JOURNAL

of the

WEST CHINA BORDER

RESEARCH SOCIETY

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Printed by the

Canadian Methodist Mission Press

Chengtu, China

Visit
Dr. Charles E. Tompkins
2-21-1929

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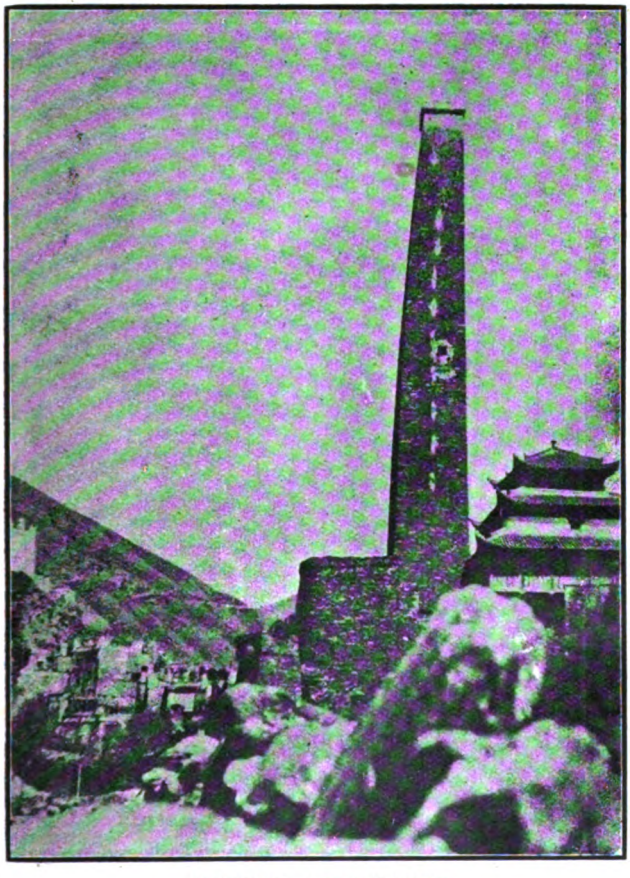


TOWER AT TAWEI

About 20 Miles East of Mongkong

Organization and First Year's Program.

Looking toward the organization of a research society for work in the hill country and among the tribes of West China, a meeting of men interested was called at the home of Dr. W. R. Morse, Union University, Chengtu, March 24, 1922, at 3 p m. The following were present:—Dr. W. R. Morse, D. S. Dye, A. E. Johns, C. W. Foster, E. Dome, H. N. Steptoe, A. J. Brace, J. R. Muir. G. B. Neumann, Dr. E. C. Wilford, Dr. S. H. Liljestrand, and T. E. Plewman.

At this meeting, as acting Chairman, Dr. Morse explained the object of the meeting and the wide field open for investigation. It was then resolved that an organization be effected, and that the name be, the "West China Border Research Society". A committee was appointed to draft Constitution and By-laws.

At the next meeting, April 21st, the Constitution was adopted, and the following elected officers: *President*, Dr W. R. Morse; *Vice-President*, G.G. Helde; *Secretary*, E. Dome; *Treasurer*, D. L. Phelps; *Member Executive*, J. Hutson.

Mr. J. H. Edgar, F.R.G.S., was elected the first honorary member.

The first meeting of members took place Oct. 28th, 3 p.m., at the home of A J. Brace. E. Dome read a paper on "The Black Lamasery at Badi", and T. E. Plewman read a paper, "A Journey into the Heofan Valley."

At the Executive meeting held Dec. 8, A. J. Brace was elected Secretary in place of E. Dome, returned home on furlough.

On Dec. 12th, a special meeting of members and friends was called to meet Dr. Smith of Upsala University, in the Biological Department, Hart College. Dr. Smith spoke informally on the "Flora of the Tribes Country" and exhibited his excellent photographs.

Jan. 27th, 1923, an open meeting of the Society was held in Hart College when the President, Dr. W. R. Morse, delivered his address on "Research", and by request, Mr. Plewman was asked to repeat his lecture on the "Heofan".

March 3rd, 1923, at the second regular meeting of the Society, Mr. G. G. Helde read his paper on "Four Passes over Fourteen Thousand feet", and Dr. S. H. Liljestrand on "Botanical Notes from Tatsienlu to Badi Bawang, with special reference to MedicalPlants".

At Executive meeting, March 19, Dr. J. Beech was elected to serve on Executive in place of Mr. Hutson, resigned. Dr. Beech was also appointed to serve on the committee for editing and publishing the first Journal of the Society's proceedings.

The last meeting of the season was held April 7th, 1923. Mr. J. R. Muir read a paper on "Snow Mountains", and Mr. C. L. Foster delivered his lecture on "Geology of Szechwan".

The members of the Society are:—Dr. W. R. Morse, G. G. Helde, E. Dome, D. S. Dye, D. L. Phelps, C. L. Foster, H. N. Steptoe, A. J. Brace, J. R. Muir, J. H Edgar, Dr. E. C. Wilford, T. E. Plewman, Dr. J. Beech, Dr. J. L Stewart, D. C. Graham and G. B. Neumann.

Publishing Committee:—Dr. W. R. Morse, President; G. G. Helde, Dr. J. Beech, A. J. Brace, Secretary.

PRESIDENT'S ADDRESS

*Delivered at the first public meeting of The West China Border Research Society, at the Union University, Chengtu, Szechwan, West China, January 27, 1923.**

BY WILLIAM REGINALD MORSE, M.D., Dean of Faculty of Medicine, West China Union University.

The quality of this audience is proof that the Society under whose auspices you are invited here today did not gauge public opinion wrongly. No matter how necessary an association may be, there are times and occasions when an apologetic is necessary; so on this first public meeting of our West China Border Research Society I wish to explain to you our aims, and at the same time to make a plea for research. The chief obstacle in the way of progress in the direction of a very necessary and important matter in this university centre of Chengtu seems to lie in the fact that it is nobody's business to attend to it, and one object of this appeal, frankly, is to raise popular feeling in the matter to a sufficient extent that influential men and women will make it their business to investigate the matter, and devise ways and means of providing a plan to carry out in a scholarly way some scheme that will meet the emergency Hence we do not feel any apology is needed for our existence; we feel we have attempted to fill a very real need; we ask your kindly consideration, and for a sympathetic hearing.

Our Constitution says: "I. The name of this society shall be the West China Border Research Society. II. The purpose of this society shall be the study of the country, peoples, customs and environment of West China, especially as they affect the non-Chinese. To this end, the Society shall promote study by the encouragement of investigation, loans of equipment, meetings, lectures, papers, the publication of a journal, and by any other means decided upon by members." The aims and purposes of this Society, then, are to encourage and promote and carry out exploration among the peoples of the Chino-Tibetan Border, especially that section which borders on Western and Southern Szechwan. The term research, as far as this talk is concerned, means investigation by exploring.

An academic statement is formal and cold and often a bit discouraging to folk of great modesty. The very words "research", "exploration", "investigation", to many educated people are inhibitory, due to the fact that so many belittle their worth and ability. The

*In the summer of 1922 six members of the Society took an eight weeks' expedition into the Tribes' Country of the Chino-Tibetan Border. The party consisted of Morse, Edgar, Helde, Liljestrand, Dome and Phelps.

promoters and members of this Society have no pretense to any other frame of mind other than an intense desire to promote as far as possible careful, truthful, accurate observation along any line which our natural abilities lead us; no other mental requisite is necessary for carrying on our research on this almost unknown border. Thus in a humble way we expect to succeed in adding something worth while to the storehouse of common knowledge.

The idea of forming this Society was born under the stress and excitement of the knowledge of the profound neglect of unknown peoples right at our doors; in was born under the strain of the prolonged exertion which one has to endure to investigate conditions under which these people live; it was born under the stimulation of the most wonderful scenery; it was born in the clean, pure air of the mountain passes of this strange and uninvestigated region; it was born in the brain of men who are yourselves, whilst their eyes were seeing some of the wonderful things the geography tells about. I hope you will feed this idea with the milk of human kindness; mother it; nurse it train it; for if rightly nourished, we should develope knowledge of value to all mankind.

All science is advanced by observation, but we must remember Pasteur's remark, "In the field of observation chance favors only those who are prepared." Preparation always means continued hard work. Our whole life here in China is one of preparation; we have only to make the application. Huxley said, "Science is trained and organized common sense," so research might be defined as trained and organized observation through the exercise of common sense. Our principal armamenture, then, is *common sense*—is there one here lacking in the chief prerequisite for research? Common sense expressed in words written on paper. No matter how much we wander about, how much we see and experience, the final result will be local or lost altogther unless we make our contribution in a form which will be permanent to others.

Ideas always leak through from one people to another; will pass from one language to another." "Print and pictures will penetrate everywhere." Hence we intend to print and publish and circulate our own results; invariably careful to give accurate and true data and full credit to whom credit is due. "Let *not* him who seeketh cease from seeking until he hath found, and when he hath found he shall wonder."

Our aim is high, but unquestionably not so high that we cannot attain it by concentrated physical and mental effort. We must not only work physically, but we must conserve all the knowledge that is worthy of preservation and publication.

We need the chemist's laboratory, the astronomer's telescope, the mathematician's observations, the geologist's crowbar, the mineralogist's hammer, the anthropologist's measurements, the ornithologist's gun, the sinologue's translations, the traveler's explorations, the philosopher's deductions, the sociologist's and economist's researches, and all tinctured by the truths of God's word; for the facilitation of the Brotherhood of Man is the groundwork of our labors. We need earnest men who are impressed by the importance of the matter and who will forego some comfort and ease, and undergo some hardship and exposure and much labor. As members of this Society there is no compulsion; we are joined by no

link that forces us through the will of any other member to continue in it or to do work. We are bound by the subtle and strong chain of honor. We are binding ourselves freely and voluntarily to study and work and sacrifice for the great cause of science, impelled to do so, it may be, by religious convictions. Behind the study and research we are impelled by a force demanding us to do our best for the brotherhood of man by as intensive study as is possible of the man himself and of the country in which he lives.

"China's wall of masonry was never a very efficient barrier." A wall of misinformation, or of no information, about our nearest neighbors is most difficult to tear down; for always life is desirable and human, a thing of intrinsic worth. It is our duty to know them and their country. It is a sacred trust. What we discover and perpetuate will influence the men of tomorrow, so we must have a clear-eyed vision of our responsibility.

Have we the "divine spark of creative ability which means new discovery and new understanding and new accomplishment" in the realm of peoples and nature? We must feel the compelling urge to know the why and the how of things; to discover truth and turn it to the betterment of our follow men, "for none of us liveth to himself and no man dieth to himself." It is our duty to find out things; to utilize our tremendous opportunities here and keep the public posted with accurate information. Not only do we plead for science for its own sake, but for the practical use of our work, the economic and spiritual values of our task. To quote an author: "We come back to the cultivation of the emotions and perceptions: the interpretation of the soul of man; the interpretation of past experience, emotional, rational, etc.; elevation and refinement of taste; knowledge of human nature as revealed in literature and history; development of ideals; interpretating ideals of beauty, culture, etc." (Guger: *Scientific Monthly*, Dec., 1921, p. 541.) The same author says, "Learn to extract knowledge not only from the past, but also from things around us, and how to use such knowledge; to learn to weigh evidence, to deal with facts and evaluate the conclusions of others; to gain knowledge of the fundamental laws of nature and not fall a prey to them, to learn to express our thoughts clearly, forcibly and with a reasonable degree of grace; to form character and develope an intelligent appreciation of the things which enrich and refine life." We must not be bigoted or egotistical. The Israelite said to Moses, "Who made thee a prince and judge over us?" We must always in our work, whatever it may be, with stones, birds, animals, fossils, implements, paintings, mountains, climate, man, see "the struggle of the human mind towards new concepts of nature and to realize the place of such concepts in the fabric of civilization." We must not be solely collectors of facts. Someone said, "fact knowledge is the fool's paradise," and "an ounce of ability to turn facts into general ideas is worth tons of information." We must know each other's point of view, his facts and point of view and we must not misunderstand his motives and his accomplishments.

We want truth: it is a craving of the human mind. Buddha comes from a word which means "he to whom truth is known." More familiar to us is "Ye shall know the truth, and the truth shall make you free." All of us recognize that there is a God of an orderly universe.

Perhaps too many of us take too languid an interest in the golden age of antiquity; perhaps too many of us thoughtlessly do not realize the importance of our own and other's origins; perhaps we are too fixed in our racial prejudices to realize our debt to all races; perhaps we are too self-centred and self-complacent. We believe that life today is fuller, more interesting and more agreeable than at any previous time in the history of man. But is it?

It has been said that it is better not to know so much than to know so much that is not true. Should we praise our forebears less or praise them more? Should we emphasize our origins more, or more correctly evaluate them if we seek the actual truth?

Mr. Justice Holmes, of the United States Supreme Court, years ago in a Memorial Day address, said, "The joy of life is to put one's powers as far as they will go, and the measure of power is obstacles overcome, to ride boldly at what is in front of you, be it fence or enemy; to pray, not for comfort, but for combat; to keep the soldier's faith against the doubts of civil life, more besetting and harder to overcome than all the misgivings of the battlefield." "There are other sorts of combat more decent, more honorable, and more productive of better and more permanent results than physical combat." Why climb Mt. Everest? Why expedition after expedition to the North and South Poles? Why explorers, football players? Why fly over the Atlantic in an aeroplane? Why missionaries? Why this university?

Discovery, exploring the unknown, is the same spirit that brought us to China to pioneer amongst a strange people. There is a tremendous satisfaction in personally physically and successfully tackling a man's job that requires every effort of will, strength and spirit to accomplish; the influence of such experiences on character is tremendous. Exploration is "a superior kind of sport", for those weary of the cares and burdens of fixed customs—to triumph over obstacles reported as insurmountable. Experiments must be made, even though pioneers be killed, from airships to the inoculation of germs into one's self: some one must risk and possibly life be lost, so that in the long run civilization will gain.

"Intelligence, initiative, character, courage and the divine spark of the human soul" constitute practically the stock in trade of the explorer missionary. The end results of our stock in trade are colored and governed by impulse; these are varied in each individual and come from original instincts and acquired desires: Some of these are selfish, others are altruistic and are evoked by things of the spirit.

There is in us all a yearning for originality: to do something no one else has done, or find or see or make something new and different. Such a spirit coupled with altruism is behind investigation and research in the obscurer places of this old earth. A service for ourselves, for the Chinese, for the world.

It is silly and unnecessary to take chances. Surely; "but people who did that won the war. Who sailed over to America in a 2 by 4 fishing boat betting the world was round; not knowing they might drop off the edge?" Who risked life and died to test the theory about insect propagation of disease? Who died, and who won in attempting the North Pole? Who do impossible things? It is risky, but it is worthwhile to take a chance. It is not going through life building a little card house of useless, silly adventure. It is matching one's

physical, mental and spiritual self against which a man might momentarily flinch but never quail. It is worth while. There is risk, danger, work, fatigue; but there is peace, finality, and satisfaction in doing a man's job against real odds. It is not a romantic fantasy. It is not cutting capers, and playing to the gallery.

The utilitarian asks what things are to be accomplished by the conquest of Mt. Everest and these other adventures. The answer is that "there is something in the spirit of man that urges him to attain the all but unattainable, and that it is that more than gain, personal ambition and specific immediate results that animates discoverers", pioneers, inventors and missionaries.

Why explore? Don't you ever want to "live history"; experience the joy and benefit of realizing Robinson Crusoe? If you stand the test of the mountains you will stand any test. It shows the yellow streak. Don't you crave for something different? Don't you ever want to be a Sherlock Holmes? Don't you feel the fascination of the unknown? Don't you crave clean, pure adventure? Don't you want to combine all of these and at the same time do something of real use? Why explore? Is it a disease? I cannot answer the question fully, but there occurs to me: (1) People are interested in people. "The proper study of mankind is man" is trite and true and important. My reading and study has suggested to me the question as to whether or not the interest felt in Tibetans and the Tribes folk is due to the fact that they may well constitute as it were a root nationality: are they, or are they not, a parent stock? If the answer is affirmative it is one of the factors in the interpretation of their psychology. Thus the purely scientific desire to study the customs and country of these mysterious and unknown but fascinating people is a laudable reason: "The enjoyment of life just the sheer love of the thing". Most of us are young, and all should feel that way. We all should love to play and test our capacities. It is time to think of retiring when we have lost the thrill of adventure. It is not unworthy to pit oneself against real physical obstacles and overcome them. An element of danger, too, does not detract from the enjoyment. Perhaps the first appeal to us is that of a knowledge of the people and country which must be occupied by missionaries in the not distant future. (2) Another reason for our trips is study of these people anthropologically, and a study of the country from a scientific point of view. An addition to the world's knowledge of peoples and countries is no small aim. (3) Men enjoy seeing the best, and being at their best physically. One must be in the best physical condition, and possess some grit and determination. Moreover it is a test of nerves at higher altitudes and with prolonged physical exertion one tends to become nervous and irritable, but one must keep smiling and keep going,—a decided gain subconsciously. (4) The achievements of man like Edgar, who has surmounted well-nigh unsurmountable obstacles; borne up amidst every physical hardship from frozen feet to pangs of hunger, should hearten men in every occupation and stir them to rise over impediments which confront them. (5) "As men test and exercise and develope their capacities and raise the standards of achievement they will be more at home in the mountains, and enter more freely into their spirit." It is a privilege to enjoy the majesty of real mountain scenery. In this way is cultivated and developed a spiritual outlook and uplift that must benefit the traveler, and by his

added zeal benefit his coworkers, for on him lingers "the mysterious impressions of meetings with the gods face to face in solitary places."

The rewards are then, spiritual uplift, physical betterment, intellectual satisfaction, advancement of knowledge—and to some of us propagation of religion. Such a task well done is an inspiration. It is essentially God-given.

This institution, imbued with a spirit of scientific research, situated so uniquely with opportunities of tremendous significance and importance, will, if only we use our eyes, move our hands and feet and cultivate an open mind, not only impart knowledge but render a service to China and contribute not a little to the solution of problems of future missionaries. We will thus attain to the "consciousness that we have fulfilled our real functions of discovering truth, diffusing knowledge and developing ideals." The real spirit of the researcher is, to quote Kipling's "Explorer":

"Till a voice as bad as Conscience rang interminable changes—
On one everlasting whisper day and night repeated—so:
'Something hidden. Go and find it. Go and look behind the Ranges—
Something lost behind the Ranges. Lost and waiting for you. Go!'"

Four Passes Over Fourteen Thousand Feet

G. G. HELDE

One cannot travel far into the country to the north and west of Chengtu without being impressed by the steepness of the mountain sides, the torrential rivers, the narrow valleys, and the general instability of the surface. This is characteristic of a country which is geologically new, the forces of nature not having had time to soften the outlines of the landscape. By consulting any map of West China, one of the most noticeable features is that there is a series of rivers running from north to south, but separated from each other by high mountain ridges; and again, the branches of these main rivers are separated from each other by other ranges so that one cannot make many extensive trips into the country which we have set before ourselves to study without encountering high passes. True, one may follow up the Min River to Sungpan or leave the Min at Weichow and turn west to Lifan and Tsakulao and several days beyond without encountering these ranges, for the road is in the valley; or one may go to Tatsienlu, without encountering passes much over 9,000 feet high. But beyond any of these points, if one wishes to continue his investigations, he is very soon faced with the problem of getting himself, his party, and his equipment over mountain passes which may be from 14,000 to 16,000 feet high. In this paper, four of these passes are to be discussed. The first two are the better known, as they have been crossed by a number of travelers, but the latter two have been crossed but rarely.

The Ta Pao Pass lies north of Tatsienlu, and must be crossed when one wishes to reach Mongkong and the Ta Chin Valley from that side. Leaving Tatsienlu, the road follows up the river through three ten *li* stages, known as the Yi, Erh, and San Tao Ch'iao. Immediately upon leaving Tatsienlu, the altitude of which is 8350 feet, the ascent becomes noticeable, and in this thirty *li* stretch which is about six miles, an altitude of 9050 is reached. The direction from Tatsienlu is ten degrees west of north. There are only two or three houses along this stretch until Jui Shui T'ang is reached, a distance of 14¼ miles from San Tao Ch'iao. In this distance, a gain of altitude of 1500 feet is made, giving Jui Shui T'ang a height of 10,550 feet. As the name indicates, there is a hot spring here, with a water temperature of 134 degrees. A back bearing 20 degrees to the southwest from Jui Shui T'ang points to what is probably the highest peak this side of the great giants of the Everest group. Judgments of heights are notoriously incorrect, but bearing in mind the distance, and the height of the summit above the snow line, 26,000 feet ought to be a conservative estimate. After leaving Jui Shui T'ang, the road winds along through quite dense underbrush, largely prickly oak and dwarf juniper; the yaks are continually bumping into the brush

trying to get rid of their loads, and if one is riding, constant vigilance is necessary to keep from being pulled off by the low branches. The yak, or what is worse, the *zo*, a cross between the yak and the cow, is worthy of a special study, and if any member of the society is looking for a subject which will take all his patience, ingenuity, previous experience, and deep psychological insight to investigate, I commend this one to you.

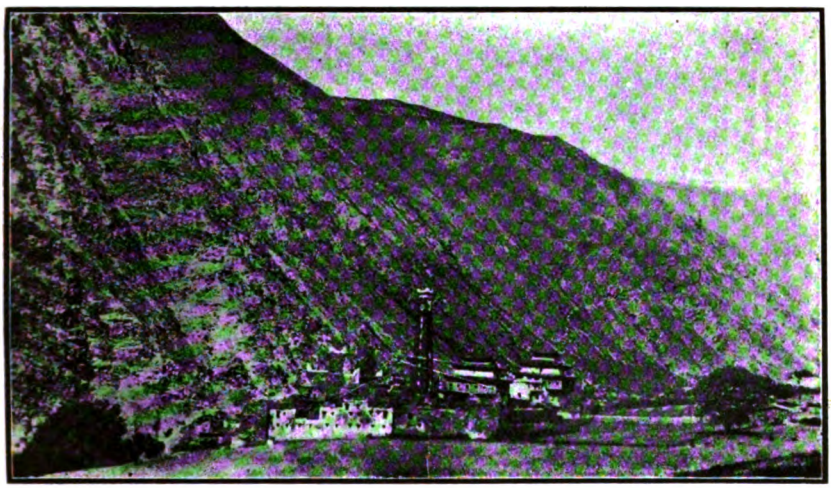
Looking forward, there seems to be no pass at all. At various points, there are high mountain ridges, but they all seem to be out of the general direction where the pass should lie. Directly forward there is only the same gradual slope that has been followed, with a slight incline right at the top. After passing around the foot of a spur over a very bad piece of road, the view widens out, but there is the same general aspect of the gradual slope. 7½ miles from Jui Shui T'ang, there is a stopping point called Hsin Tien Tze, but never a place belied its name more. At some time in the past, there must have been several huts there, but now it is completely ruined, and the one or two miserable families who make their living by giving some sort of provision to the occasional traveler have merely roofed over two or three small rooms. But this is the last habitation until one goes over the top of the pass, and many miles down the other side. The altitude here was shown to be 11,590 feet by hypsometer, and 11,850 feet by the aneroid. The direction of the road forward is 35 degrees west of north. Five miles beyond Hsin Tien Tze, there is a fork in the road, the one to the left being the north road from Lhassa. It is now apparent why the pass seemed to have no difficulties, for while the outlook directly ahead shows the gentle slope, with the river gradually disappearing until only a small spring is seen, the road over the pass takes a sudden turn to the right and goes up the mountain side, at the foot of which the road has been leading. The bottom has an altitude of 12,800 feet, and the top by hypsometer an altitude of 14,500, and 300 feet higher by aneroid. The stone forming this slope and top is shale, with an occasional bit of limestone and marble showing. The strata dip 30 degrees to the southwest.

The day the writer went over this pass, the weather was most unfavorable, so that more than fleeting observations of the surrounding country as the clouds broke a bit was impossible. But for hardly more than an instant, the air to the southwest cleared somewhat, and there appeared a group of spirelike peaks, so steep that in many places the snow could find no resting place, but where a crevice or shelf held back the ice and snow, the contrast of color and the delicate weaving of the snow and ice outlines gave all the delicate tracery and fascinating lightness of a Gothic cathedral. The mists, now heavy, now light, now disappearing for an instant, threw over all an illusion of lightness and laciness. No heavy ponderous somber mountains here, immovable through the ages, but movement and lightness and illusion.

The descent from the Ta Pao Pass on the north side is first down a steep decline of broken stone to the head waters of a small stream flowing at the bottom of a rounded basin. Above the timber line, this basin and the mountain sides are covered with grass and flowers, typical of much of the Tibetan country of this altitude. At an altitude of 14,000 the first trees are found. These are the larch, scattered at first, but getting thicker and thicker, then an occasional

spruce or fir is found, and soon the traveler is in the midst of a dense forest, continuing almost monotonously until K'uei Yung, where there are two Tibetan houses, is reached The altitude here is 10950 feet. The distance from Hsin Tien Tze is called 120 li, and my estimate of the distance horizontally is 17 3/8 miles. This is after reductions to allow for turns and twists in the road are made. The distance from Tatsienlu is 45 miles, also allowing for these reductions. In actual distance traveled, my estimate is 55 miles, agreeing very closely with the estimate made by General Pereira. Following the road from K'uei Yung along the Mao Niu River to the point where it joins the Ta Chin River, Romi Chrango is reached. This pass, as is also true of the Hung Ch'iao, is not on a route over which the Chinese carry on trade, so that there are no inns, as there are on the Pa Lang and the Kung K'o Erh. The traveler must either be provided with tents, or depend upon making stops in K'uei Yung, the nearest houses to the pass on the north side and getting over to Hsin Tien Tze, in one day there to find shelter of the most abominable sort. It can be done if all goes well.

The Pa Lang Shan is on the main road west from Kwanhsien to Mongkung, which is the official and trading center of a large Tibetan district. A traffic of straw sandals, oil, and rice goes in, while medicines, hides and furs come out. The rainfall appears to be heavier than on the other three, and especially on the west approach, the soil is so saturated that one cannot get through without being soaked to the knees, except of course on horseback. With this excess of moisture goes a chill and depression, quite different from the softness and warmth of the Kung K'eo Erh. Leaving Mongkong, the road follows up the Ogszhi River to Jih Lung Kuan, with a rise in altitude from 8200 feet to 11,000 feet, in a distance of 41¼ miles. Three streams join here, and the road follows up the ravine of the most easterly one in a general direction of 30 degrees south of east. The road is rough and steep and the numerous streams and boggy land make very uncomfortable traveling. 2¼ miles from Jih Lung Kuan is an inn known as Kao Tien Tze, and at another stretch of the same distance, one called Sung Lin K'o. The highest inn about two miles from Sung Lin K'o is called Wan Jen Fen, "The Graves of Ten Thousand Men". The altitude is 13,800 ft. There seems to be a story of a battle which took place in here at one time, but whether true or not, the dreariness and desolation of this spot almost makes one willing to be added to the ten thousand who have gone before. The first mile from Wan Jen Fen continues on the same general slope, then the broken stone of the top is reached and the climb is very stiff. The formation is broken sandstone and limestone with considerable quartz in the veins. The writer has crossed this pass twice, both times in heavy rains and a wind that chilled to the bone. In order to take a hypsometer reading, a shelter was built of stones and the water boiled without undue difficulty, though the time in weather like this always seems interminable. There was considerable difference in the aneroid and hypsometer readings the former giving a reading of 15,000 feet and the latter 14,290. This latter figure agrees very closely with a hypsometer reading taken two years ago, which gave a height of 14,330 feet. At that time, the aneroid (not the same one with which this second observation was made) also read high by about six hundred feet.



KUANCHAI

About ten Miles East of Mongkong

K'ONGK'ER PASS

The top of the pass on the east side is also made up of broken stone, but upon leaving this, the road follows along the mountain side, high above the small stream to the right. There is much limestone through this section, and in the fertile soil, the grass and innumerable variety of flowers give a charm which is entirely missing on the west side of the pass. Some of the slopes are covered with dense timber, one of the curious features being that one slope will be densely wooded while the other will be barren of all wood except an occasional clump of underbrush. After following this slope for seven miles, the road drops down the point of the ridge with a sharp descent to Ten Sen Pa, a village on the left bank of the rushing P'i T'iao Ho, at an altitude of 9550 feet.

The Pa Lang Shan marks the boundary between Ogszhi and Wa Ssu, this latter being familiar to many, for it is governed by So Tu-si from his *chaitze* near Wen Ch'uan, where he has been visited often by foreigners. All of the carrying on this road is done by Chinese, and while for the entire distance from Mongkung to nearly Shuan K'o is in tribal country, the road itself is in Chinese control.

The K'ung K'eo Erh, meaning according to the Chinese, empty mouth, though most of the names in these parts are transliterations of the tribal names and can be taken as generally meaningless, lies between Tsung Hua on the Ta Chin Ho and Mongkung. The traveler can avoid it in making this journey by coming down the Ta Chin to Romi Chrango and then up the Siao Chin to Mongkung, but in so doing, he travels around the two sides of the triangle instead of one. And any one who has experienced the delights of the K'ung K'eo Erh in beautiful weather will never be tempted to forego the pleasure of the ascent.

Leaving Tsung Hua, the road branches off from the road down the Ta Chin a short distance below the city, and follows a stream flowing from the southeast. The altitude of Tsung Hua is 7300 feet, and after traveling about eight miles to a point called Shan Ken Tze, a gain in elevation of only a thousand feet is made. But at this point, the approach to the pass differs from those of the others we are considering, for instead of following up near the small river, it leaves the bottom, and makes an exceedingly steep ascent to the rounded shoulder of a mountain spur, at the head of which lies the pass. One advantage in this method of approach is that a large gain is made in altitude by a steep climb before the difficulties of the rare atmosphere are reached. This sharp ascent continues until an altitude of 10.600 feet is reached, then the slope becomes more gradual, and finally as the summit of this long projecting spur is reached, the road becomes almost level, and again the traveler finds himself in the beautiful grass lands, with the landscape widening at every foot of advance. Here and there are groups of snow mountains, and to the west, the rolling undulations of the nomad country beyond the Ta Chin, with the setting sun bringing range after range into relief, makes the traveler, sitting by the road with the warm soft luxuriant atmosphere enveloping him sense something of the meaning of Nirvana. But he is rudely awakened by the chill air of the evening and the realization that he must sleep at Wu Li P'ai, the last stop before going over the pass. There can no more miserable inn in the world. The road from this point to the pass makes a gradual ascent for some two miles, then the scramble over the broken stone and the top is reached. There is

the inevitable pile of stones and prayer flags of the thankful travelers who have passed over before. The direction of the ridge is north and south, and the formation is largely slate, with the strata perpendicular. In August, there were some patches of snow in the protected spots. The hypsometer reading, taken under admirable conditions, gave the height as 15,678 feet. The aneroid was 300 feet higher. On the east side, there are the remains of inns which have been destroyed, and also the outlines of a barricade which a carrier said had been built by soldiers. The first inn is at Ta Shin Pao, and the first town of any consequence is called Tsung Tei, at an altitude of 10,650, and according to my estimate, fourteen miles from Wu Li P'ai. From there to Mongkung, the distance is some five miles.

I have left to the last, the Hung Ch'iao or Vermilion Bridge, for it is the highest and greatest of the four. It forms the water shed between the T'o River which flows past Tsakulao and Lifan into the Min, and the Siao Chin, though these waters finally unite at Kiating. The actual ascent of the pass may be said to begin at Mong Ku, a group of Tibetan houses on the east side of the range, lying at an altitude of 9760 feet.

The pass is visible from this point and already looks formidable. The road from Mongku is along a small stream and through much forest country, absolutely without habitation. This pass is not on the Chinese trade routes, the travelers and traders being Tibetans, who of course need no roofs. But in order to provide for the occasional Chinese, some one built a rest house called Tsoa Peng, but two years and a half ago all that remained of it was a piece of stone wall and a few shingles. The hut was just below the timber line, and from this point, a range of magnificent snow mountains can be seen in the northeast, somewhere north of Tsakulao. The timber line is at an altitude of about 12,000 feet, and at about a thousand feet higher, considerable masses of snow are encountered, for a great range of mountain peaks is just south of the road, and these hide the sun for much of each day. The road soon becomes more difficult, and from the time the snow is reached until the summit is passed, none of the other passes compares with it in difficulty. Not the least of the disturbing factors is the nearly continuous presence of robbers in the neighborhood, and at the time the writer crossed, the dead bodies at the roadside did not contribute to peace of mind. But when the top is reached, there is found the best view of the snow-covered peaks which join the pass on the south. They stand from two to four thousand feet higher than the pass itself, are covered solidly with snow and ice except where the precipice is too steep for the snow to hold. They appear so near, that one seems almost able to reach out and touch them; this illusion is intensified by the distant masses of snow peaks beyond them which can be seen. On the north and west other peaks are seen, but these are lower, and have no snow. In proportion and outline, they are as beautiful as the others, though they lose in color contrast and brilliancy by being without snow. The hypsometer observation was made under ideal conditions and gave the altitude of 16,279 feet.

In making observations as to the directions of some of the mountains, I found that upon taking the compass from my pocket, the needle instead of coming to rest spun rapidly for at least twenty revolutions, and did this several times when I held the needle, then

turned it east and west and released it. On the west side, the first possible stop is at a house called San Sung, some seven miles from the pass. The road soon follows along the stream draining from the pass, through the timber, and reaches Liang Ho K'eo, the junction with the Siao Chin.

If any members of the Society are interested in mountain climbing as such, I know of no more interesting spot than in the Hung Ch'iao region. Transport to the timber line can be made without difficulty where a permanent camp could be established, and the wait made for favorable weather conditions. It should be possible to reach the highest peak and return to camp in a day, and would give what we never have in our ordinary West China mountain climbing, true alpine conditions.

A Journey Into the Heofan Valley.

T. E. PLEWMAN.

The writer's intention was to traverse if possible the main valley of the Heh Shui, and failing that to at least attain the upper reaches of the Little Heh Shui known as the Heofan. In company with Messrs. Mao and Peng, two Chinese friends, we attempted to reach the Heh Shui from the Four States to the west, by way of Matang, but failed. Returning to Lifan, Messrs. Mao and Peng were already tired out, so the writer made a second and more successful attempt alone by way of the Ta Keo ("large valley") northwesterly from Lifan. However, I heard at Lifan that a band of robbers was operating at the upper end of the Ta Keo and had made up my mind to try the Siao Keo ("small valley") north from Lifan.

In company with my cook and two carriers, I left Lifan for the Heofan on July 30th. My guide was to catch up to us. There is a "Providence that shapes our ends rough hew them how we may," and though I had been over this part of the road twice before, I missed the entrance of the Siao Keo, some fifteen *li* north of Lifan, and continued up the Ta Keo towards Shangmengteng, quite oblivious of the fact that I was on the road that I had been warned against taking. After having travelled about 30 *li*, I knew I must have passed the entrance of the Siao Keo, and was somewhat dismayed to find out my mistake. I was reluctant to go back so far, and met some men coming out who stated that the robbers had left and that the road was momentarily open. Traders were going in again in little groups, travelling together for safety's sake. If they could, I could. I decided at once that I would stay with the Ta Keo route, which would take me into the Upper Heofan, go down the valley to Yahtu and return from the Lower Heofan by way of the Siao Keo to Lifanting. Knowing that the Heofan trip at best was rather risky, and that food was almost unprocurable there, we had purchased enough provisions to last us ten days, and only taken a few dollars in cash. No need to let the robbers have more than was necessary. That evening we stayed at the home of Hsia Sheopi, headman of Hsiamengteng. His large but rather dilapidated *gonggwan* (residence) is located on the top of a bluff overlooking the river, which flows south-easterly towards Lifan. A number of young women and some children were playing in the courtyard when I arrived, and not having seen me before, seemed afraid to have me enter. I gave them my card and asked one of them to convey it to Hsia Sheopi. He came out and gave me a warm invitation to stay with them for the night. I have known him for some years, but this was the first time I have stayed at his home. He is a well-meaning, but very weak man, and much addicted to opium. Every part of the house gave evidence of neglect and his fine large guest room was exceedingly

Photo by T. E. Plewman

GRASS COUNTRY NATIVES AT MATANG,
STATE OF SOMO

Photo by T. E. Plewman

ABBOT OF KANG KANG KIAI LAMASERY

dirty. However, he invited me to occupy a smaller but cleaner room upstairs, adjoining his own. After supper I accompanied him to his own room, where he invited me to enjoy a pipe with him. I declined, but had quite a long conversation while he indulged his "yin" for opium. I retired to my room about 10 p m., but did not get much continuous sleep. Hsia Sheopi's wife, one of the young women I had seen at the gate, joined him, and from that time till 3 or 4 in the morning there was a procession of slave girls through my room to their apartments. Each time one of them came through carrying opium, midnight lunch, etc., they would also bear a flaming torch within an inch or two of my mosquito net. One time one of the slave girls did something that offended her master, for I heard a blow followed by the girl's cry, "Aba, Aba!" ("Father, Father"). The term seems to be synonymous with Lord or Master. An hour or two before daylight, quiet descended on the house. The master's craving for opium was satisfied for the time being.

July 31st.—Sent off my loads early in the morning, but delayed my own departure to take a picture of Hsia Sheopi's family. Ten *li* up the road came to the Shïh Men Kwan Lamasery (yellow sect), where I renewed acquaintance with some of the lamas and caught up with my loads. Here also I was joined by our guide, who had followed us up from Lifan. Below Shïh Men Kwan the river is rather turbid and the scenery while beautiful not so picturesque as from that place to Kangkangkiai Lamasery. We noticed the river water above Shïh Men Kwan growing increasingly cold and clear. The path led through dense thickets of underbrush and occasionally through groves of trees, usually located close to a village. Most of these villages had good-sized red sect temples, with all the paraphernalia of prayer wheels, etc. We did not see any lamas attached to them, and walked through open doors into two of them which we looked over at our leisure. At Tasipa we met Tsang Sheopi, jun., who was visiting some of his relatives there, but turned and escorted us to his father's *gonggwan* at Zr-pao-kiai. Alt. 7750. From him I learned that four or five Heh Shui robbers had remained after the main band left, and hearing this Tsang Sheopi had plucked up courage and surrounded them with 30 or 40 of his henchmen. After a brief skirmish, in which one of the robbers was wounded, they surrendered. Two of them had modern rifles and Tsang Sheopi was rejoicing in his acquisition of these. This occurred the day before my arrival. I also was glad, for it meant that the Ta Keo was probably free of robbers for the time being, and if I was wise I would take advantage of the going while it was good.

The next morning was beautifully clear, and I took a couple of landscape snaps from the roof of Tsang's house. The scene was entrancing. Great snow mountains in the distance, five or six villages in sight in the wooded valley, with several watch towers on the hillside and two beautiful streams lending variety to the view, Zr-pao-kiai has the finest outlook of all the native villages I have been in. Would that I could transport it a little nearer Kwanhsien. This morning I again sent my carriers on ahead and stayed behind for breakfast with Tsang. Five *li* beyond Zr-pao-kiai I stopped for a few minutes' rest with the Da Lama of the Kangkangkiai Lamasery (alt. 8000 ft.), whose picture I took several years ago and who at 78 years of age is

still hale and hearty. The lamasery belongs to the red sect and compared with the Tsakulao one is quite small. There are only about forty lamas. Tsang Sheopi is a devout adherent of the red sect and has rebuilt the lamasery at considerable cost to himself. On the top of his own house he has erected a private chapel or *kin leo*, where he also has a new set of Tibetan Scriptures that cost him over $1000. But his piety does not help him to keep the favor of his parishioners, for not many years ago, enraged by his exactions from them, several thousand tribesmen surrounded his *kiaitzi* and killed most of his family, Tsang himself escaping by the skin of his teeth. He also is a confirmed opium sot and his son bids fair to follow in his ways. Bidding farewell to the friendly lamas, we turned up the right branch of the river. From this point onward I was travelling through an unexplored section not previously traversed by a foreigner. For two or three *li* the path lay through a lightly wooded country and the grade was easy. Then the valley narrowed up, the path ascending the mountain by the side of a stream that was a continuous cascade. Great trees overshadowed us on every side. The scenery was magnificent beyond description. But we had to mind our step, for it was perilous to look too long at the towering crags on one side, or the rushing stream below us on the other. Bog holes and slippery tree roots lay in wait for the feet of careless travellers at every turn. I fell a victim to tree roots several times, and on one occasion had some difficulty recovering my helmet, which disappeared down a cliff into some brush. Fortunately I did not follow it. Everything seemed supersaturated with moisture. At noon that day my cook tried to kindle a fire to heat some water with, but spent nearly an hour in a vain attempt to get anything to burn. We had to carry a little kindling wood for use in such places. After rising three thousand feet the grade got slightly easier, the timber was noticeably stunted and small, and consisted largely of evergreen trees known as P'an-sien and Yang-go, the leaves of which are used by the Ch'iang exorcists (*dwan-gong*) in the worship of the white stone In places the ground was quite swampy and fallen timber frequently provided a convenient way of crossing a soft section of the trail. We arrived at Niupeng—alt. 11900—about 5 p.m., not having seen a house or met a person during the day's stage. The name is derived from the fact that Tsang Sheopi has a cattle ranch in the vicinity, where he has 60 head of yak. The grazing being better a short distance away, his ranchers were now using another shelter, while the original one in which we were now resting was occupied by a number of families engaged in digging medicinal roots and sundry transients like ourselves desirous of getting into the Heofan. Arriving several hours before dark, most of the root diggers were still out on the mountain slope, and we had a chance to survey our surroundings and get settled down before the crowd got in. The shelter was about 45×25 feet, with bark roof. One side had three rooms partitioned off from the main part, branches of fir trees being tied to the framework of the shack to do duty as walls. As the branches were thinly distributed the protection was slight, and you could put your head though almost anywhere to see what was going on outside. A long trench at each end of the room held huge logs of wood, which burned merrily, and over which were suspended a large number of heavy iron saucepans and kettles. As darkness drew

nigh groups of young people kept straggling in with their pouches filled with roots and carrying their root-digging picks. The place was alive with activity. The huge fires were stirred up, edible greens picked on the mountainside were stewed to make soup, to which when boiling was added large lumps of cornmeal dough. Others toasted cornmeal or barley bannocks *(gokways)*. Fire space was at a premium and the rootdiggers did not stand on ceremony in monopolizing the fire for themselves. Charity begins at home and the transients could wait till the first rush of supper was over, and then they could edge a pot or a pan in on the now slackening fire. The rootdiggers numbered about 35—men and women, boys and girls, together with seven or eight transients, so that there were about 45 people packed into the shack. The majority of them were natives (Rong) from the neighborhood of Kang Kang Kiai (Snangmengteng District), whole families coming up with about a week's provisions, digging roots for that length of time and then going out to Lifan to sell same, proceeds being reinvested in staple necessaries. Some claimed to be able to earn a dollar a day digging roots. The most sought after was the ***peh muh***, a plant with a blue flower, to the root of which was attached what looked like a small white bean. Freshly picked the latter fetch from 200 to 300 cash per ounce, or 500 to 600 if dry. They are valued as a tonic and supposed to give warmth to the body in wintertime. Amongst the rootdiggers we found a man who several weeks before had seen me in the chapel at Lifan when having some fun with my electric battery. He was quite friendly. After supper I gave two natives a little medicine, and some others who were not too tired started a dance. But every once in a while there would be a halt in the performance while the local fire brigade got busy extinguishing a blaze on the bark roof caused by sparks from the logs. A stalwart young man or woman would get up on the edge of one of the bunks round the side of the room and sling half a pail of water at the burning bark. It generally achieved its object—that is, put out the fire—but somewhat at the expense of the crowd below, who received the surplus water. Betwixt times I was informed that the Heh Shui robbers had visited them a few days before, but had not thought it worth while to tackle such a crowd for the sake of the small booty to be obtained. A mile or two away was the cowherds' shack occupied by two or three defenseless natives, and this they cleaned out to a finish. The evening drew on and the wind penetrated through the branch lining of the shack with ease. The heat from the log fire was comforting, but my back was chilled, and I thought it wise to retire before the atmosphere was too cold. A crowd has its advantages. I slipped into bed without hardly anyone noticing the fact. The families who occupied the partitioned-off sections retired therein. The rest of the natives—men and women—occupied bunks in the open part of the room, while the transients slept on pine boughs on the ground. A few lingered quite late into the night preparing ***momo*** and bannocks for the next day's bill of fare. My cook and carriers suffered quite a little from the cold, as they had no ***pukais*** (wadded quilts) with them and were only able to rent some very flimsy covering. No wonder that they frequently arose during the night to stir up the embers of the fire and toast themselves for a few minutes in preference to sleep. Towards morning we had a shower, and I had to cover my bed with an oil sheet. We were

glad when daylight came, the rain ceased and we had the promise of a fine day. A long stage lay ahead of us and we were informed that there was no habitation *en route* till we got to our destination at Heh Kia Si Kiai, sixty or seventy *li* away. We had a hurried breakfast and my cook Lao Wei was much concerned when after five minutes' cooking I cracked a boiled egg to find it still raw. He did not understand it at all, but I laughed and told him to try them the rest of the way—the altitude was too great. Niu Peng, as I have already noted, registered 11900 feet by my aneroid, but as it seemed consistently four to five hundred feet less than other aneroids, I am inclined to think that a hypsometer reading would have shown close to 12500 feet. Anyway, it was no use trying to boil eggs, and was the highest place at which I stopped overnight. Leaving the shack, we followed the stream up through a thicket. The sun came out, but the air was frosty, and the branches let down showers of ice-cold water as we passed through—the result of both dew and rain. We passed over a flat covered with slide rock and then came on to a long reach of meadowland covered with flowers. We were above the timber. One of my coolies who had once tried his hand at rootdigging pointed out a blue flower to me as the *peh muh* plant. I borrowed my guide's sword and dug the plant up by the root. Sure enough there was something like a white bean attached to it. I put the precious trophy in my pocket, but alas it was lost before I got back to civilization, and I am afraid I will have to buy some in the medicine shop if I wish to show you one. The valley narrowed up and on the slopes above us we could see several snow fields. Except in the valley bottom the whole country was devoid of vegetation. We seemed to be getting into a *cul de sac*, for on every side except the one we had come by were huge masses of slide rock surmounted by perpendicular precipices that towered up two and three thousand feet. I looked around uneasily and wondered where the path went to. Then it turned a corner and we saw in a hollow at the head of the valley a beautiful lake. It might be half a mile long and a quarter of a mile broad—a gem in a rough setting, for I could hardly appreciate its beauty. The terrible crags above me were overpowering, and my subconscious mind had ever before it the fact that I had to get over the pass somehow, and didn't like the look of things. The stream we had ascended drained the lower end of the lake, which in turn was fed by the water from a fall many hundreds, if not thousands, of feet in height. The head of the valley was shut in by several huge precipices in successive steps above each other, and my guide assured me that there was another lake as large or larger on one of the topmost ledges which was supplied from a snowfield. Near the summit of one huge precipice to the left was a natural tunnel through which, though a mile or two away, I could see the blue sky of the far side. The lake had doubtless been formed by mountain slides damming up the creek. For a few feet round the edge the water was crystal clear and the bottom easily seen. Then the color of the water rapidly changed from light green to deep green, and a few feet further from the bank it was blue black of the densest shade. I think it not unlikely that the lake is hundreds of feet deep and I regret that I had no time for further investigation. It would be interesting to find out whether or not there were any fish in it. The weather was ideal for photography—clear and sunny—and I made three careful exposures

of the beautiful scene, but hardly a trace of the view was visible on the film when developed. They were all over-exposed and the negative results I can only attribute to extremes of heat and cold, dryness and moisture that the roll was exposed to before I developed it in Chengtu. On the bank above the lake my aneroid registered 12600 feet, which I expect means an actual altitude of over 13,000 feet. The whole basin in which the lake reposed was full of slide rock and to my mind showed signs of much glacial action. The Dragon Lake above Iuchee was doubtless formed under similar circumstances, but the Shangmengteng lake and surrounding mountains are on an infinitely grander scale and provide a fine opportunity for geological investigation. After slowly sipping a little ice water from the stream draining the lake, we turned up the mountainside to the right. The so-called road was barely visible, being mainly indicated by signs of dusty footprints across and up the rock slide. One needed good eyesight to detect the way. It was very steep and we had to go carefully lest we precipitate a slide on the heads of those who followed us. Frequent rests were necessary, and my poor carriers were in constant distress, though they only had about forty *gin* (50 lbs.) each. A few wild poppies were in bloom alongside of the slide rock near the foot. Above this the mountainside was entirely bare. Towards the top we had to rest every few yards and our legs actually trembled with the constant strain of uncertain footholds. It was with a feeling of real thankfulness that we reached the top of the pass, to find a narrow ledge hardly big enough for the pile of stones surmounted by prayer flags built as a thankoffering by those who had safely made the ascent. Even my flippant friend the cook devoutly said *O-me-to-fu* several times and planted a stone on top of the others already bearing witness. The top of the ridge was so narrow that one could fairly straddle it, and the gulf on both sides was so deep and steep that you could not enjoy the scenery very much. I pined for lower ground and a less chilly blast. My aneroid registered 14120 feet, equivalent, I believe, to an actual 14500 feet. There was no snow on the summit, but one thousand feet below were numerous small snow fields in the gullies. Off to the west was an exceedingly high snow mountain, which I should take to be the same one I saw when going in to Matang. Looking northward, the range between the small and main Heh Shui rivers seemed comparatively low—not more than twelve thousand feet, so that when one gets over the Heofan pass the main physical difficulty of entering the Heh Shui proper has already been overcome. The top of the range marked the boundary between Shangmengteng and the Heofan. We had arrived at the summit at 10.15 a.m., and after a few minutes' rest started down over the rock slide. One thousand feet below came to a little flat with a stream running through it. Three or four snow fields were close by, but we were weary and had a long way to go, so were not tempted to do any wandering off the path. As we were thirsty, too, the surroundings suggested an early lunch. There were no trees near by—we were still above the timber line, but we collected some twigs and furze bush and tried to ignite them. However, it took over half an hour before we got a fire to burn and another half hour to boil water. It certainly was a trial to one's patience trying to heat anything on high ground. While preparing lunch some coolies coming out from the Heofan passed by. They were all taking out opium. Lunch over, we resumed

the descent into the valley, and soon began to get into timbered country again. I began to speculate on what kind of people we would find at Heh Kia Sī Kiai, what language they would speak, whether they would be lamaists or white stone worshippers and whether they would prove friendly. Not far down the slope we passed a large stone platform or altar, on the top of which a white stone stood erect. The sight of this familiar symbol made me wonder if I was not once more in a land inhabited by Ch'iang, and I was quite excited at the prospect of finding them so far West. I was not exactly calmed down when my guide broke it to me gently that he had come away without Yang Sheopi's card, had not travelled this route before and was not acquainted with the people of the first village—Heh Kia Sī Kiai—that we would come to. Perhaps he could speak the language of the Heofan, but as a guide he seemed of but slight value.

Two thousand feet down from the summit we got into very heavily wooded country and the temperature went up rapidly till we were uncomfortably warm. We passed through large patches of red and white wild strawberries, the latter being the largest I have ever seen. The cook and I lingered for a few minutes to pick a pailful, which was sufficient to last me several meals. (On the road to Matang we only saw the red variety.) Again we passed through groves of wild cherry trees, with tempting bright red berries, but the fruit was bitter to the taste. Still lower down we saw lots of large yellow raspberries. The slope was one long continuous descent—the most unbroken one that I have seen on my travels, and we arrived at the 10,000 foot level without having struck an up grade anywhere. We then slackened our pace, as it was still fairly early and we were getting close to Heh Kia Sī Kiai. I called the guide and told him to go ahead and spy out the land. Incidentally to break the news to the inhabitants that a white man was coming and nôt to be alarmed. He asked for my card, but when obtained did not seem in a hurry to go on. We therefore purposely lingered, to give him a good start, and after resting a while followed on slowly. My worthy help did the same for me, believing discretion to be the better part of valor, and were a good five minutes behind. After walking slowly for several *li* lest I catch up to the guide, I arrived at an open glade, with a little rise at the far end, and there to my disgust not two hundred yards ahead, I saw him ascending the slope with feeble steps and slow. And not because of weariness, believe me, for he was a horse on the road when he wanted to be. I dropped in my tracks unseen, and let my valiant introducer get another start. Evidently he was afraid of a hostile reception himself, and felt more secure to have us close by. I wrote up my diary for fifteen minutes, and when my retinue arrived we resumed our march together. Soon after we came to two small houses with water wheels, but when we looked inside found that they were turning not millstones but prayer wheels. At this my anticipation of being in a land inhabited by Ch'iang suffered a rude jolt, for prayerwheels were not characteristic of the land of the sacred quartz-stone. It looked like Lamaism being predominant. The road we were travelling on was much more defined on the lower ground, where the subsoil was heavy, but as a result, was also much more susceptible to the effects of heavy rains, and in several places had been carried away by slides. There was no repair gang here and we had to do some careful edging to get across the forty and fifty feet gaps in the

road. The drop below was only one or two hundred feet, but that was quite enough to spoil my good looks, so I copied Agag, and "walked delicately." I never ceased in my admiration for my carriers in such places. True, they were mountain men, but how they could snake round a corner with my folding cot and other impedimenta on top of their loads and maintain their foothold was a marvel to me. We were now near the end of our stage and came to the first cultivated fields we had seen for two days. We were out of no-man's-land. We stopped our descent, and leaving the creek's rapid fall, angled round the side of the mountain. The main river at the bottom of the valley flowed eastward towards Maochow, while the stream we had been following flowed northward into it. We could now see quite clearly the northern side of the Heofan Valley, which was not nearly so precipitous as the one we were on, and having a southern aspect, was one long east and westerly reach of cultivated fields only broken here and there by large and populous *kiaitzis* (villages). Hardly a tree could be seen on that side of the valley, while the southern side with a northern aspect was mainly a mass of crags and forest. Passing through some opium fields, we came in sight of the first village of the Heh Kia Sī Kiai group of *kiaitzis*. We could see our guide just arriving there. He had managed not to get far ahead, and was now interviewing a group of natives. Evidently he met with a satisfactory reception, for by the time we got on the scene he was ready to lead us to one of the houses at the near end of the village. The houses were high three and four storey structures, facing down the hill, and with no windows or doors on the rear side. We passed through the stables on the ground floor, up a ladder way into the living room with its big fireplace, then up another ladder way on to a lower roof or threshing floor, which was partly covered over. This was where I elected to sleep in order to get away from the smoke and the fleas. The ground floor of the house was built up from the steep mountain-side, and by the time you got to the third floor you were some distance up. I had stayed on many rooftops before, but these people seemed to be goats, for none of their houses had parapets round the edge of the roof, as was the rule in other districts. The stream we had followed down from the pass and left a mile or two back was now far below us—a silver thread of roaring rushing water. Standing as the village did on the promontory of two valleys, it enjoyed a splendid outlook. While surveying the situation, however, I kept well away from the unprotected roof edge. It did not accord with much dreaming. Found the elevation of the village to be 9750 feet and the main valley bottom was still 2000 feet below. Three other villages surrounded the one where I was staying and together comprised—as indicated by the name—the four villages of the Heh people. I made up my cot on the roof top, and had barely done so before the neighbors swarmed in on me—the men to the forefront, the women fetching up the rear. They proved to have the same speech as the Upper Heh Shui or Lu Hua district. They term themselves Krehchuh and their language while distinct from seems akin to the Ch'iang. They do not seem to be ardent religionists, for both lamas and *twankong* (exorcists as among the Ch'iang) are to be found, but lamaism seems to be predominant, as every village has its red sect temple and prayer wheels. Occasionally you would see a prayer flag on the roof top, but these were not general. On the other hand, apart from the white

stone I had seen on the mountain side, I saw practically no sign whatever of the white stone religion. I was quite disappointed in this, as I had hoped to find a Ch'iang settlement in this mountain recess perpetuating uncontaminated by Chinese or Tibetans the ancient rites of their mystic faith. Quite a number of the natives could speak Chinese, so I asked if any of them could read it, but in the whole village only found one youth who could recognize a few characters.

I found I was the guest of two widows—an old lady long bereft of her husband and more latterly bereft of her son, whose widow was now her only kin. They appeared to be as poor as church mice, but I was informed that the old lady had property and would have sufficient to live on had she any men folk to look after her fields. Getting practically nothing from her property, she was glad to take in any transients passing through the village. A quiet Rong native from Hsiamengteng had already been there for a few days when we arrived and seemed like one of the family. Our party numbered five. I occupied the roof top. The others with the trader and the two women occupied the living room below, which was not very large. In fact, rather congested quarters for seven adults.

One of the greatest drawbacks to residing on the rooftop is the fact that every time you want to go downstairs you have to run the gauntlet of the smoke. Arriving safely on the floor below, you find it much easier to breathe if you squat on the floor with the natives round the fire, as the air is comparatively pure close to the ground. In four days' stay in the Heofan, I did not see a single chair, little tiny stools about three inches high, such as Chinese cow coolies use, being the nearest approach to such. Usually there is a small aperture in the ceiling for the smoke to escape by, but it is also quite inadequate, so that by far the larger volume of smoke escapes by way of the ladder passage. On my coming into their midst the old lady kindly offered me her stool, but I sat on a small sack of grain instead. Some neighboring men and women came in and we talked together quite a time while the evening meal was being prepared. The young woman gave me a little of the soup she was stewing, which was made with greens from the mountainside. I found it quite appetising. After supper I sang for them, and taught them a verse of "Hark, I Hear a Voice," in English. They picked up the words and tune in no time, and would have kept me singing all night, but I suggested that it was their turn to provide some entertainment. So the neighbors who had dropped in and the young woman of the house all sang and danced. And while they rested twixt dances I had to sing again. There was more life in their dancing than any I had seen elsewhere. At ten o'clock I left them for my perch on the roof, somewhat to their disappointment, for they protested that the night was still young and the going still good. The neighbors came up on the roof with me and so close was the adjoining house that they could step across to it. Partly because of my eerie outlook over the moonlit valley, partly because it was my first night in a a new country, I did not go off to sleep at once. My feet were toward the edge of the roof. My head was close to the door of a flat occupied by another family. I could hear the murmur of their voices inside. Dozing, I imagined that my cot was slipping down the slope of the roof, assisted towards the edge by the kindly ministrations of some of the natives. I would come to with a

jump to find that I was still quite safely anchored to the roof. But my seventy *li* tramp over the pass was a pretty good cure for restlessness, and despite an extra allowance of fleas, I got a fair night's sleep.

Next morning (Wednesday, August 3rd) while performing my ablutions and getting a shave, I had a most interested crowd of spectators, both men and women, who early found their way to my dressing room on the roof top. Among them was a red sect lama, from whom I found out that there was a lama temple close by. When leaving, I tried to secure a snap of two bright girls, the lama and a yak, but the girls took fright and ran away. On the way I visited the temple and found it to be a small square-shaped building, and typical of many others I saw in the Heofan. It was only one storey, with a bit of a loft above. The idols were of the ordinary Buddha type, but there was usually one or more of the objectionable kind. While the majority of the idols were inoffensive, the same could not be said of the paintings on the walls. Fully one-half of them could hardly be described in a mixed company. My observations have led me to conclude that the yellow sect lamaseries and temples are comparatively free of objectionable paintings and idols, in the red lamaseries and temples the conventional and objectionable are about half and half, while in the black sect lamaseries it is hard to find a respectable object of worship. After leaving the four villages of the Hen Kia, we rapidly descended over 2000 feet to the river bottom, which was said to be infested by robbers and devoid of regular inhabitants. Our path lay through dense underbrush, and when we heard some voices on the road below us, my guide handed one of his swords to the cook and held the other ready for action in his own hand. The travellers proved to be three Heh Shui men from Biao-oh Kiai, over the range from Chongkutzi. All were armed with swords but no rifles. One was quite friendly. The others were very suspicious, and it took our united urgings to persuade them to stand for a picture. It is hard to say whether they were robbers or peaceable citizens, but probably the latter for the time being, as there were not enough of them to be very formidable. To my regret this picture was amongst my spoiled films and for reasons hereafter mentioned, I did not attempt any further snaps of people in the Heofan. In general the Heh Shui and Heofan natives are of only average stature, sharp-featured, slight but wiry build, and of a truculent disposition. Their swords were always handy. A peculiarity of the Heh Shui men—in which they differ from other tribespeople, was their habit of drawing their hair into a knot *(Chu-chu)* at the back of the head. Arriving at the bottom of the valley we found a water mill, and a venturesome native miller who clung to his job despite the robbers, and cultivated a small garden patch on the side. His little shack was the only habitation that we could see in the valley bottom. The soil would naturally be richer there, yet all the population is found on the high ground, perhaps for safety's sake. Just beyond the mill was the bridge across the river. I took a snap of my loads crossing the bridge, the miller and his wife following me and watching me use the camera with the greatest of curiosity. We were warned to get away from the low ground as quickly as possible, so started the ascent of the far slope at once. The lower part was precipitous and devoid of timber, but covered with small undergrowth. (I forgot to mention that the

A Journey Into the Heofan Valley.

T. E. PLEWMAN.

The writer's intention was to traverse if possible the main valley of the Heh Shui, and failing that to at least attain the upper reaches of the Little Heh Snui known as the Heofan. In company with Messrs. Mao and Peng, two Chinese friends, we attempted to reach the Heh Snui from the Four States to the west, by way of Matang, but failed. Returning to Lifan, Messrs. Mao and Peng were already tired out, so the writer made a second and more successful attempt alone by way of the Ta Keo ("large valley") northwesterly from Lifan. However, I heard at Lifan that a band of robbers was operating at the upper end of the Ta Keo and had made up my mind to try the Siao Keo ("small valley") north from Lifan.

In company with my cook and two carriers, I left Lifan for the Heofan on July 30th. My guide was to catch up to us. There is a "Providence that shapes our ends rough hew them how we may," and though I had been over this part of the road twice before, I missed the entrance of the Siao Keo, some fifteen *li* north of Lifan, and continued up the Ta Keo towards Snangmengteng, quite oblivious of the fact that I was on the road that I had been warned against taking. After having travelled about 30 *li*, I knew I must have passed the entrance of the Siao Keo, and was somewhat dismayed to find out my mistake. I was reluctant to go back so far, and met some men coming out who stated that the robbers had left and that the road was momentarily open. Traders were going in again in little groups, travelling together for safety's sake. If they could, I could. I decided at once that I would stay with the Ta Keo route, which would take me into the Upper Heofan, go down the valley to Yahtu and return from the Lower Heofan by way of the Siao Keo to Lifanting. Knowing that the Heofan trip at best was rather risky, and that food was almost unprocurable there, we had purchased enough provisions to last us ten days, and only taken a few dollars in cash. No need to let the robbers have more than was necessary. That evening we stayed at the home of Hsia Sheopi, headman of Hsiamengteng. His large but rather dilapidated *gonggwan* (residence) is located on the top of a bluff overlooking the river, which flows south-easterly towards Lifan. A number of young women and some children were playing in the courtyard when I arrived, and not having seen me before, seemed afraid to have me enter. I gave them my card and asked one of them to convey it to Hsia Sheopi. He came out and gave me a warm invitation to stay with them for the night. I have known him for some years, but this was the first time I have stayed at his home. He is a well-meaning, but very weak man, and much addicted to opium. Every part of the house gave evidence of neglect and his fine large guest room was exceedingly

Photo by T. E. Plewman

GRASS COUNTRY NATIVES AT MATANG,
STATE OF SOMO

river crossing altitude was 7,500 feet. We had come down 7,000 feet since the previous morning.) After travelling two or three *li* of a zigzag path we came to a couple of houses that seemed to be deserted. We had probably climbed a thousand feet in that distance. Our path then lay through cultivated fields, but we went another couple of *li* before we met anyone. We were then halted with a call from behind us, and turning saw two natives who had apparently come off a side road. They had swords in their hands and demanded what our business in the Heofan was. They halted about six feet from us and kept up the conversation at that distance. Both of them seemed very suspicious of us and were ready for an offensive at a moment's notice. One of them had a long scar across his forehead that did not add to his beauty. Eventually, to our relief, we shook them off. Some distance above us we could see a village, on the outskirts of which a group of people stood watching us. We also heard a succession of deep horn blasts that would have done credit to a steamer's foghorn. Was it a warning that strangers were approaching? Arrived at last at the village of Chongkutzi (alt. 9600) to find all doors shut. However, our guide found his way to the largest house in the *kiaitzi*, belonging to a man named Ch'en, and after some parleying procured admission for us. What story he told the people about me, I do not know. I rather think he told some of the communities that the Lifanting official had appointed me to enquire into the woes of the Heofan people and suggest ways and means of redressing same. We prepared our dinner in this house. It was full of people, some smoking opium, some gambling, some having a violent quarrel in an adjoining room, some watching me eat my meal. The men of any consequence all had heavy ivory bracelets, and some of the women had belts made of large ivory buttons. They told me that it was all brought in by traders from Yunnan, probably en route from Burmah. It was a commentary on the adaptability of the Chinese traders to the needs of all sections that the demand of the Heh Shui and Heofan for ivory should be met from such a distance. I priced one huge bracelet and was informed that it cost over fifty taels. Not everybody is starving in the Heofan! The village of Chongkutzi is the largest and most centrally located in the Upper Heofan. It is difficult to get to, but once there it is probably the safest place to stay in the district, as only a very large band of robbers would dare to attack it. Had we not been bent on going as far down the valley as possible, and returning to Lifan by the way of the Siao Keo, it would have paid us to make Chongkutzi our headquarters and study the people from there. After dinner we noticed the large square roof of a big lama temple and walked over to it. It was the only one of any size we saw in the Heofan, and as usual belonged to the red sect. It had quite a library of Tibetan scriptures and a resident lama or two. But there is not a lamasery in the whole of the Heofan and nowhere have I seen Lamaism so nominal as there. Only occasionally did I see a prayer flag on the roof or an idol in the house. My own opinion is that the people of the Heofan do not trouble themselves very much about religion of any sort. It doesn't enter into their everyday life like it does in other sections of the Tribes country. A large proportion of the fields were in opium. The harvest was in full swing and gangs of natives, together with a few Chinese,

were engaged in scratching the pods and scraping off the exudate. Just how an opium tax can be collected here I don't know, for the Lifan official has not a rifle in the country, and dare not send a soldier in, but I met a young Chinese in the Ch'en house who assured me that he was opium tax collector for the district. I don't fancy that he would wax wealthy on what he collected in the Heofan, but it may be that he superintends the sending of the opium into Chinese governed districts, where it is only received if it has his chop with the amount of money to be paid at destination. Or it may be—and I think this is more likely—he is simply purchasing agent for the Chinese officials and tries to secure that the bulk of the crop is delivered to them. He would not have the worry of collecting an impossible tax then.

As there were villages every few *li* on this side of the valley and a network of roads, I decided to head down towards Yahtu and get as far as I could before evening. Leaving Chongkutzi about 2.30 p.m., we passed Ch'ienkutzi half an hour later. Was somewhat perturbed to hear that robbers were in the Siao Keo that I was hoping to return by. Nearing Ngeoker we turned a sharp corner, and found that the road was crossed by a deep gulch, that we would have to descend and reclimb before we could get to the village that looked so tantalizingly close. Just round the corner of the road, where the cliff was sheer to the bottom of the gulch 500 feet below, I found my four worthy henchmen stopped by a band of five armed men. One had a rifle; the others had swords. I had my camera case under my arm and came up hastily to see what was the matter. I put on a bold face and asked to see the rifle. The owner still held it at the ready, but let me look at it, and I found it to be a cavalry carbine manufactured at the arsenal in Chengtu. My coolies moved on again, and I waited till they were well started and then followed them with as much composure as I could muster. I looked back a couple of times to see whether we were followed or not and then caught up to my cook and asked him why they had not gone on. He was greatly excited and said that the five men, who were from Shih Diao Leo in the Lower Heh Shui, had stopped them and demanded to know what was in the loads. They were preparing to go through them when I appeared round the corner with my camera case. The man with the rifle immediately inquired what the foreigner was carrying. My guide replied that it was an automatic ten-shot pistol. The robbers were immediately quite respectful, and when I came along were willing to respect the truce if I would. Apparently they preferred to wait till they could find an easier prey than a foreigner with a ten-shooter who might hurt someone before he was tamed. A narrow road, a precipice above and below, it was an ideal spot for bandits, and I hasted on towards the bottom of the gulch, where were several water mills, wondering how much longer my good fortune would follow me. Only one mill was occupied by a family of scared natives, who were undecided as to who they were most afraid of—the foreigner or the Heh Shui men. A heavy shower started, and we were tempted to seek shelter in one of the mills, but the natives were so afraid of us and we also were uncertain whether there might not be more robbers up the gulch, that we decided to go on a little further before seeking refuge from the storm. When we had gotten about two-thirds of the way up the far side of the gulch we come to an overhanging rock, and as the rain was now coming down in torrents took shelter there-

under. We could command a view of the gulch for some distance, so did not think we could be caught unawares from that direction. After fifteen or twenty minutes the rain abated, and we sallied forth to find the road up the hill exceedingly slippery. Fortunately the village of Ngeoker was only a few yards away. Arriving at the outskirts, we came across one man. No one else was in sight. He said to us in a surprised voice, "Didn't you meet the robbers?" We said, Yes, but they had not harmed us. Meantime some heads began to show above the parapets of the roofs, and men, women and children stared at us from a safe distance. Our guide appealed to them to let us into one of the houses, as we did not want to go any further. They replied that they had no room, and that there was an inn in a village close by. We went to the place where the inn was supposed to be, but every house there was also locked. Came back to the first place, and our guide again appealed to them to take us in out of the wet, and told them that we had our own food and would not need anything from them. I believe that the very fact that we had got past the robbers without hurt made them think that we might be in league with them, and if they let us in the enemy would be within their gates. However, at last one family agreed to take us in and the man of the house came down and unbolted the door. The buildings were very high—regular fortresses, with only notched logs from floor to floor, and these could be pulled up behind them and isolate every floor from the one below. I was on the third storey roof, but there was still another roof above me, where the women and children were located, and though the men crowded around me to see my pictures the rest of the family never ventured down from the topmost shelter, and when none of the men were using it, the ladder was drawn up to the top. The women and children did not come down while we were in the house—they just crowded to the edge of the parapet about ten feet above me and watched me from there. The people of this village seemed so afraid that they were suspicious of everybody they did not recognize and were probably a little nervous about us as long as we were there. They told us that the robbers had gone right through the village, but they had all taken refuge in their houses and the marauders had gone on without molesting them. An interesting matter to us was the fact that Ngeoker was the dividing line between Upper and Lower Heofan, the people of the next village speaking Ch'iang while the people of Ngeoker spoke Krehchuh, the language of the Upper Hei Shui. The people in this village were also quite curious about my camera case, and later my guide asked me not to destroy the illusion that it was a deadly weapon. I at no time gave any one to believe that it was such, but the fact remains that I profited by the ruse of my companions and did not think it advisable to take any further pictures of natives lest I expose the deception. One or two bands of robbers were now behind me; according to all accounts there were still more ahead, and now I was going to get back to civilization was somewhat of a problem. So I kept my camera close at hand, and did not allow any of my Ngeoker friends to see the terrible ten-shooter. Another matter for anxiety was the fact that while I was amply provided for, my coolies had practically exhausted the food they had brought with them, and no more could be obtained except at famine prices. They got one thousand cash a day from me, and it was insufficient to give them two good meals of even the cheapest

food—potatoes and *ch'in k'o meitzi* (a kind of barley). My men were going on short rations and could not stand that very long. Thursday morning, August 4th, we were up betimes still heading towards Yahtu. Our guide did not seem very familiar with the country and we kept to the lower road whenever we came to a fork. Passed a large village by the name of Gaygee. On still further went through another *kiaitzi* by the name of Hsinsi-haha. In conversation with some of the Ch'iang inhabitants we were directed to a village in sight far down the valley, and quite close to the river, as the settlement of Yahtu. This encouraged us to go onward, and we pressed on down the lower road till we got right down by the river side. It was surprising in a populous country how few people you would meet on the road between places. No-one dared travel. Apart from the robbers, we had not seen half a dozen people on the road in two days. This morning in twenty or thirty *li* down the Heofan Valley the only person we saw on the road was a solitary girl whom we found ensconsed on a high rock watching a flock of goats. On the other side of the valley far below us, we saw the entrance of the Siao Keo, the bridge leading to it, and five or six water mills on the stream nearby. We also saw several men and a horse or two cross the bridge as if entering the *keo*. Who would they be? Probably Hen Shui robbers, for hardly anyone else was travelling. A little further on, our road slanted down the bank towards the large village by the riverside which had been previously pointed out to us as Yahtu. It was now about eleven o'clock, the sun was very hot and arriving at the the river bottom we began to look around for a cool spot to get lunch. We were only a few yards away from the village when we met a native collecting wood. He seemed surprised to see us and said, "Where are you going? I would advise you not to go on, as there is a band of robbers right ahead." We said we were going to Yahtu. He informed us that we were on the wrong road, and were now 15 *li* beyond Yahtu. We should have taken the high road instead of coming down to the river. My cook and two coolies were exceedingly wroth and panicky into the bargain. Robbers ahead and behind, and a guide who did not know the road. They reviled him in no uncertain terms and he retaliated in kind, till they almost came to blows. A Chinese came limping up the road emptyhanded. His face was battered up. We asked him where he was coming from. He told us he was a small trader, and that the robbers ahead of us had taken everything he possessed and without food or money he was trying to get back to Lifan. I doubted if he would ever get over the pass alive, for the people of the Heofan are not given to charity and the man who is without goes to the wall. We ourselves were also short in both money and food and could not proffer any help. We were in a fix. The only direction in which we did not know of robbers blocking the road was northward and away from home. Yahtu was previously the seat of a Chinese *fen chīsī* (official), who had charge of the Heofan, but there was no one there now and the natives were a law unto themselves. So I told the guide he had better get busy and hasten up hill to Yahtu. He was to see if he could find any headman who would provide us with an escort through the Siao Keo. The guide himself was badly frightened, and I was afraid the whole crowd would bolt at the first favorable opportunity. Our being so far out of the way was the combined result of having a poor guide,

being falsely directed at Hsihsi-haha, and not meeting any one en route to put us right till we got to the river bottom. The village by the river bank was Lehtukiai, not Yahtu. Altitude Lehtukiai about 7200. We had not eaten and were tired and hot, but we did not dare stay any longer, so thanking our informant, we turned up hill and followed our guide. The cook being also ahead, I decided to bring up the rear, lest something happen to my loads. My poor carriers cursed the guide and their luck both loud and deep as they sweated up the steep, steep hill. No food, no opium,—they were ready to drop. Coming to a fork in the road, I saw the cook a couple of hundred yards ahead on the lower and easier grade we had come down by. He was going full speed ahead, and as I was sure we should keep to the north road up the mountainside to reach Yahtu, I called after him. He turned, but apparently did not hear what I said, for he kept on his way and was round a corner and out of sight in a moment. Feeling that the guide, if he had obeyed instructions to go to Yahtu, had taken the other road, and that I must keep the loads with the guide and not leave them for a moment, I urged them up the Yahtu road, and decided that the cook had bolted. For an hour and a half we toiled up the zigzag path, and then came in sight of three *kiaitzis*, which we hoped were Yahtu. Nearing the first village we saw one woman in a field and asked her if a man answering the description of the guide, and carrying two swords, had passed up. She did not understand us very well, but intimated that a stranger had gone by. We knew that there was not much hope of getting into any of the houses without someone who could speak the native language, so the two carriers and I rested on a bluff about quarter of a mile from the village, where we could see the guide and he could see us if he emerged. The minutes passed and no sign of cook or guide. My coolies frankly said that they thought both had bolted, and that we would have to get back as best we could without them. It was the bluest moment of my trip, for I seemed to have put my head into a noose from which there was no escape. I was glad I had some life insurance. We ate a bit of *gokway* (Chinese hardtack). A thousand feet below us was the other path that we had gone down by, and which the cook had also taken to return by. I scanned it carefully, but saw no sign of him, and my carriers said he must be far up the valley by then. Then I suddenly saw what looked like the cook's figure emerge slowly from behind a corner in the road. If it were he, he must have waited for us further up the road, and now was slowly going on again. We all yelled together, and after a minute or two, thanks to the still air, he heard and looked upward. We gesticulated and beckoned. If he went back to the fork and followed up the road we had travelled by he would have to go quite a distance, so he elected to climb over the bluffs and through the brush that separated us. He certainly paid for not coming back when I called him in the first place, for the short cut was not easily negotiated. He would be out of sight for ten minutes at a time, and we would wonder whether he would be able to make it, and then we would see his head show up over a crag again. He would stop to get breath for a minute or two and then wearily clamber up the crags again, arriving at last exhausted to throw himself on the road by our side. When he got breath we asked him why he took that road. He said that he was suspicious that the guide would bolt, and determined to

keep him in sight. The last time he had seen the guide he thought he was speeding on the lower road, so himself had followed along that fork. After progressing a way, not seeing us behind, he had stopped, and was going on slowly again when he had heard our shouts above him. He was quite sure the guide had travelled that road, and that he had bolted. I was quite encouraged by the cook's reappearance, for it was a much easier job for two people to keep the carriers together than one person alone. When the cook was rested a little we went on to the village, and ate a lunch. Not a native came near us. They were all up on the housetops, and paid no attention to anything we called out in Chinese, so we decided to start back for Ngeo-ker and rest with the same people who had given us shelter the night before. Surely they would not turn us away now that we were acquainted. Down the road we went, I leading the way, and the cook fetching up the rear. As usual, not a soul did we see. The people were like frightened rabbits in a burrow. They did not dare come out of their fortified villages. We had travelled about 15 *li*, half way to Ngeo-ker, and it was about 4 p.m., when I heard a voice above me calling out to stop, stop! A man rushed excitedly down from a higher road. It was our worthy guide. He stormily declaimed that we had made him follow us all this way. Why didn't we stay at Yahtu? He had been the round of all the three *kiaitzis* and had persuaded the headman to give us an escort on the morrow through the Siao Keo. I asked him if this was certain. We had now well started on the way back to the Ta Keo, by which we had come, but as the Siao Keo was new ground and the route we had planned to return by, we would retrace our steps once more if he could assure us of an escort. He was quite positive we would get the escort, so we ordered the carriers to face about and took the road the guide had come by. From Yahtu to Lifan by the Siao Keo was the last side of a triangle, and the quickest way out, so we were naturally not anxious to retrace our steps the two sides we had already done and return by the Ta Keo. By 5.30 p.m. we were back again at Yahtu (alt. 8650), having covered about 70 *li* since early morning, but not travelled more than 30 *li* in any one direction. We had traversed one section three times. We were billetted at the ex-*siangyoh's* house. Under the Chinese *régime*, every village had a native headman responsible to the authorities for the behaviour of his people. But during our trip down the Heofan valley we did not find a solitary village with an incumbent in office. They had all resigned, as the lawless condition of the country, with Heh Shui robber bands roving up and down at pleasure, made it impossible for them to assume any responsibility. These men were termed *siangyoh*. It was now eighteen months since the natives had ejected the Chinese official from Yahtu, and though nominally under Chinese rule, they were in effect independent. But their independence had not brought them any happiness. They had lost what protection the Chinese had been able to afford them and the Heofan now constituted a no-man's-land between independent Heh Shui and Chinese-governed territory in the Wu T'eng. The Heh Shui robbers tell the Heofan people that they are still Chinese subjects, and therefore their legitimate prey, so they rob and ravish at will. "If you aren't under the Chinese, come and join us and acknowledge the Heh Shui *t'usï* (chieftain) as your ruler." We had landed into

Yahtu at most inopportune time, for the ex-*siangyoh*, named Yang Ch'in Long, had troubles of his own. Several weeks before a marauding band of Heh Shui men had carried off his wife, who was still in their hands and probably held for ransom. He had called a gathering of the men of the district to consult with him as to the best way of recovering her. Now we turned up and wanted the protection that he had not been able to afford himself. I am afraid that my guide told the headman some cock and bull story about my being sent into the Heofan by the Lifan official to enquire into conditions there, for the poor chap came in and prostrated himself before me, and told me a long story of the woes of his people. If the cattle were taken out to graze, or the young people went to work in the fields, they were carried off by the Hen Shui men. Just three or four *li* away, by the bridge leading to the Siao Keo, were their water mills for grinding grain, but not one of the six was turning a wheel. They didn't dare go down. What were they to do? Their brethren in the Heh Shui, speaking the same language (Ch'iang), nevertheless harrassed them beyond measure. He could only see one way out of it. That, was to join up with their oppressors, and acknowledge the Hen Shui *t'usi* as their overlord instead of the Chinese, in the hope they would then be spared. The latter were apparently impotent to protect them. Would I tell the Lifan official for him how impossible the situation now was, how though he had been a *siangyoh* for many years under happier circumstances, he was now powerless to maintain order. He hoped that the Lifan official would allow them to transfer their allegiance to the Hen Shui, which seemed their only hope of getting peace. I was informed elsewhere that there are at least two thousand Russian rifles in the Heh Snui, exchanged mainly for opium, and brought down through Mongolia and Kansu. While there are a few rifles in the Heofan, the number is inconsiderable, and the arrogant Heh Shui men stalk through the land like lords of creation. The Heofan people can't withstand them. They can only retire into their *kiaitzis* and wait till the intruders have left. But while they may save their persons from injury by such passive resistance, their crops and their live stock are being carried off and famine conditions prevail. What could I say to comfort the poor man? He told me that they had three rifles in the settlement, and that the owners of same had consented to see me to the summit of the range on the Siao Keo road on the morrow, for which service I was to pay them one dollar each. They did not think there were more than two or three robbers at present in the pass, and they would probably not attack a party of seven, when we had three rifles with us. One of the three who were to accompany us was a vigorous but weather-beaten man of 55 or 60 years of age. In a countryside full of turbulent spirits this old man was a delightful contrast. He told me that all respect for law was gone, but that he still was determined to follow the light of his conscience and would do what was right no matter what the cost. He and the ex-*siangyoh* both struck me as remarkable men.

Here I had found several really delightful people in the very village where in the morning we had sat forlorn and hungry on the outside. Our guide was not much good in some respects, and he had led us on the wrong road several times, but he was certainly a help to us in introducing us to the people. Once inside we generally managed

to get on friendly terms with them. They were greatly interested in my snapshots, and none of them seemed to have seen a watch, for it excited them greatly. The women were also attracted by the sight of a collapsible manicure scissors, which could be folded up and opened at will.

That night we went to sleep dead tired. We had had to talk with our friends till late, but we retired thinking that the worst was over, and that on the morrow we would make a dash for liberty through the Siao Keo. Next morning we were up bright and early. Alas, the first thing we heard was that someone the previous night reconnoitring in the neighborhood of the bridge across the river, had seen 25 more robbers armed with rifles enter the Keo. The Heh Shui band in the pass would now be far too large to risk conclusions with them with only three rifles. Even odds they didn't mind, but there was no use their throwing away their weapons, and that was what venturing out now would mean. We were bitterly disappointed, for we had lost a valuable day in the vain hope of being able to return via the Siao Keo. There was nothing to do but change our plans once more, and head back the way we came, round two-thirds of the triangle. The good old man who was one of the three who were to have accompanied us, was quite agitated because the other two did not return the money they had received right away, and went out and collected it himself. He personally returned the three dollars to us. Our guide had again lost a certain amount of face, for we had all returned to Yahtu on his assurance that an escort was certain, and now we were about to traverse the Ngeo-ker section of the road for the fourth time, and dependent only on a kind Providence for protection. Food, money and time were all short, so we could not afford to linger. The big band of robbers at the entrance of the Siao Keo, of whom the horsemen we had seen at the bridge the previous day were probably the advance guard, would likely split up, and some of them following up the creek would likely enter the Ta Keo. If we wished to head them off, and get in ahead of them the quicker we started the better. Forced marches were the order of the day. With regret we bade our friends farewell, hoping that the next time we saw them it would be under happier auspices. We passed four or five *kuaitzis* along the way, but did not meet a solitary traveller. Arrived at Chongkutzi by noon, forty *li* away. Our reception here was not very friendly, and I began to think that our guide's zeal was not tempered with discretion. I had heard him say a number of times, when asked our business, that we were there to "K'an di-tu" (see the land). If he had said to see the scenery and the people, his statement would likely have been harmless, but now coming back over our tracks, we heard murmurings against anyone who would receive us, for were we not there by our own confession to "spy out their land," and take any that was any good. So I told the guide not to use that expression any more. It was said that I could see three feet into the ground (why three feet and not one hundred, I don't know), and some of the baser sort who thought to profit by my magic eyesight, wanted me to tip them privily as to where was good land and what I had seen of precious things therein. I think my guide also made me out to be just what he thought would impress his hearers the most, and for "conscience sake" I dare hardly enquire what rôles I was supposed to have filled.

After dinner at Chongkutzi, we descended with all haste to the river bottom, watching for robbers all the time. Found the imperturbable miller still at his work, but he had had some interesting experiences since we had seen him. The five Heh Shui robbers that we had met near Ngeo-ker several days previously had gone right on down to the river bottom, avoiding the big villages near Chongkutzi. They had stopped at the mill, but not molested the miller. Behind us that day were two Chinese traders laden with bacon and salt that they expected to sell to the natives. They had accompanied us over the pass, but had lingered behind, so that we crossed the bridge several hours before they did. The robbers met them at the bridge and carried away both the men and their loads. They may now be working as slaves in the Heh Shui. This was just two or three hours after my innocent camera case had passed as a ten-shot pistol. None of the big band of robbers down the valley had as yet arrived at the bridge, so we were apparently ahead of them, and were much encouraged. We purchased a few potatoes from the worthy miller and struck up hill for Heh Kia Si Kiai with all speed. After a stiff climb of 2250 feet we passed through the opium fields surrounding the four villages. Arriving at the first village, found the people much more friendly than at Chongkutzi, and one family insisted on my going to the top storey and drinking tea while the loads caught up. They were full of stories of women and cattle being carried off by the Heh Shui people. Then left them for the next village, where we had stayed previously. There was a noise of weeping at one end of the street, and I was informed that a young man of 28, the only son of his mother, had fallen off one of the parapetless roofs the previous day and had been killed instantly. My forebodings had been justified by someone else. He had just been buried. I enquired as to the funeral rites, and was told that in the absence of any lama at the village just then, they had only held a sort of "wake" and taken the corpse to the burial place without any further ceremony. They inferred that the body was interred in the ground, but as I saw no graves in the Heofan, I think it just as likely that the remains were cremated or the corpse thrown in the river.

The same family took us in again. Had supper and went to bed early, as we had a long stage ahead of us the next day, with a 5000 foot climb in rather thin atmosphere. My guide and the Rong trader previously mentioned as stopping with the family, were having a merry time below with the young widow and a girl from the neighboring house. I could hear them talking and laughing for a long time. The moon rose over the mountain and the roof of the house was almost as light as day. I heard some steps coming up the ladderway, and the two damsels stood in the bright light of the moon. One of them had a little musical instrument like a jewsharp and proceeded to serenade me. The little tune was very primitive and simple, but the surroundings were certainly romantic enough and rather embarrassing. Politeness forbade me to abruptly dismiss them, so after listening for a minute or two to the zim-zim refrain, I complimented them on the music, suggested that it was late and I was tired, and they, taking the hint, retired the way they came. In Somo and the Four States it is customary for a girl's family to take the initiative in securing a husband. I think the same custom prevails

in the Upper Heofan. Who knows? Perhaps these ladies thought I was still unattached!

Next morning, I rose an hour before daybreak, got an early breakfast. and bade the family goodbye. The four villages of the Heh Kia had certainly treated us pretty well. It was 5.10 when we sallied forth, with 120 *li* to the next village over the range in Shangmenteng, and in all that stretch of country, the shack of the root diggers was the only shelter. It was possible that we might find a band of Heh Shui robbers in any part of this section, but we were hopeful that we had got the start of them and intended to maintain it. As we ascended the slope towards the pass we wondered if we would ever return again. Certainly the conditions of the country were not such as to encourage us, but we had met a few kindly souls and upright men who were as lights in gross darkness, for never have I been in a more God-forsaken or hopeless country than the Heofan. Our two coolies and the cook had an extra hard time returning over the pass. The cumulative effect of much travelling and lately also of short rations was having its effect, and though the loads were now down to about 50 lbs. each, it was with the utmost difficulty that they made the last two thousand feet to the summit. One thousand feet below the pass we stopped for an early lunch and a rest. We had carried up some sticks from several thousand feet below to assist us in lighting a fire, but our efforts were in vain, we could not get one started, so eventually gave it up and had a cold meal. Then on again up the last steep bit. I brought up the rear, for I was afraid that some one might give out entirely. The cook had to lie down every few yards. Arriving at the summit, with the exception of the guide, I was the freshest of the party. Descending the southern slope, we passed the beautiful lake for the second time, and arrived at Niu Peng quite early. I urged my men to go on a little further, and we would camp in the bush, but they were exhausted, so I let them stay there on the understanding that we would get up before light and start at daybreak for Lifanting. I offered them two days' pay if they could make the 130 li to Lifan in the one day. We had taken two and a half days coming up. My men had a good rest, as we had gotten in about 4 o'clock. That evening we had the usual shower. Heard some animals lumbering about after dark, so investigated, and in the dim light was able to see that several of Ts'ang Sheopi's herd of p'ien-hiu (a type of yak) had wandered down to our shelter. Was sorry that I did not have a chance to see them in a good light. Up again next morning an hour before daylight and with the first signs of dawn started for Kang Kang Kiai Lamasery, 60 *li* away. By 11 o'clock we were at the lamasery. Fording a stream got my feet wet, and shortly afterwards noticed that they were hurting, so investigated. Found that the *ts'ao-hai* (hemp sandals) which I wore over my boots, and which were small to start with, had contracted with the soaking they had received, and the withes had cut right through the leather of my boots and taken the skin off several toes. I had to change both shoes and sandals.

Arrived at Lifanting at 7.30, just after darkness set in. My men got in about ten o'clock. We had descended 7000 feet in one day, and travelled 130 *li*. The last part of the stage the heat made us feel very limp, for we had gotten accustomed to higher altitude and cooler weather. The balance of my journey to Kwanhsien was uneventful, so will not take time with further narrative.

Language of the Heofan. The language of the Upper Heofan is the same as that of the Upper Heh Shui. It is termed Krehchuh. It is spoken down the Heofan valley as far as the village of Ngeo-ker. Below Ngeo-ker the language is Ch'iang. At Yahtu I was surprised to find that the language was almost identical with the Kiutzeteng Ch'iang. Yet the Tunghua Ch'iang, adjoining Kiutzeteng, has many variations, and it is usual to find a new dialect every few miles. It would appear as though the Yahtu Ch'iang represent a migration from Kiutseteng, or vice versa. But with the language identical one would expect the religion to be likewise, yet the Kiutzeteng Ch'iang follow the ancient cult of the white stone while the Heofan Ch'iang are all animaists, as far down as we went, at least. In respect to the Krehchuh or Luhua language, the fact that it has so many words somewhat similar to the Ch'iang would indicate to us that though the natives now consider themselves quite separate and the Krehchuh have no dealings with the Ch'iang of the adjoining village across the boundary line—despite these present-day conditions, they may be of common origin. The passing of the centuries has developed two languages from the parent stock. A comparison is given below of five sections.

	Kiutzeteng Chiang	Tunghua Chiang	Yahtu Chiang	Krehchuh	Kiarong
One	arguh	ngaiguh	arguh	aow	gaychoh
two	nerguh	neguh	nerguh	i-yiu	gayness
three	cheeguh	cheeguh	ksurguh	k'siu	gayswom
four	gurgun	zrergun	gurguh	griu	gogee
five	warguh	hwayguh	warrguh	on-wu	gemngoh
six	strugnguh	strughguh	strugnguh	strugh	gaydron
seven	schnerguh	hsingun	schnerguh	shiu	geshniss
eight	crerguh	bingun	zrerguh	cra-ow	wanerryih
nine	ingwerguh	ingwillee	ingwerguh	erguh	gengoo
ten	hadrugo	haluguh	hajugo	hao-jiu	sjay

The Krehchuh language is quite different from either Kiarong or Tibetan, but there are similarities to be noted above that indicate it is related to the Ch'iang. Note especially the Krehchuh equivalents of four, six, eight, nine and ten. Note also the strange fact that the Tunghua and Kiutzeteng Ch'iang have many variations though living side by side, while the Yahtu Ch'iang several days away is practically the same as Kiutzeteng. Though I saw none of the white stone worship in the Heofan, I had some indirect reminders of it. The village where we were misdirected to Yahtu was called Hsihsi-hana. This is rather an odd name. On top of the mountain near Tunghua is a white stone temple, with two sacred stones, the names of which are the Peh Hsihsi and the Peh Hana, or Hsihsi-hana. So the Ch'iang village in the Heofan went by the same name as the sacred white stones of the Tungnua Ch'iang. The rites of the white stone religion are handed down by *dwankong* (exorcists) from father to son. Amongst the Krehchuh there were said to be a few of these exorcists, but the Yahtu pure stock Ch'iang, where you would expect to find them, denied having any. I am therefore afraid that the investigator of the white stone religion will have to go elsewhere than to the Heofan to get much new light on the *lopree* (white stone) and *Apa Lowoxi* (Father God).

Opium in the Heofan. Ten years ago the Heofan opium trade was probably a gold mine to the Chinese officials of Lifan, Maochow, Weichow and Kwanhsien. The writer remembers that Yang Wei, one of our local politicians, years ago was credited with keeping a big guard at the Niangtzeling Pass, above Kwanhsien, because of the opium revenue he derived there. The price then was over ten dollars an ounce. Now, however, with opium being cultivated north of Kienchow and other places quite close to Chengtu, the price has dropped to $1.30 an ounce, and the writer believes that very little Heofan opium comes out to the plain. Their best markets are in the Chinese towns close by, and perhaps in Kansu to the north. Opium is just as cheap in Chengtu as in Weichow, so there is not much object in smuggling it out, with all the attendant risks, when no profit can be realized. Though the Chengtu market is lost to them, the Heofan is still a large producer of opium. The natives themselves do not cultivate a large quantity. But Chinese and Rong from the Wu Teng who perhaps are in direct touch with the Chinese officials, if not acting on their instructions, go into the Heofan and rent land from the natives for opium cultivation. These speculators, however, have come upon hard times. While there was a Chinese official in the Heofan, they would enjoy his particular favor and protection. The natives got strong enough to eject him, however, and for eighteen months there has been no law in the land. I met a native from Shangmengteng, who had a little rented farm near Yantu, and he bitterly complained that the only rule in the Heofan was the rule of the sword, and that no redress was possible if a Chinese or Rong had a difference with a Heofan man. This in conjunction with the cheapness of opium has made their lot not an enviable one. How to market their crop when once harvested is another problem, for that is the time the Hei Shui bands love to rove up and down the land intercepting the opium caravans and making huge hauls for their own profit. Despite all these handicaps, however, there is a constant procession of haggard opium sots over the Heofan pass. They go there to work in the opium fields near harvest time, when they receive 50 cents and found per day. Perhaps they are allowed a smoke between times, too, and when returning hope to fetch out a stock of opium with them. Returning from the Heofan, near the summit of the pass, with the temperature close to freezing, we came across several men prone on the ground having their smoke. Empty-handed, no food, no bedding, but the inevitable opium outfit with each one of them. Such wretched looking specimens. Some might never come back over the pass again, but what cared they! Was not the opium paradise just ahead! Generally speaking, the immediate result of cheap opium in the Tribes Country is an immense increase in its use. All along the high roads are opium dens and you can hardly go into a house without seeing some one smoking. The valiant appearance of opium suppression that existed three years ago in Wenchwan, Weichow, Maochow and Lifan has now all disappeared and officially managed opium dens are the order of the day.

Currency of the Heofan. Lump silver is the usual financial medium, dollars being only valued in respect to their weight, and are chopped up into various fractions of the tael.

The Future of the Heofan. The problem of the Heofan is the problem of the Hei Shui. Geographically and racially they are one.

But it will be disastrous to China's prestige on the whole of the border if they actually surrender the Heofan to the Heh Shui tribesmen. The only other alternative seems to be a military expedition into the Heh Shui, and that would mean a large force, considerable skill and great expense. Kao Sheopi, of Tsakuiao, who has personal knowledge of the Heh Shui, says that the reduction of that district will take a larger army than the one against the Goloks, and prove a more difficult task. The Goloks were robbers, and had had but little experience of real fighting. But the Heh Shui men have been engaged in civil war for six years. They have, according to Kao Sheopi, two thousand Russian rifles brought down across Mongolia and Kansu. They are inured to mountain fighting and would compose their differences in a second if their independence was threatened by the Chinese. Two years ago a force of several hundred Chinese soldiers essayed to enter the Heh Shui. Twenty-five hill men, occupying a position of advantage, ambushed them. The soldiers had no stomach for fighting a hidden foe, threw down their rifles and fled, leaving the Heh Shui men in full possession of the field. I heard stories in the Tribes country of the Heh Shui men's prowess with the rifle that were suggestive of William Tell. How one would hold an egg on his hand and let another shoot at it. Doubtless some of the tales are imaginative, but living as the Heh Shui men do with a rifle in their hand most of the time, it is natural that they should develop some marksmanship. Meantime the Heofan people in No-man's-land are ground between the upper and the lower millstone and long for peace. They wish to be on the winning side and just now lean to the side of the Heh Shui, to get relief from robber bands. But that the Heh Shui, or any part of the Tribes Country that is geographically and commercially dependent on China, can permanently effect its independence seems impossible. The lack of a centralized and authoritative government at Peking gives such sections of the country a chance to attain a temporary success, and it may take a century or two of gradual absorption on the part of the Chinese to regain what they may lose in the present period of unsettlement. Time is fighting on the side of the Chinese, but the immediate subjugation of the Heh Shui by military force does not seem in the range of present probabilities.

Regarding the possibilities of main Heh Shui exploration, the writer believes he would have had an easier time had he elected to go there instead of into the Heofan (small Heh Shui). The danger would not be from robbers, but would lie in the uncertainty as to what sort of a reception the people would give a foreigner. Once in and well received, you would have nothing to fear. We now know of several roads into the Upper Heh Shui—roads that are being travelled over every day, but whoever goes over them will have to run a certain risk and it is for the individual concerned to decide whether it is worth while or not to take it.

Observations on the Medical Botany of the Szechuan-Thibetan Border, with notes on General Flora.

BY S. H. LILJESTRAND, PH.B., M.D.

1. In the first place I want to acknowledge my indebtedness to Mr. George Heide for his record of altitudes and for the use of his well worked out map. For the sympathetic help of Mr. J. Huston Edgar, who was the inspiration of the party in his unflagging attention to physical and psychical needs, and for the patient forbearance of the members of the party whose special missions made for speed, but who had daily to wait for the member dragging along behind, filling his portable presses by the way.

The trip may be divided into three sections:

(1) Yachow to Tachienlu
(2) Tachienlu to Mongkong, via Badi and Tsonghwa
(3) Mongkong to Kuanhsien.

The first section represents a gradual transition from *Rainy* to semi-arid climate, and exhibits the phenomena of the Rainscreen effect of three mountain ranges.

The second section lies wholly in the hinterland and is characterized by much sunshine and high altitude, with semi-arid to arid climate.

The third section is the reverse of the first, with a difference in latitude, not sufficient to cause marked change in flora.

2. The writer, not being a professional botanist, started out with a fundamental knowledge considerably below par. This was in part made up by constant observation, consultation of books and people and an eager desire to find out what those mountains and valleys of mystery held in the way of plants for the healing of men. Both the search and the findings have well repaid the weariness of the tedious care of specimens that often had their natural freshness greatly increased by showers and mists. My faithful assistant and personal friend Mr. Lu Tseh Ren deserves unstinted praise for his persistent endurance of the most trying conditions, eating his monotonous fare of corn cakes for many days at a time and staying up late nights to dry the pressing papers over refractory fires.

A kind Providence also lead a real Botanist, in the person of Prof. Harald Smith, of Upsala University, to our vicinity. He unlocked many closed doors and corrected mistakes I had made. He also furnished an example, in himself, of what blood and spirit must be put into a scientific study of Nature, in one or other of her phases. I am therefore indebted to Prof. Smith both for inspiration and

practical help in technic and classification. In view of this, and the fact that a two months' delay in Song Pan prevented Dr. Smith from getting across the passes north of Tachienlu before they lay deep in snow, I was glad to be able to furnish him with about two hundred specimens in flower of which he either had nothing, or only seeds, or leafstalk.

I. (1) The Rain-screen ranges.

TEA. Of historic interest is the TEA PLANTATION on the Min Shan, near the Hsien City of that name near Yachow. The tea from this mountain has been from ancient times prepared specially for the imperial household. Tea is grown in a scattered fashion on the hills west of Yachow. Crossing the Pheasant Pass, 80 *li* from Yachow, I found the tea fruits being dried in preparation for pressing oil out of them.

Yüin King Hsien is a tea packing center, and from here on we found the road filled with carriers of tea, laden as heavily as 300 lbs., going westward to Tachienlu.

The second pass, the Tah Hsiang Ling, presented on its eastern aspect a fine floral display, but I was enjoying an attack of diarrhœa and was unable to get samples. The top gave a reading of 9250 ft. on the aneroid barometer. Buttercups and wild geranium gave a homelike look to the summit, descending from which we saw the startling transition from abundant rain to only enough to support a grass-land pasture. Jin Ji Hsien lies below the steep descent, its uplands being clothed with the buff and pink of extensive fields of Buckwheat. The picture now was one of marked dryness of climate. Solomon's seal: Polygonatum: Characterize Pass.

Crossing a low range we descended into the spacious valley of Er Lang River, tributary to the Tong R. White Wax trees in bloom filled the air with a nauseous odor. Some fine Chestnut trees relieved a dry landscape, barely supporting a sparse growth of corn (Maize). This valley presented only some fine persimmon trees, the road finally ascending to the town of 'Mud Head', where we had an elegant inn, and the next day crossed the Fei Yue Ling range. At 7800 ft I found a lonely specimen of Larkspur which offered hope of seeing more vigorous neighbors. Loads of Chinese medicine, reporting as from Yü Ho Tong, passed us.

We now entered the valley of the Tong River, which presents a characteristic flora. Coming down from Hwa Lin village, where we spent the night, and dispatched home-sick messages to the stranded mariners on Beh Lu Ting, we collected specimens of *Convolvulaceae*, species indeterminate as yet, but possibly closely related to *Scammonium Radix*. Also a red flowered plant esteemed by the Chinese *(Tong Dze)*. The convolvulus may be Exogonium purga. At least, it is very similar. In this case the root gives *Jalap*.

(2) *The Tong R. Valley*, in brief, furnished the following:—

The Stinking Peach of the Chinese Pharm. Perhaps, as suggested by Prof Smith, one of the Euphorbiaceae. The French priests have decided it is a noteworthy "heart tonic".

Acacia. There are a number of varieties along the route. Dry.

Datura Stramonium. This was just growing up as we entered the Tong and everytime we touched the Tong R. or its near tributary valleys we ran into *datura*, a good guide for lots wanderers.

Scoparius, broom corn.

Hyporicum, very oily, and aromatic, odor like citronella. Beautiful, shows polymorphism. High altitudes small unbranched, low shrub.

Marrubium, or white horehound, in great abundance. Thrives on dry banks size of plum trees.

Dwarf chrysanthemum. Below Hwa Lin. and other localities. Dry. Prickly Pear is a curious inhabitant. According to Edgar, they are employed as pets, taken out walking, etc They roost unconcernedly on top of sunbaked mud walls. They were in fruit and I picked one, for six days I was occupied with picking the microscopic barbed needles out of my hands,—or rather wearing them out.

Xanthoxylum, familiar to Chinese feasts as Hwa Jiao, in favored places.

Turning from the Tong Valley up branch leading to Tachienlu, I found wild parsnip, cultivated rhubarb and anisum.

II. (1) In Tachienlu, we enjoyed *strawberries,* and rhubarb from 12,000 ft and higher on adjacent Alps.

Tame Digitalis, I found growing vigorously in Dr. Andrew's garden (Purpurea). It should do well on plantation.

Tsamba Tea, if denatured, would be a good article of diet. Its odor is borne on every wind in this largely Tibetan town.

Argot is said to exist on Grasses around Tachienlu. I saw none. Asafetida can be bought on the street in Tachienlu. Quite likely from Persia. A condiment in cooking. It may be that its herb *Conium Maculatum* is among the floral habitants of the region. There are certainly very similar plants in abundance.

(2) Leaving Tachienlu, northward we enjoyed the roses which Wilson describes, creamy, white and abundant. Red rose more sparse.

We here ate something like piecrust for bread. Officially = "GO KWEI", blessed, as a memory. It was excellent ballast, assisting equilibrium on yakback.

At 9000 ft Osier willows, white birch along the water course and its narrow verdant bottom where grain fields are tidily kept, after the fashion of river bottoms at home. Oats, barley grow well.

Water cress (= Nasturtium) occurs.

Chinese med. "San Hwa Sen" Mtn peanut in stone walls
"Du Jo Lien" " "
"Ma Yü Dze" Poinsetta-like leaves, species *Paris*
"Ho Ma" Nettle, watery extract good for boils said rifleman. Use root.
"Chien Lin Gwang" watery extract for Scabies. Local anesthetic "like opium"
"Tseo Mao Dan" (ShuYoh), Peony.
Fern on Mani stone piles = Polypodium
"Niu Lai Tsao": "smell of leaves like milk".

Taraxacum officinale, and variations, in abundance.
Ranunculaceae, Buttercups in the Ta R. Valley
Wild geranium
Peony
"Ho Tsao",— { Anapnalis Margaritacea?
"Everlasting"?
Salix Populus (from which salicin), all thru Tachienlu region, called "Beh Yang Su"
"Yiu Song" terebinth (spruce?), more tamarisk-like in foliage.
Ba Yue Gwa of unknown classification. "Seeds cure children's colic after eating".
"Wild Pepper" shrub, in fruit.
San Dzao Go, an ACACIA (probably).
Hydrangeas, creamy colored. Sown horse peas in fields.
D. Phelps says "river bottom much like those in S. California".
Wilson's "Lady's Rose" much in evidence.
Red Rose 10 ft high single
Fruits: Gooseberry, Cherry, Currant.
Juniper
Fine blooming single Peonies in groves of "mountain willow" that look like olive groves.
Arum, "Jack in the Pulpit".
Laryx Botaninique

(3) At 10 000 feet (Hsin Dien Dze) an angel entertained me unawares. This was a significant looking plant that was past its flowering, so I could not be sure, but I have since concluded that the robust family in the midst of which I pitched my tent was

Atropa Belladonna, whose tribe I, of course, was eagerly looking for. The calyx cup is unusually deep, but leaves and root are typical. I broke Geo Heide's staff and my own, digging the great root of one plant. The root was large as my head. The next morning having gone a considerable distance, I inquired about the root. "Oh, it is back there at the camp".

The approach to the Dan Pao Pass showed a change of scene. Rank wet grass meadows over which stood sentinel the upright yellow-green seed stalks of

Rheum (? Alexandreum) and watched us go by. Huge *Yellow Meconopsis* luxuriated here also. The others of the party were by this time on the way up the pass, and in my distraction I almost passed by; fortunately I waded into the meadow and got specimens which proved very difficult to dry, remaining wet for many days.

It is a cruel ascent, taking the life out of carriers and weak hearted travelers, to one of whom I loaned my mule, and did not see him again till the end of the stage 80 li over the Pass. This was a blessing "in disguise", however, as it gave me a good excuse for the time taken in collecting.

T'UNGKU

About 10 Miles South of Romi
Chrango

I should here say that such an expedition is no occasion for good botanical work. Brobably most of my specimens would be unacceptable in a first rate herbarium due to fading of colors caused by insufficient time for changing the presses. It is also to be said that botanizing is no summer day's picnic. It means many hours of work often late at night, changing paper and drying them over smoky fires that are usually either too hot or too cold.

We now re-entered the Tong R. Valley, the "Takin Ho," and encountered tomatoes, cultivated by French fathers, and potatoes.

We arrived opportunely to find the bloom at its best. On the west-southwest side of the pass the grassy steep is replaced, near the top, by shaly rock slides. On the border between these zones and for some distance down, the "purple poppy", so-called locally, gave us some brilliant specimens.

As we crossed over the wonderful vast sloping meadows of the other side (N. E.) altitude 14.000 feet, the Primulas, Yellow Meconopsis and Rheum were in their glory. Aconitum proved very scarce, but other members of the Crowsfoot are abundant, especially Troilius in the moist lush meadows of the great forest which one traverses for ten or fifteen miles, and which contains many gigantic trees, of which Betula, birch with red bark (otherwise just like white birch) interested me most. The larches and birches are hung with Spanish moss (usnea longissima), a striking spectacle.

K'ong K'eo Pass. Favored with brilliant weather we found a truly Elysian display of flora in the vast meadows forming the West aspect of the Pass The number of specimens was embarassing with only one night to spend at the inn at Wu Li Pai well up toward the cross over.

The king of flowers here is Aconitum Napellus. He is attended by a good growth at a lower altitude of a curious black dusky aconite on a flower stalk bearing no leaves which all spring directly from the root. I have found no description of it in Strassburger or the Botany texts. This dusky type, so curious in comparison with the royal blue of the Napellum, but morphologically the same, may be the "Black Aconite" of the Thibetans.

3. Passing Mongkong we ascended Balang Shan. We here encountered heavy rains, and collecting was impeded. The Solanaceae were interesting, and the gigantic specimens of Rhubarb, with flowering stalks eight feet high, of which I got a good photograph. The Chinese corroborated the presence of Atropa—"dien chueh", specimens occurring in fruit.

Name	*Altitude Place*	*Synonyms and use*
Wintergreen	Yüin Hwa Shan, 11000 ft	Gaultheria
Dipsaceae	Hwa Lin 6000	
Dang Gwei	Yuin Jin 7200	
	Fei Yue Lin	Larkspur
Polypodium	Lu Ding Chiao	
Huan Huen Tsao	" " "	
Vicia		
Forget me not	Fei Yue Lin	
Fennei	Wa Sze Geo	
White Horehound	Tong Valley	Marrubium
Acacia	Tong Valley	

Name	*Altitude Place*	*Synonyms and use*
Currant, red	Fei Yue Lin	
Sedum (Ben Yeh)	" " "	
Polyganum viviparum	Ta R. Valley	Ran B'h
"Purple sage"		An aromatic
Lilium "tiger:"	Ta Valley	
Gnaphalium	Ta	
Xanthoxylum Piper	Ta	
Datura Stramonium	Tong R. Valley	Lao Lien Hwa, "poisonous"
Campanula		Pao sen, tonic, much used
Parsley	Tong R.	
Dentaria	Da Pao Shan	
Primula	" " "	
Tseo Tsao Hwa		
Peonia		Tseo Mu Dan
Tseo Tsao		With Deo Fu, for edema of legs
Usnea Longissima		"Spanish moss" Da Pao Forest
Incarvillea	Bawang	
Artemisia	"	Tsen Ngai
	Dung Gu	Hemp
Thyme	Mao Niu	Ngai Hwa
Man Orchid (Hsiang Shu) 9000	Mao Niu	Incense
Clematis	" "	On dry side of mountains
Thalictrum	"	
"Citronelia"		"Jin Hwa" Hemoptysis
Ni Ban Tsao	Mao Niu	extract hot alcohol
Chiang Ho (Yeh)		Umbelliifera
"Cow Tail Medicine"		Niu Wei Chi
Bah Yue Gwa		
Sambucus Eoulus		
Malva		Dong Han Tsai
Epimedium		Yüin Yang Hong: "den reo" for coughs
Tsai Fu		Nation wide use. Sze product for colds headache
Hypericum		Citronella-like odor, oily.
a Euphorbiacea?		Tseo Tao Dze, heart tonic
Convolvulus (jalap?)		
Tswei Gu	Hwa lin	Antipyret. Sedum? crassulacea
Gentian	Hsin Dien Dze	Chin Jiao
Asterias	" " "	
Ngai Tong Dze Su	Hwa lin	Tonic
Valeriana	Da Pao	
Aguilegia		
Anemone	Da Pao Forest	Wine, "5th month flower" Ague
Polygonum		Lumbago, "ran ba"
Arum	Hsin Dien Dze	"Jack in the Pulpit"
Labiatum	" & Mao Niu	Sage?

Name	*Altitude Place*	*Synonyms and use*
Juniper		
Ben Hao Hao		Marrubium ?
Hwang Tsai		Anti-febrile
Mountain Pepper	Ta R. valley	
Polypodium	Ta R. valley	
Salvia-like		Labiate, very aromatic, oily
Rheum (alexandreum)	Ta R. valley	Da Pao meadows
Mountain peanut		Stachys ?
Gnaphalium	Dapao south	
Cynoglossum	Ta R. Valley	Jin Gu
Stellaria	" "	
Crissa	" "	Crucifer, nasturtium
Artemisia	" "	
Cherry	Hsin Dien Dze	Swan Pao
Arum	" "	Ten-leaved, Ba Yue Gwa, red fruit
Corydalis		
Chu Dze Hwa		wine making ferment contained
Lao Hsiung Pao	Hsin "	
Heracleum	" "	Niu lai tsao
Pedicularis	Ta valley	
Pi Dze Hwa	"	Clove shaped flower
Swei Hwang		for cuts
Borage		San Bo Tsai, "Mountain mint"
Salvia		Gen gwa hwa
Sorbus		Mountain "ma liu" for gormands (leaf & root)
Berberis		Tooth ache, anti-inflammation
Mecnopsis Botanini	Da pao meadows	
Iris yellow	"	*"RARE"*
Primulas	"	
Paris	"	Du Jo Lien, for bruises
Deutzia		Ben Ji Gu teo, tonic
Aconite		Tall peaked cowl, "Pien teo hwa"
Salvia II		Large leaved
Soldanella	Da Pao Meadows	
Trollius	" " "	
Saxifraga		Tse Chien Hwa, eye med. Infusion
Epilobium	Ta R. Valley	Ma Yü Dze infusion : bruises
	Dsung Gu Valley	Yen San Fong, species Angustifolium
Gentian II	Dapao Forest 10,000	Small leaved
Long Dan Tsao		Dragon Gall
Valeriana	"	species 'dioica'
Labiate Shrub		Very aromatic
Cucurbitum	Mao Niu et al.	Chien Li Gwa, 1000 mile gourd
Cassia		

Name	*Altitude Place*	*Synonyms and use*
Acacia		
Acer		O Dsang
Salix Populus	Tong Valley	Beh Yang Liu
Valeriana 88		
Fennel		
Phaseolus		Yeh Deo Dze
Swei Beh Dze		Smallpox antiseptic
Spirea	Mao Niu	
Sedum		I Dze Jien for boils.
Primula 70	Dung Gu	New? species. Leaf dentatiform
Lamium album	Tong Valley	
Viburnum		Chen Tsen Su
Vicia III		Fresh wounds, Dao Keo Yoh
Stachys		Mountain Peanut
Geranium		
Primula IV	Ta Valley	Den Dsan Hwa
Medicago	" "	
Jiu Niu Tsao		8-ft tree, bruises poison
Orchid III	Mao Niu	Tsen Pan Tsao, wounds
Salvia		Hong Mi Hwa
Ma-T'i-o	Mao Niu	Tonic
Dipsacea	Romi	Cliff
Chrysanthemum	"	Dwarf, "hwa gwang"
Chu Dze Tsao		Lavandula?
Cuscuta		Parasite, "motherless vine"
Hwang Geo Jin	Chango	Incense
San Lin Go 167		Acacia-like
Tobacco? 165	Bawang	
Physalis		Solanacea, "hong gu niang"
Hippophae		"swan swan tsao", mountain willow
Polyganum	Bawang	vegetable
Leontopodium		134
Sticta		lichen on tree
Philadelphus		
Rosae	Ta valley	
Chelidonium	Tong valley	
Chalistephus		Sinensis
		Holiyhock, Chi-pan-hwa Tonic
Orobanche		
		Catnip-like labiate
Solanum Tuber		Potato (cultivated)
Euphorbia Helioscopa		Ring worm
Du Ho		
Rheum IV 93	Dung gu	
Fagopyrum		Buckwheat red and white
Bitter Gourd		Yen K'u Gwa
Orchid		
Hemp		Yeh Su Ma
Atropa bel.	Hsin Dien Dze	Past flowering season.
" "	Ba Lang Shan	Berries present.

Name	*Altitude Place*	*Synonyms and use*
Leguminosa	Kong Keo Erh	Large rotund leaf.
Dang Gwei		Tonic, costly
Alsine?		Hsueh Lin Dsi. Panacea genito-urinary
Meconopsis II		Tall flowering stem multiflor.
Colchicum? 36		Fu Seo Sen. Tonic
Aster		Ban dao dsen. Cardalgia
Fritillaria		Roylei, first among Cough Cures (Bei mu)
Small Ma Tu O		Ligularia? Bruises
Arnica? 40		Incipient Boils. Di Din Tsao
Gao San (Aconite?)		Low, blue cluster
Veronica		

Pseudo-Lonicera, Leonurus S., Impatiens, "wild cotton", Anemone, Repeat Valeriana, Gnaphalium, Hsiang hsiang tsao, 141, Anemone, Salvia, Borage. Swertzia, Spiraea. 4. Thistle, Mu Hsiang, long narrow leaf Orchid. Sa Sen Tonic (Campanula), Primula V, Pedicularis, Allium (wild onion)

Aconitum Napellum in vigorous profusion at 15,000.

Delphinium succeeds aconite at 12,000 to 10,000 feet, and this is succeeded in turn by a large salvia like labiate. This order is followed faithfully on all the passes.

Delphinium is called "Fu Tswang tsao" application for sores.

Artemisia, Chiang Ho, Du Ho. LAVANDULA? or primula.

Chiang Ho is brought out in enormous quantities as medicine, both for export and domestic consumption.

Pao sen (campanula)

Repeat Dentaria, Corydalis. Sedum Sausuria. Polygonum. Spiraea

Potentilla. Repeat "Buddha's Hand. Deutzia. Astragalus.

Military Orchid, also Man Orchid. Repeat Gnaphalium

Rhus. "Lao shiung pao" for bruises

Hsuen tsan, "snow tea" for eye wash

Euphorbia. Used for Boils.

Incarvillea reappears at 8,000 and lower.

Scutellaria Alpini. Repeat "Fu seo sen" = Buddha's Hand Tuber, Tonic (an Orchid)

Parnassia, Lao Bin Yoh for phthisis,

Sausuria is used as emmenagogue. (Hsueh hwa)

Datura Stramonium reappears in neighborhood of Tong Valley

Epipactis and Sibbaldia

Campanulaceae vary from time to time.

Wu Jia Pi 145

Rheum II, grass meadows of Kong Keo Erh, deep-dentate 1-ft long leaf

Rheum III, Smaller Leaf

"Lao Bao Dze Yoh" very poisonous (corydalis)

Tsen Lan for arthritis, alcoholic extract, much used

Pedicularis shows fine large specimens

Repeat Stachys, Physalis, Allum.

Euphorbia Lactifer Lapidium 8/5

Chenopodium

Rhodeola

ON THE BALANG SHAN:

Atropa at 15,000. Veratrum (Album?)
Rheum Gigans at 14,000-15,000. Flower stalk 8 ft high: leaves 2-ft diameter.
Wu Bei Dze
Repeat Polygonatum, Hsueh Mu, Blood tonic, Du Ho, Umbellifer
Opium cultivated in large quantities west of Mong Kong.
Aruncus. Myosotism. Repeat Artemisia, and labiates. Aromatics.
Repeat Dentaria. Vicia. Triticum. Astragalus.
Dianthus Superbus.
Solanum.

ON THE NIU TEO SHAN:

Calama Grastis. Geranium Much Larger as others due to moisture
Repeat Viburnum, Berberis, Rubus, Prunus, Ribus, currant black and red
Carnus.
Henbane Burdock
Corydalis is of wonderfully wide distribution (Dr. H. Smith)
Salix (rotifolia) spectacular foliage
Euphorbia III, 157 Repeat: Salvia, Viciae abundant, Chrysanthemum,
Hyoscyamus Niger Repeat Dianthus. Thalictrum. Pedicularis Solanum
Aster, candelabra-formed. Repeat Gnaphalium, Corydalis, Delphinium
Arabis Crucifera, Ficus. Viburnum (prunifolium)

There are many unidentified plants, and the writer plans to continue the survey. A Chinese assistant is engaged to gather specimens during the two flowering seasons during furlough, after which it is hoped to do intensive study of a given section.

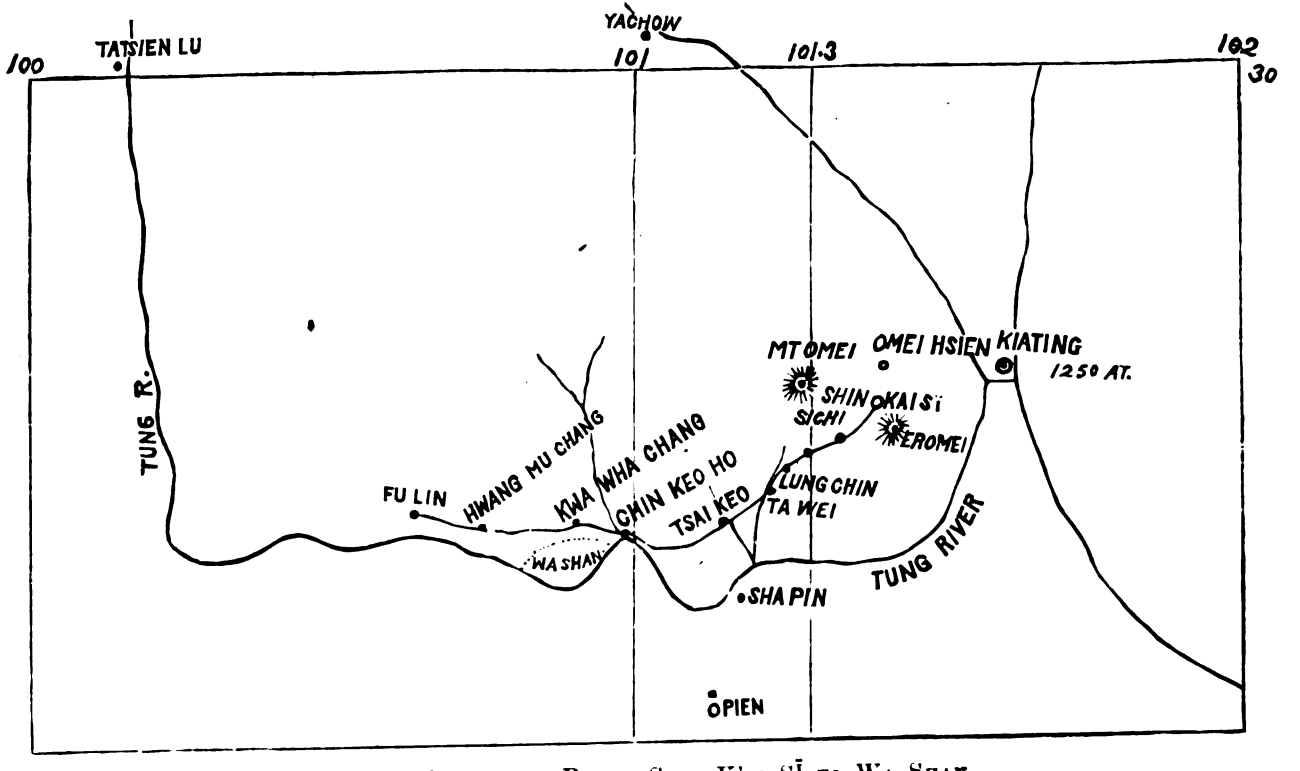


FIG. 3.—SKETCH OF ROUTE SHIN K'AI SĪ TO WA SHAN

Notes on Szechuan Geology.

C. L. FOSTER

We who have travelled thru the gorges of the Yangtse into Szechuan have seen striking evidences of the forces acting on, within and around this earthly home of ours. In the gorge region so much history in space of time is compressed into so little space in distance that we are likely to miss the inner significance, while admiring the outer charm of the scenes around us. In the Gorges the view is confined to a few hundred feet horizontally and about a mile upward. When we get beyond them we can see the mountain landscape unfolded before our vision and can appreciate a little more fully the work that has been wrought by the hand of Nature in fashioning the hills, carving the river channels, tilting and folding up the surface.

The geological history of Asia in general, and of China in particular has been outlined by Bailey Willis (Research in China, V. 2; Carnegie Institution, Washington, D. C.). The purpose of this paper is to outline in a genereral way the sequence of events in Central Szechuan. Data dealing with this area is limited at best, and for the most part is at this time inaccessible to the writer.

It has been the privilege of the writer to traverse the region surrounding Mt. Omei, sacred to Chinese Buddhism, in a more or less casual manner. Some of the resulting impressions are hazy and uncertain, but a few stand out strong and clear. Among the uncertainties is the question of the age of the strata under consideration. One of the strong impressions is that crustal movements of considerable magnitude were in progress at times during the deposition of the 10,000 to 12,000 feet of sediment in the district immediately surrounding Mt. Omei.

It may be well to begin with the section of the mountain as observed on one occasion. Lying at the base is a series of rocks of igneous origin. The eroded surface of this formation dips in a general southwest direction at about 15 to 25 degrees. One of these rocks is a coarse gray biotite granite. It lies exposed in a stream cut some 200 feet deep just North and East of a small ravine known to the local foreign community as "Granite Gorge". It is seen again in the lower and intermediate slopes of an eastern spur of Mt. Omei known as Sī Chi P'in. The rock weathers readily, and the small streams from the mountain have cut it out to a width of several hundred feet where they come together. It is not found as large boulders far from its source of origin, but small fragments are carried for some distance by the streams. It seems to have been intruded into an older mass of porphyry, the groundmass of which is heavily impregnated with hematite. The phenocrysts are evidently of feldspar, and range from ¼ to ½ inch in length, and are about 1/8 inch wide. This porphyry

seems to have a rather wide distribution in the region. It is seen at Flying Bridges, near Ta O Si in the valley between Omei and Er O, at Lung Ch'in, and on the northwest flank of Wa Shan, where it lies as large water-worn boulders at three separate horizons. These different levels are terraces formed by some stream in the course of its development. It is possible that this stream may have been the T'ung River, which may have had its course North of the mountain before elevation resulted in throwing it to the south, where it now flows in a loop around Wa Shan. The porphyry is at or near the top of Mt. Omei and formed the uppermost rock of Wa Shan before the outpouring of a red and green lava covered it.

In the Granite Gorge there are other varieties of igneous rock. Some are evidently dykes cutting older masses, fine-grained rocks, rich in ferro-magnesian minerals, resulting in dark red to black colors.

Immediately below the Si Chi P'in, the igneous formations dip below the surface and disappear. The contact between the igneous below and the sedimentaries above is unconformable. The igneous formations suffered erosion for a considerable period of time. The sediments in immediate contact filling the depressions are gray sandstones alternating with gray shales for about two feet. Then follows a foot of sandstone, above which is shale or argillaceous sandstone of undetermined thickness. A half mile farther up stream is a carbonaceous limestone about 35 feet thick. The upper surface of this formation is uneven. The reason for this was not apparent. While no fossils were seen at this place, the surface of this limestone suggests a stromatoporoid formation. Next is a dark limestone about 500 feet thick. No fossils were secured. Lying above the limestone is about 500 feet of arenaceous reddish gray shale with a rather large amount of mica finely pulverized. Next in order is a coarse red sandstone 15 feet thick. The lower 5 feet is fairly uniform in texture, and finer than the upper part, tho there are occasional white quartz pebbles up to one inch in diameter scattered thru it. At the 5 foot horizon there is a pebble layer four inches thick followed by coarser sand and more scattered pebbles. The upper three feet of this formation is free from pebbles. Red calcareous shale and sandstone come then for about 500 feet, when there is a repetition of the red sandstone about 50 feet thick. Next is a red arenaceous shale some 500 feet thick. Above this shale lies a bed of conglomerate about 100 feet thick. The boulders are about one foot long, and are set in gray shale, and are roughly worn or angular. While no striae were seen, the intimate association of this coarse material with the fine clay shale suggests a glacial origin. (See Fig. 1) The shale is a source of weakness in the formation, with the result that it is eroded more rapidly than the shale below, and very much faster than the 500 feet of limestone above it, which projects about 50 feet as a roof. The contact between the conglomerate and the overlying limestone was not seen. Near the upper part of this limestone formation a fossil coral was found. Above the coral limestone lies a light yellowish gray quartzite. It seems to be fairly uniform in texture, which is rather fine. It is capped by 1000 feet of porphyry of dark gray to dark red color. The phenocrysts vary from small quartz masses to one inch in diameter, and consist of banded agates colored in some cases a copper red or azurite or malachite near the margins, and frequently small quartz crystals at the center. The

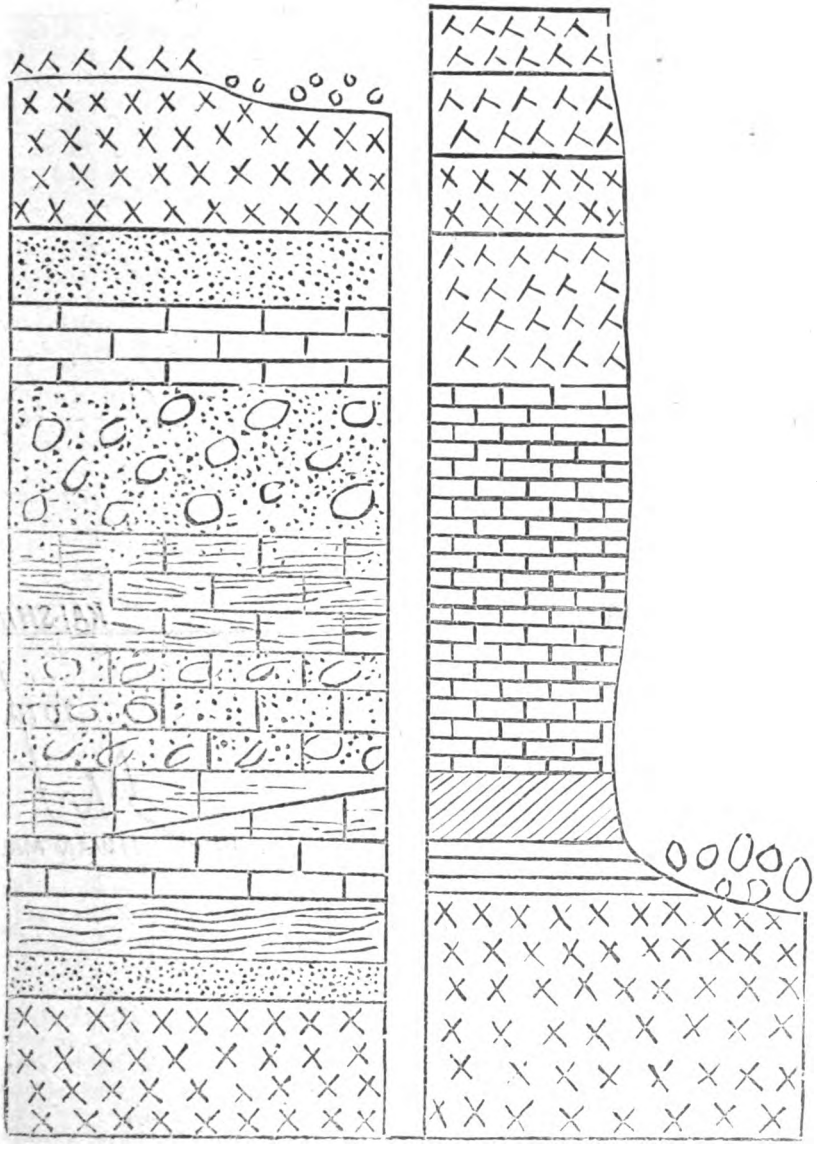


FIG. 1.—COMPARATIVE SECTIONS OF OMEI AND WA SHAN (subject to revision)

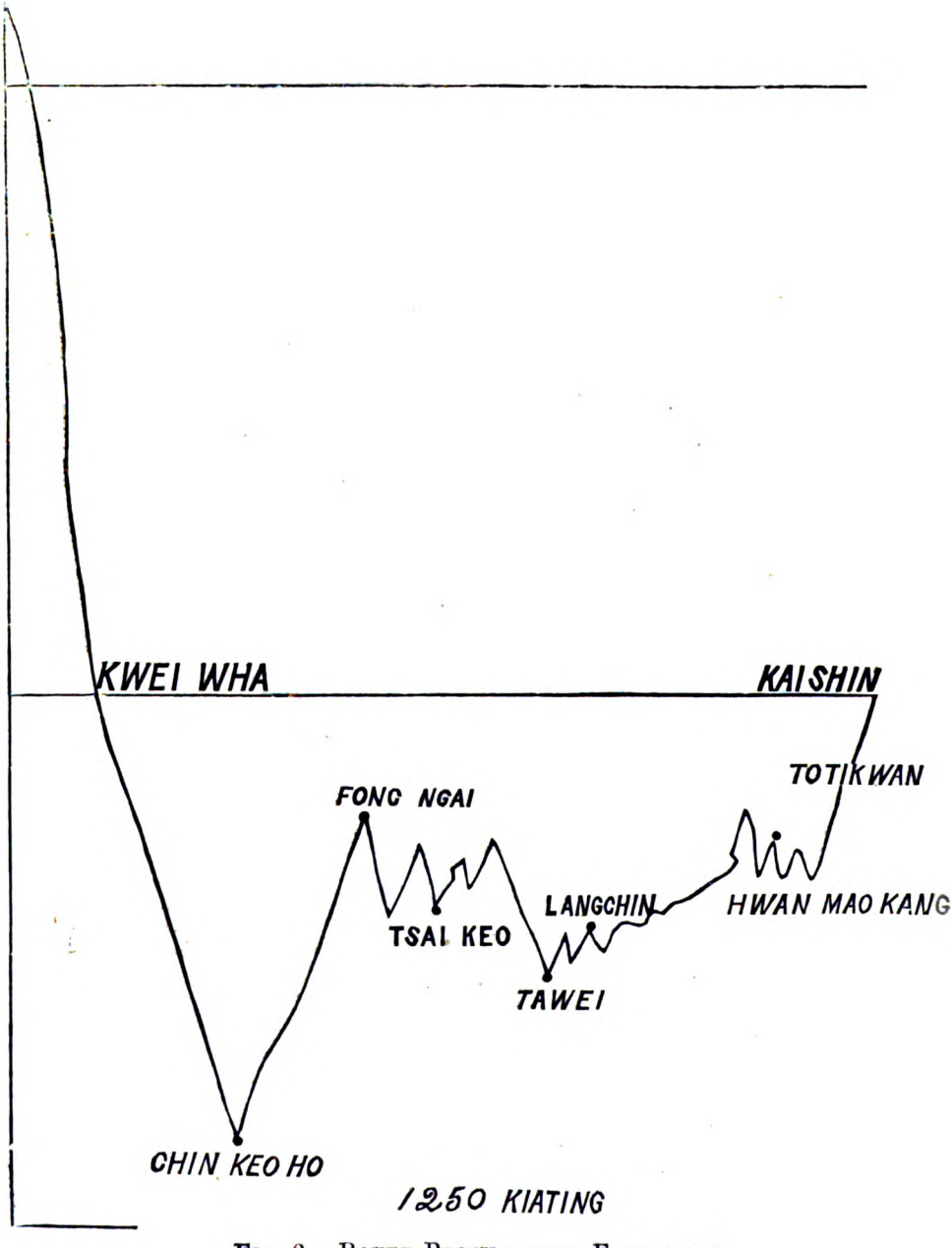


FIG. 2.—ROUTE PROFILE WITH ELEVATIONS

outer surface of the phenocrysts is, as a rule, stained a malachite green or an azurite blue. Above this coarse porphyry there is one with smaller phenocrysts, and having a large proportion of hematite, as mentioned in a preceding paragraph. This brings us to the top of the great cliff of Omei, near the Chin Tin Temple. A little to the south of the temple there is a small exposure of columnar basalt, very dark and fine grained. These two top-most formations evidently belong to a surface flow, the more deeply buried mass forming the larger phenocrysts and that cooling nearer the surface being finer grained. The lower part referred to as porphyry would perhaps better be called amygdaloidal, while the top portion is so fine-grained as to be microscopic. The whole seems to have been part of a great surface flow, the extent of which has not been determined.

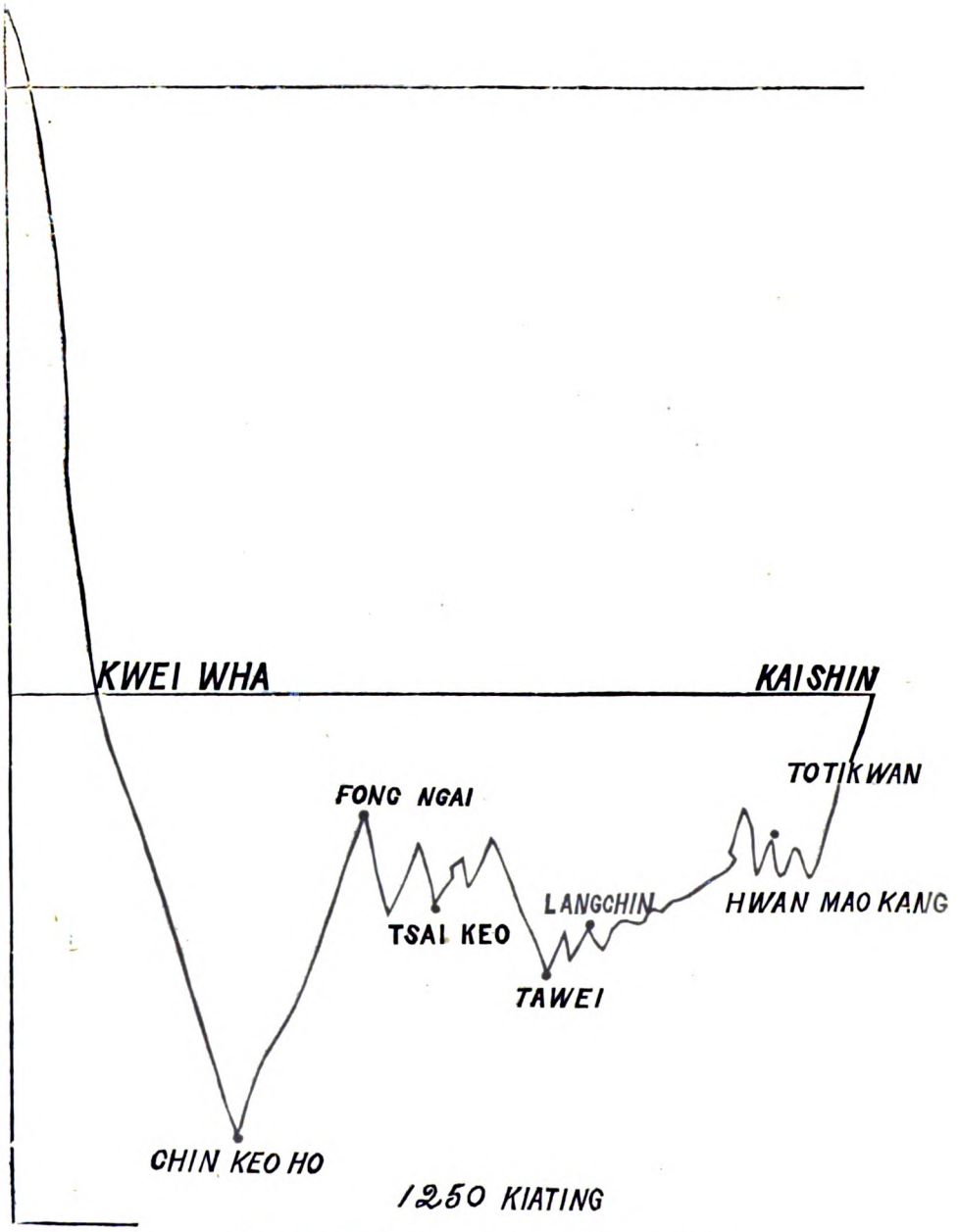
Basalt of similar character occurs at the foot of Er Omei, some 9,000 feet below, and it has the same relation to the amygdaloidal porphyry as at the top of Omei. The fracturing of the crust in this region has permitted vertical movements of some size to take place, and the basalt and porphyry at the foot of Er Omei are in juxtaposition with limestones and shales. 1,500 or 2,000 feet up the slopes of Er Omei the porphyry has been weathered, and the amygdaloids are thickly scattered in the fields. Those picked up here cannot be distinguished from those collected on Wa Shan, the Chin Tin (Mt. Omei), and in the T'ien Ch'uen region to the northwest of Yachow.

No sediments lie above the igneous rocks at the top of Mt. Omei, unless a clastic formation on the north side of the top should prove to be of sedimentary origin. It seems rather to be a pyroclastic. Its relations are indicated in the Omei section (Fig. 2).

Near the base of Mt. Omei the porphyry seems to have been intruded beneath the red shales, giving them a baked appearance, as between Ta O Sï and Flying Bridges, and near the foot of the Shin K'ai Sï spur, at and below the Tung family.

The history of Wa Shan seems to be similar to that of Omei. The chief difference lies in the fact that the top of Wa Shan is covered by a lava that has small amygdaloids instead of the porphyry. The lava here seems to have cooled rapidly and formed a scoriae at first. Later infiltration has filled the cavities with agates coated with malachite, but very small as compared with those at a lower level, which are like those near the top of Omei. The total thickness of the igneous rock at Wa Shan is about 2,000 feet. While it cannot be asserted positively, it is thot that Wa Shan was the outlet of a volcano in ancient times. The central portion of the mountain rises gradually above the rims of the horst, and at its center there is a yellow sandy, loose material that may be a broken down spine.

About five miles north of the Omei spur known as Sï Chi P'in is another known as Shin K'ai Sï. This is one of the foreign summer resorts for this region of Szechuan. It reaches an elevation of about 5,500 feet. Reference has already been made to the occurrence of porphyry on this spur, intruded beneath the red shales which have been tilted and baked by it. A fault at the east foot of this spur brings vertically bedded limestone against the tilted red shales. Fossils have not been collected in this section. But near the top of the spur, especially near the bungalow knows as "Rocky Roost", several have been gathered. Those most common there are Productus and Bryozoa.



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The Productids are of several species, and are at least similar to cuts and descriptions of

P. viminalis
P. burlingtonensis
P. arcuatus
P. semireticulatus
P. ovatus

The Bryozoa may be compared with
Fistulipora waageniana
Fistulipora sp.
Fenestelia sp.

One Zaphrentis sp. was found.

At lower horizons were found the ones noted below:
Schwagerina sp.
Leptodus sp.
Cystiphyllum sp.
Cyathyphyllum sp.
Syringopora sp.

In a clay bank at the rear of the church were found:

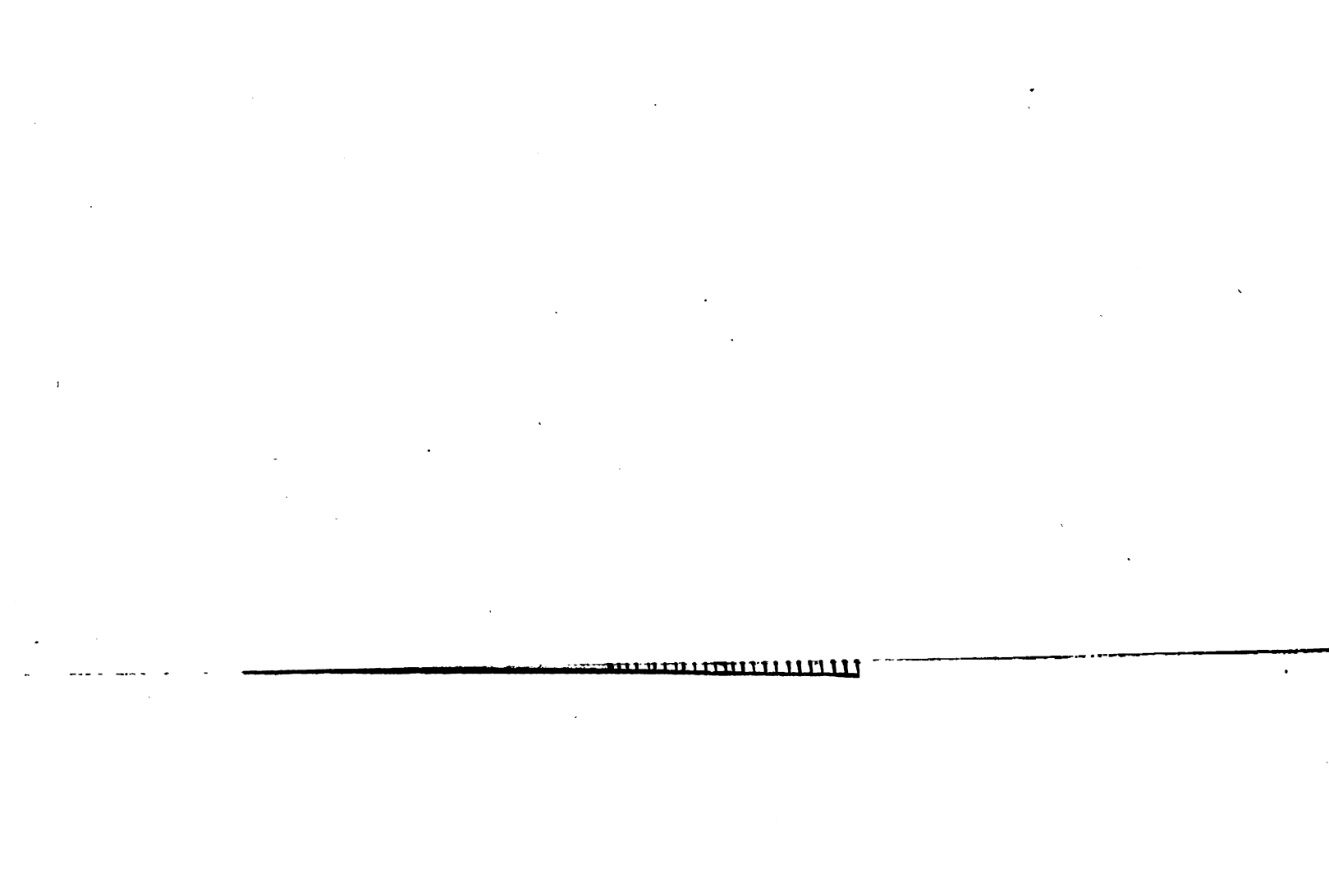
Euomphalus sp.	Crinoid stems
Cyclonema sp.	Foraminifera sp.

This material was no doubt weathered from above and washed in here.

About five hundred feet below the top there is a red quartzite sandstone tilted at about 60 degrees to the S-E. In contact with it at an angle of 10 to 15 degrees is a gray shale which has some fossils, as Monograptus, Orthoceras annulatum, and a few diminutive brachiopods. Above this gray shale is a red shale much discolored by limonite, and rich in trilobite remains. Data at hand do not seem sufficient for definite determination. One glabella appears to belong to Homolonotus. A nearly complete outline with hypostoma and one eye may be a species of Phillipsia.

The limestone and shales of the upper part of the Shin K'ai Sï series are rich in carbonaceous matter. In certain horizons it crumbles like sawdust when wet.

The above assemblage of fossils suggests that the sediments of the Shin K'ai Sï region were deposited in the seas of late Carboniferous and Permian time, and perhaps to some extent in the seas of the early Mesozoic. The red shales and sandstones lie 1,000 to 3,000 feet below the top. In the fracturing, folding and elevation of the region Omei was thrust up above its surroundings. Possibly a counter movement occurred on the flanks, and the area between the Min River and the foothills near Omeihsien was thrust down. This gave the streams new vigor, and the renewed power enabled them to erode rapidly and the material was brought down and laid in the basin formed between Omei and Kiating. The tops of the old mountains composed of Permian or Carboniferous Sediments now stand but a few hundred feet above the T'ung and Ya Rivers, while the Omei horst stands 9,000 feet or more above.



Other points in Szechuan that seem to be related in time and physical conditions are to the North and West of Yachow. In a gorge of the Ya River 15 *li* above Yachow there is faulting and tilting of the red shales and sandstones. The section (Fig. 7) will make clear the relation.

Conglomerate is present here in four places. If our interpretation is correct, the rock of all four belong to a single stratum. The pebbles in this are mostly quartz, and the groundmass is red debris of the eroded red sandstones.

About 30 miles to the North of the Ya Gorge is a gorge near Shuang Ho Ch'ang. The red shales tilted about 30 degrees to southeast lap onto a conglomerate about 3,000 feet thick. It is composed of boulders not exceeding two feet in size, rounded, and cemented with calcium carbonate. Near the top the material is finer, the pebbles averaging about one or two inches. Both fine and coarse ingredients are almost wholly limestone fragments. The cement of the finer part contains argentite and malacnite. At one time these minerals were extracted. The fact that they are not now worked probably means that the amount of mineral is too small to make it worth while. This conglomerate is burned for lime. The minerals were first noticed by the Chinese in the debris from the lime kilns.

A light gray or black and white fine sandstone lies below the conglomerate. Coal deposits are associated with this sandstone formation. This conglomerate may be the shore deposits in marginal seas during the transition period of the Permo-Mesozoic. At least it shows a change of conditions from low-lying swamps to lands that gave fall enough to the streams to carry fairly coarse material.

About 10 miles northwest of Shuang Ho Ch'ang is a market town called Lin Kwan. Limestone abounds there, rich in several forms of coral, including Favosites ap. A few miles north of Lin Kwan the sediments give way to igneous intrusions. These culminate near Mu P'in, about 15 miles to the North in a coarse gray granite, very similar in texture to that at Hwang Ni P'u at the southern side of the Big Pass (Ta Shiang Lin).

From the above notes, incomplete as they are, we may assume that the great intrusions of central Szechwan are not earlier than Middle or Late Mesozoic. The wide distribution of conglomerate, while it does not demonstrate glacial conditions, in the absence of striae is suggestive of great changes in the capacity of the streams to move the debris brought into them. It is possible that these changes were altogether due to the crustal movements that brought to a close the conditions that favored limestone deposition.

Location of Snow Mountains

G. G. HELDE

Considerable interest has been shown in the location of the snow peaks which are frequently seen from Behluding, one of the summer resorts in Szechwan, and occasionally from Chengtu. A fine view of them was obtained from Chengtu on the morning of May 28, 1923, and at that time their bearings in relation to the magnetic north were taken. Two masses of peaks could be seen, the southern one lying between 8 and 13 degrees north of west, and the northern one between 18 and 23 degrees north of west.

On the morning of June 5, 1923, two groups of peaks were seen from a point about a mile outside the small north gate of Penghsien, and the bearings taken. Reference to sketches made of the mountains at Chengtu and Behluding show that the northern group seen from Penghsien is not the northern group seen from the other two places. The bearings for Penghsien of the southern group are 12 to 8 degrees south of west, and of the northern group, 7 to 12 degrees north of west.

A week later, the same mountains that were seen from Chengtu were seen from Behluding, and the bearing again taken, giving three different observations of the southern group and two of the northern. The group still farther north, and seen from Penghsien, is hidden from Behluding by the nearby mountains. From Behluding, the bearings of the southern group are 24 to 30 degrees south of west, and of the northern group, 12 to 17 degrees south of west.

The latitude and longitude of the three points, Chengtu Penghsien and Behluding were obtained from observations made some years ago by French scientists, and were further checked for direction by bearings taken of Behluding from Chengtu and Penghsien. These three points were used as the ends of two base lines and the bearings plotted on the map made by the writer after two trips, one from Kwanhsien north to Weichow, west and northwest over the Hung Ch'iao Pass into the Shao Chin Valley, south to Mongkung and east to Kwanhsien; the other, from Yachow to Tachienlu, north over the Ta Pao Pass to Romi Chrango and Tsung Hua, southwest over the Kung Ko Er Pass to Mongkung, and east to Kwanhsien. In drawing the map, it was checked by figures given in Wilson's "A Naturalist in Western China" which gives the latitudes and longitudes of Chengtu, Ya Chow and Tachienlu. Use was also made of the observations of the French scientists and Fergusson.

The lines showing the bearings of the southern group cross at a point about fifty miles west of Kwanhsien, the mountains being north of the Ba Lang Pass on the road between Mongkung and Kwanhsien. The northern group is in the same range about two

miles farther north, and the group seen from Penghsien still another ten miles to the north. This range of snow mountains has been seen at close range by the writer when crossing the Hung Ch'iao Pass, again from the west from the Shao Chin Valley, and again from the south from the Ba Lang Pass.

Notes on the Primitive Religion of the Chinese in Szechuen.

D. C. GRAHAM.

Near Suifu on the Yangtse River is a small temple known as the White Stone Temple. (白石廟). Originally there was only one large, white stone, taller and whiter than the others. People began to worship it, and ascribed to it the power of healing. Later a temple was built around it, and the more common idols were added. The stone is still worshipped, and for a few cash one can purchase a tiny bit of the rock, which will cause him to recover from illness if he will grind it to sand, soak it in water, and then drink the water. No phallic worship is evident in connection with the white rock. Probably the process began with the natural sense of awe aroused because of the size and whiteness of the stone.

South of Suifu is the town of Shuin Gien Sī (巡撿寺). Near this town is a man who runs an oil factory. He has some big, fine bulls run the stone rollers. He has prospered, and the value of his bulls has increased. About two years ago the owner burnt incense to the biggest bull and worshipped it as a god. In this man's experience we have illustrated the history of many primitive tribes, such as the Todas. The animal on which the welfare of the tribe most depends becomes sacred.

Probably the essence of the popular religion of the Chinese of Szechuen is belief in and fear of demons, which cause pestilences and do all kinds of harm, and the attempt to protect oneself and others from the demons and guarantee happiness and prosperity by means of magic and charms, and the influence of idols and priests.

Last summer some missionaries asked the abbot of one of the Buddhist temples on the summit of Mt. Omei to preach Buddhism to them. He began, "We Buddhists believe that there are hundreds of demons in the world who are constantly doing harm, and that protection must be found against them." Many of the idols are revered by the Chinese because of their power to drive out demons. Some of the ways in which exorcism is accomplished are, throwing round biscuits (撒齋粑), sprinkling holy water (洒水), imitating the crow of a rooster, setting off firecrackers, and pasting up, wearing, or burning charms. In some villages south of Suifu geese are kept because it is thought that their cries frighten away the demons.

There are many demons living in rivers and streams, whose aim is to drown other people. They themselves have been drowned, and must cause the drowning of others in order to escape their demonic condition. There are demons who have committed suicide by hanging, and can only escape by inducing others to hang themselves, Ts'an Lan Kuei (產難鬼) have died in childbirth, and can become reborn as human beings only by causing others to die in childbirth. Mirrors are hung above doors and elsewhere to keep out demons. When the latter attempt to enter, they see their own reflections in the mirror, and they look so horrible that they become frightened at their own images and go away. Sometimes the mirror is circular and has the T'ai Chien Tu (太極圖) in the center, which makes it more efficacious. The Bah Kua (八卦) is very widely used in protecting against evil influences. Amber, when worn on the body, protects from disease and pestilence, which are always caused by *kuei*. Paper charms written in fantastic ways and having such inscriptions as "GOD OF THUNDER CUT OFF EAR," are pasted above doorways, in different parts of houses, on bed nets, and are worn on one's clothing. Some are burnt and the ashes eaten. Such instances could be indefinitely multiplied. It is obvious that the fear of demons is a powerful factor in the religion of the Chinese of Szechuen.

Magic is very common. A Chinese friend, who owned a rude shotgun, stuck the feathers of the birds he had killed to the gun by means of the blood, believing that it would make the gun shoot more accurately. When a favorable wind is blowing, the boatmen will shout and whistle loudly the make the wind blow harder. When a pig, a cow, or a water buffalo is born, the afterbirth is wrapped in rice straw and hung in a tree. The wind, blowing over and through this, causes the young animal to grow rapidly. Crows that choose to roost in the village trees must not be molested, for they cause the village to be prosperous, and make fires less probable. If you harm the crows, business will suffer, and other calamities will come. A foreigner shot some crows in a town on the shore of the river near Kiang K'eo (江口). The natives came out and threw stones at the foreigner's boat, so that the foreigner thought it best to depart. Magic underlies the idea of fasting for rain, and of closing the south of the city to cause rain, and the north gate to induce dry weather.

Animism is certainly common among the Chinese. The demons are the ghosts of dead people who for some reason are not at peace, and so are at outs with mankind. Near Kiang K'eo (江口) is a banyan tree that the people began to worship about five years ago—no one knows just why they began to do so. It is called *Huang Gch Giang Chuin* (黃角將軍), or "General Banyan". It heals all kinds of diseases, for which the leaves are generally used. Incense is burnt to it. If one's feet are sore, he can get well by hanging a pair of straw sandals on the tree. The tree is said to possess marvelious powers because it has a spirit or ghost (妖氣).

At this point let me urge that those who are studying the native religions get clearly in mind the fact that there is a distinction between primitive religion and animism. While scientists may not have spoken clearly on the subject two or three decades ago, the distinction may now be taken for granted, primitive religion is lower than animism, and animism represents a higher stage of development

where one can reflect sufficiently to distinguish between himself and his soul, and to attribute the possession of similar souls to other living and inanimate objects. The primitive man acts much, and sometimes quite skilfully, but he can do little or no abstract thinking. "Animism, in the sense of belief in a soul separable from the body and therefore able to survive bodily death, was achieved only through considerable reflection, which may have required a long period of time."[1] "Such belief is, indeed, universal at certain levels of culture, and it has had an important part in the evolution of religion. The question is, What part? Clearly, animism as such is simply a general level of thought. It contributes something to the god-idea, but it is not of itself religion. We must still search for the motives, the life-issues. Moreover, animism is not a strictly primitive form, even of thought. It involves the notion of a difference between spirit and body, a notion that could have been achieved only through a considerable process. As the achievement of this notion is, of course, one phase of religious evolution, a preanimistic stage of religion is now recognized."[2] If the above statements are correct, it is obvious that the original religion of any people could not have been animism.

Moreover, some primitive religions have been identified and studied, among the most backward races; and scientists are affirming that the most important thing in the life of the primitive man is a mysterious potency, which is thought to be active in all strange, striking, or marvellous things. This has been called by various tribes the Algonkin, the Manitou, the Wakonda, the Orenda, the Kukini, and the Mana, the latter term being most commonly used among scholars. One of the best expositions of this idea is found in Irving King's book, The Development of Religion, chapter six. This concept, which has sometimes been mistaken for a high ethical monotheism, is a quite natural result of the primitive man's contact with his environment. It is a semi-mechanical power that may reside in stones, rivers, trees, animals, men, and deities. It has been traced among the American Indians, among certain Australian tribes, and in the early Roman, Greek, and Semitic religions. It is believed that the idea of Mana is a key to all the phenomena of primitive life, and that all the changes, variations, and developments from this point of view in the more advanced religions may best be interpreted as influenced by physical environment, racial experiences and contacts, and the social life and ideals of the people. I realize that here is raised a question requiring a great deal of research and study, but my own observations have led me to believe that, while the popular religion of the Chinese may be more or less animistic, the Mana concept furnishes the best key for scientifically understanding and explaining that religion.

1. George Albert Coe. THE PSYCHOLOGY OF RELIGION, pg. 83.
2. " " " " " " " " 102.

The Ch'uan Miao of Southern Szechuen.

D. C. GRAHAM.

Directly south of Suifu, near the Yunnan border, are several thousand aborigines known as Ch'uan Miao (川苗). The women wear short skirts instead of trousers, and do not bind their feet. The men resemble the Chinese more closely than they do the Lolos. Most of the people are farmers, and they live on high hills, the lowlands being cultivated by the Chinese.

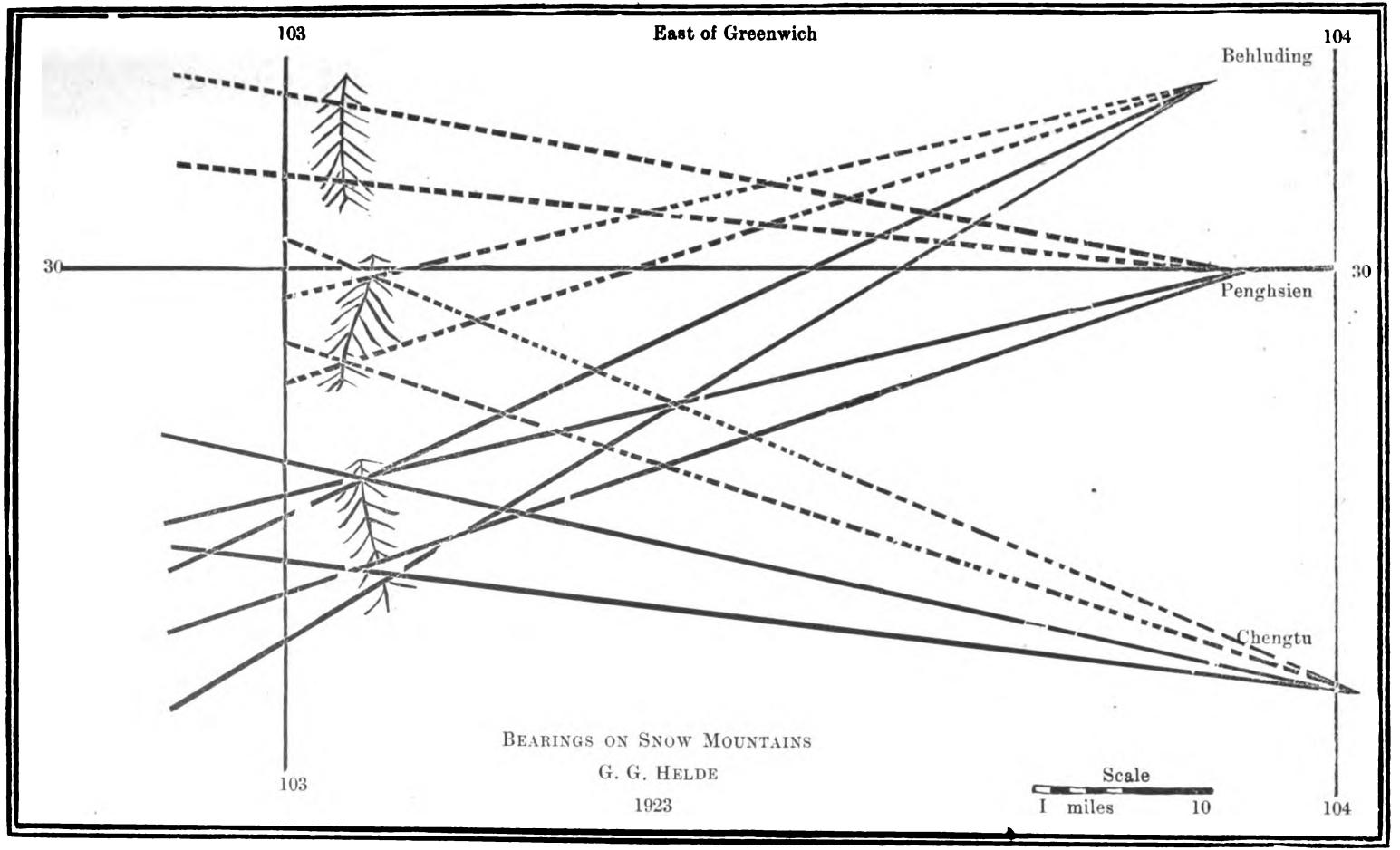
The music of the Ch'uan Miao is attractive. There are a number of folksongs that relate the legends of the tribe. The tunes of these songs bear a slight resemblance to the chants often heard in Christian worship. The instrumental music lacks the harshness so evident among the Chinese, and is really pleasant to hear. Especially interesting and attractive is the Luh Sen (六笙), which has six tubes. When it is played the musician performs a dance much like that of a Scotch bagpipe player.

We have found no evidence of the existence of tribal gods, unless their ancestors may be considered as such. Ancestor worship is thought to be original with the tribe, but even this shows marks of Chinese influence.

An old legend states that formerly the tribe buried its dead on their backs with their heads to the east. This was because their ancestors came from the west, and in order that the deceased, on coming to life, could rise with their faces to the west and go directly to the land of their ancestors. However, some of these Miao assert that the tribe migrated to this place from the Province of Canton.

One Miao family has several members whose complexions are light, and a nine-year-old boy who is a regular towhead. His hair and skin are lighter than is the case with most white children, and his eyes are a light blue or grey. I am told that albinos generally have pink eyes, so that this boy is probably not an albino.

It would be well worth while to make a more thorough study of these people, especially those who live further south and have had less contact with the Chinese.



BEARINGS ON SNOW MOUNTAINS

G. G. HELDE

1923

Smithsonian Institute

In the Proceedings of the National Museum of Washington, U.S.A., No. 4, 1922, Rev. David C. Graham, one of our charter members, is given credit for the discovery of three new species of bees:—

1. A species of the *B. mastrucatus* group: two females from Suifu, W. China.
2. *Xylocopa orichalcea*, Lepeletier, from Suifu, West China.
3. *Speckodes Grahami*, new species from Suifu, W. China. Mr. Graham has been honored for his painstaking work by having this species named after him.

Also from the Biological Society of Washington, Mr. J. H. Riley states that among birds, Mr. Graham has also discovered a new variety of *Dryonastes* near Suifu. It is called after him, and known as the *Dryonastes Grahami*. At the Smithsonian Institute this specimen is catalogued, *Dryonastes Grahami*, sp. nov. Type, adult male, U. S. National Museum, No. 257, 204, Shin Kai Si, Mount Omei, Szechwan, W. China, July 6, 1921. Collected by David C. Graham.

We congratulate Mr. Graham on his well-deserved honors.

The White Stone

J. HUSTON EDGAR.

The white stones occur from Tatsienlu to Kanze in the Hor country, and are used as

1. The capping stones for walls and corners of houses
2. Culminating points of religious mounds and shrines
3. They are worked in walls as oxheads and other designs
4. And are objects of worship in Kanze city.

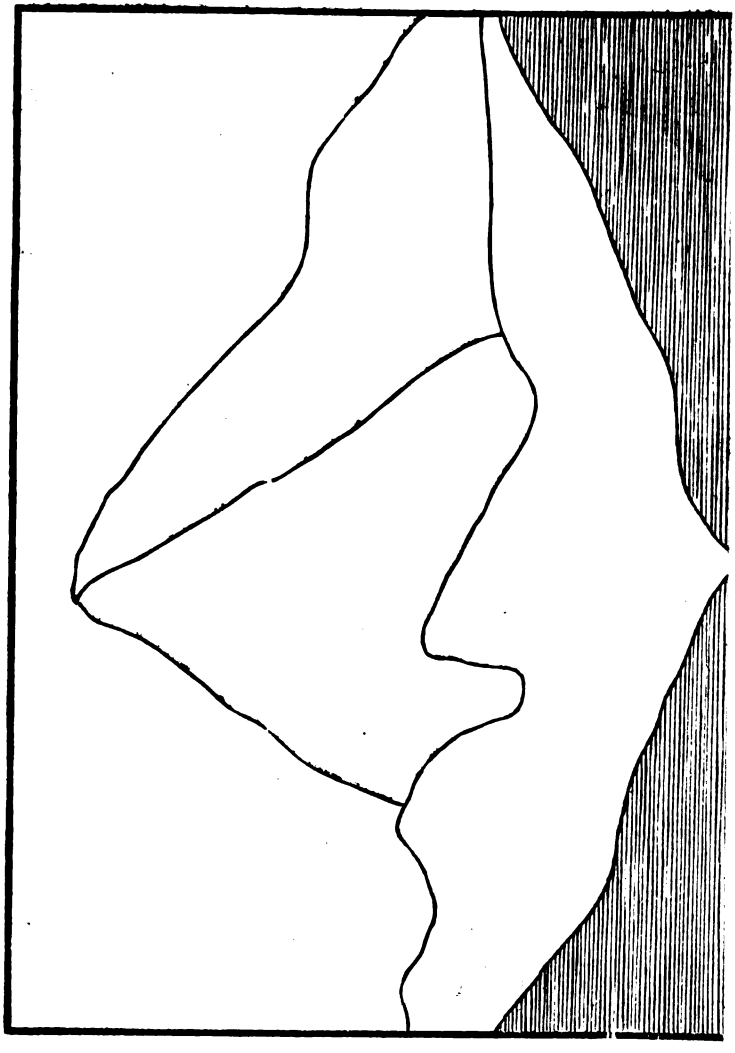
The designs have already been sent to the Society with notes. In and around Kanze white fragments on *mani* mounds are quite common and occasionally lines of them may be seen on the plain. In Kanze a conical stone, apparently white quartz, is an object of worship on the street. It is a "Tibetan Idol" known as the "Lord of the Earth", or "God of the Region" (*Sa Bdag* = Chinese *t'u di* 土地), but

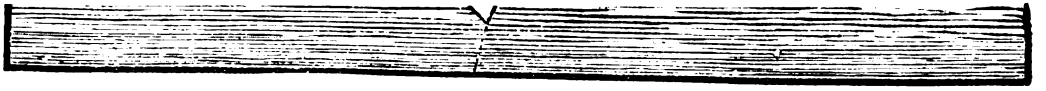
the Chinese have built a shrine over it and strips of paper with Chinese sentiment adorn the sides and *mani* inscribed stones decorate the roof. It is said to be most uncanny (*wai*). In quite a different place we witnessed a peculiar ceremony in which fragments of white stones played a part. The lamas had predicted a severe earthquake in Kanze and sinners of all classes had been confessing sins and doing penance therefor. A pile of stones in the form of a thin wall, slightly off the perpendicular was built against the *mani* mound. About four feet high it was capped, with a fragment of quartz or inscribed slate or sandstone. At the sides, sometimes, were flat slabs of the former material. The devotee, facing the lamasery and his shrine, went through a process of stimulated prostrations, touching the white stone with the head, and the others with the chest, while the two hands slid along the smooth slabs if there. Just what additional value the quartz or the *mani* inscribed stone gave to the performance I did not learn, but in these regions both are powerful talismans for warding off calamity. The bleached bones of an oxhead are sometimes placed in positions usually occupied by cones of white quartz, and I have seen one with the norms intact topping a *mani* mound. The accompanying figures of yak are copies of house talismans (?) done in white lime wash. There were other designs—conch-shells, swastikas, shrines, etc., but these yak seem to be of special value. They are copies of drawings made by the owner himself. The grotesque and bad drawing may be intentional—caricatures in fact.

Note Accompanying Sketch of the Gang Ka.

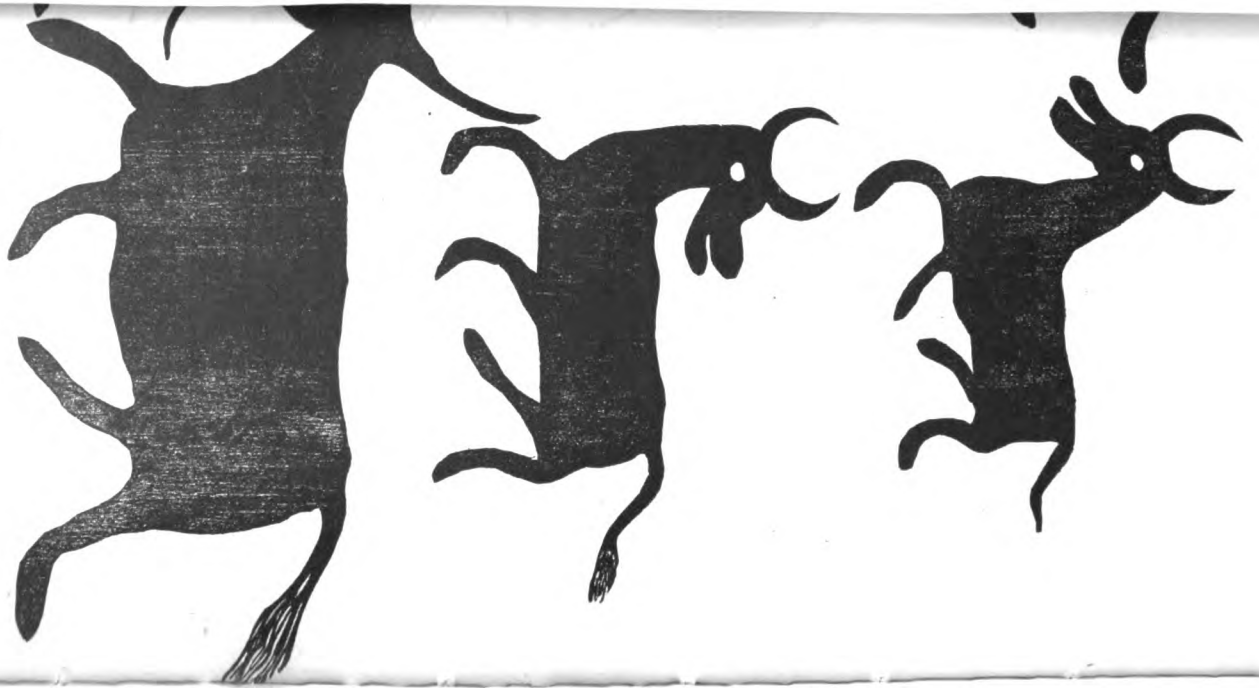
J. H. EDGAR.

The enclosed sketch is an attempt to give an idea of the Gang Ka, which I understand General Pereira suspects may be higher than Mount Everest. This peak may be seen from the Chengtu plain and even from Meichow. The thought in my mind is that this peak may be 30.000 feet. The sketch is taken from Ying Kwan Chiai looking East. When on a plateau of 15.000 feet I had a wonderful view of a great frontier arc say of 90 degrees, studded with many peaks over 20 000 feet, but this rises so far above the 15,000 feet plateau, and even the snow line (18.000) that nothing but a scientific measurement will make me relinquish the 30.000 foot hope. To the North along the arc is a group of four other peaks of extraordinary altitude and bewildering grandeur, but far behind the heavenward thrust of the Gang Ka.





THE GANGK'A FROM YING KWAN CHIAI



GS OF YAK, DONE WITH LIME

(see page 58)

Notes on the Kiating Caves and Buddha, with Suggestions on the Origin of Litholatry.

J. HUSTON EDGAR.

The following notes from the Kiating History may be of interest. The first deals with the caves in the Kiating and other districts; the second gives some information about the great Buddha in the cliff below Kiating city; and the remainder deals with early Semitic litholatry.

1 Translation—

The caves of the Liao people. They made caves by tunnelling into the mountains. They are found in the hills around. Some of the caves are several fathoms deep and others several tens of fathoms. Tradition says they were dug by the Liao people between the Chin (or Hsin) and Song (Liu?) dynasties (265 or 477 A.D.).

獠人洞。鑿岩爲洞。山谷往往有之。洞數丈深。至數十有丈者。傳晉宋間。獠人所鑿也。

2 During the reign of K'ai Yüen (713-741 A.D.) a priest made the great Buddha, height 60 ft.

3 Under Asherah, Dr. James Orr, D.D., says, "... *the trunk of a tree or a cone of stone* which symbolized Asherah was regarded as a Bethel, or 'house of the deity' wherein the God was immanent.... The trunk of the tree was often provided with branches..." It is worth noting that very often in connection with the white cones of quartz, portions of pine or spruce are set up to represent small trees. I have noticed this custom as far apart as Lifan and Litang. Again, under "Ashtoreth", Rawlinson assumes this goddess was the female principle in Nature. She represented the Moon and bore the head of a heifer with horns curving in a crescent form and became sometimes the Astarte of two Norms. She was a Phoenician goddess. Asherah and Ashtoreth were probably the same objects of worship in Babylonia originally. This being so, and assuming a Semitic origin of the frontier litholatry, the separation must have taken place when Asherah and Ashtoreth were one deity, perhaps before Abraham left Ur. of the Chaldees. The inherent phallicism and the title "God of Heaven" applied to the white stone cones or pillars, clearly indicate the very ancient attitude of an early people towards the stones and crescentiike norms. Needless to say, Chinese history assures us of the existence of these tribes on the frontier from the most remote times.

The Story of the Nya-Rong (Chantui)

J. HUSTON EDGAR.

Until 1911 a strip of country, Chantui or Nya Rong, was ruled by a high functionary from Lhasa known as the "Spyi-Kyab" of the Nya Rong, a title which means Governor-General. As the most eastern point of this region was only about one hundred miles from Tatsienlu, and as it was really detached from Tibet proper, the Lhasa claim seemed somewhat of an enigma. And as time can only add to the mystification, the present even meagre information may be of interest. My sources of information are dictionaries and old frontier inhabitants, especially one aged gentleman of sixty-eight years.

1. The Nya Rong are Horpa and have been divided into eighteen tribes. Regarding the etymology of the term "Hor" we are quite in the dark. It is a very ancient designation for tribes of Turkish origin and may be traced in such terms as "Ti Khara", "Tu Chüch" and even our word "Turk". But before we accept this suggestion as proof of racial identity, it is well to remember that Ta Hsia (大夏), the Han Dynasty name for Graeco-Bactria, is also a corruption of "TuKnara", and a famous conquest or inroad into Tibet about 270 A.D. (?) of sojourners in India known in Chinese histories as Enah I'eh K'o Keh may be ascribed to the same "Tochari". But neither the Graeco-Bactrians nor their conquerors the Yüeh Ch'i (月氏) were Turks in the present day sense. Indeed Sze-Ma-Chien would suggest what Schuyler hints at—a Gothic origin. Then owing to their occupation of Graeco-Bactria we must assume a considerable addition of Greek blood before their hordes swarmed into Northern India; and by the time Lhasa was reached a further modification by Aryan blood must be suspected. The question now is—Can the Szechwan "Hor" be in any way the descendants of the old "Tochari" modified by a sojourn in both Bactria and India? We hesitate, but point to the etymology of the family name; to undoubted Greek types; and to a statement in a late geographical journal that an inroad of Graeco-Bactrians entered northwest Szechwan about the beginning of our era?

2. Until about sixty years ago the Chantui Horpa were independent of China and Tibet. That implies they were professional brigands and a general nuisance to everyone. About this time a chief united the Tribes of Chantui and losing all ideas of proportion imagined himself one of the great monarchs of the earth. His name was Kong Pa Long Chia. During the halcyon days of this swash-buckler a sister of the reigning king of Chagla was given as wife to the powerful Prince of Derge. The King of Chantui, hearing of her accomplishments, and no doubt aware of her beauty, sent an army of his desperadoes to abduct her. This they did, and the outraged lady entered the harem of the outlaw king. But robbing

caravans was one thing, and abducting queens, the daughters and sisters of kings was a different matter. And as a consequence of Chantui's undiplomatic action we had the programme of Troy enacted on a small scale. In this case the girl's brother, the king of Chagla, became the champion and went out gaily to exterminate the abductor of queens. But just here the Trojan parallel breaks down, for the man with the righteous cause was soundly beaten and his unfortunate forces subjected to unspeakable atrocities. What Derge was doing in the meantime we have no information, and if China sent help it was to no purpose, for the wicked man of Chantui remained the victor. But Lhasa was alarmed and, no doubt anxious for the friendship of Derge, sent out an army under one P'un-Rog Pa, who by some means conquered Chantui[3] and sent him a fugitive to the unsubdued Golos. The princess was sent back to her husband and P'un Rog Pa put the subdued territory under Lhasa whose satraps specialized in misgovernment for one generation or so.

3. About twenty-five years ago, however, an important section of the population rebelled and fled into the territory of Chagla, China's tributory kingdom. This, of course, was the signal for hostilities in which by the combined action of China and Mi-Nyag[4] the Lhasa party in Chantui was defeated and the country came under the Viceroy of Szechwan. But a strong protest came from Lhasa, and for unknown reasons China handed back the conquered territory to the former masters.

4. For the next ten years, under the Lhasa Governor-General, Chantui did not improve in wealth or morals. Widespread brigandage was rampant, and the Lhasa functionaries, out for exploitation, could not or would not control the Nya-Rong. And since my appearance in the Marches the region has been a hatching ground for intrigue and rebellion against China. But even in Chao's very definite programme in the Marches, Chantui was not formally considered a legitimate sphere for operations. And right up to the last, when all around her was submerged in the great sea of Manchu conquest, Chantui remained like an island among the ruins. Why? Simply because China wished to humour the Dalai. And if my opinion is doubted it is sufficient to refer to the fact that when the Tibetan "God" sought an asylum in India, Chao, as a detail, when returning triumphantly from the Tibetan wars, tweaked Chantui into line with the other conquered regions. And in August, 1911, the Lhasa Governor-General of the eighteen Horpa Tribes was seen en route for India where the Dalai was safely watching events.

I have at times been guilty of wasting sympathy on the Nya-Rong[5]. That was a mistake, because when men are unable to use independence, a period of tuition is manifestly necessary. Moreover, these folk although preferring independence, if a choice between Peking and Lhasa were the only alternative, the present *status quo* would remain unaltered.

1. Spyi-K'yab—general coverer.
2. The types and the alleged immigration make us diffident about classing the Hor among true Turki tribes. But it must be remembered that the Yüeh Chi, or Chinese Goths (Getae) in their flight from the Hsiung Nu, left a remnant

which may easily have migrated south along a natural line of expansion, and, finally, settled in the hills and vales of the upper Yalung. The main branch, which conquered Graeco-Bactria, was known as "Tachari" Hor or Khor, and, indeed, gave the name to Graeco-Bactria, Ta Ha or Hsia. So it is not unlikely that the Hor are Sze Ma Ch'ien's "Lesser Yüeh Chi" (小月氏).

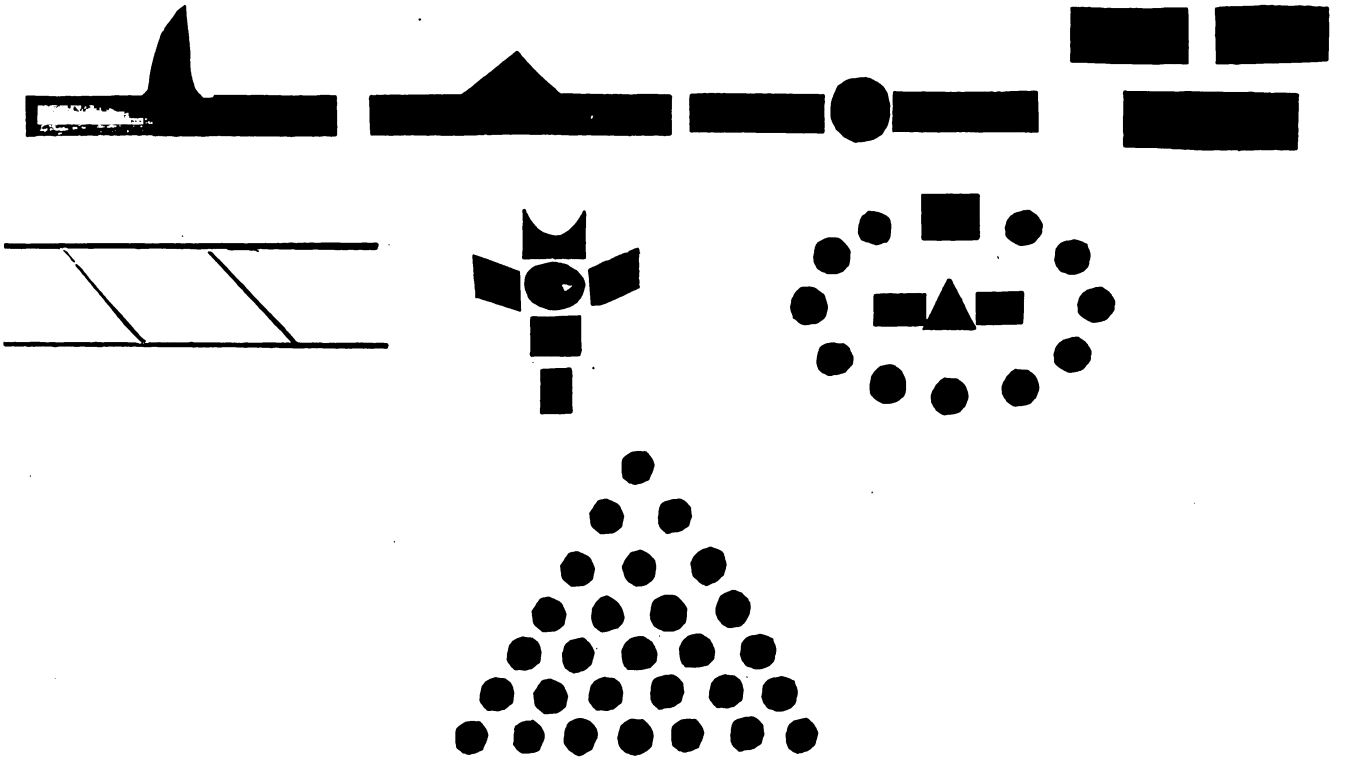
3. It was probably Kong Pa Long Chia who claimed the *j'us primae noctis* (Seignorial).
4. An ancient kingdom often mentioned with the Hor. It at least included the present Chagla.
5. The term "Yalung", an important river in eastern Tibet, is a corruption of the Tibet "Guya rung".

White Stone Ornamental Designs.

J. HUSTON EDGAR

I am sending you a sample of designs worked into the stone work of Tibetan houses between here and the Yalung, five days journey to the west. They are in every case fragments of white quartz. Their meaning is so far a mystery, but they almost incline one to think of them as the remains of a pre-Tibetan script. The fact that the fragments used in mosaics are of white quartz add to the interest. On the Litang side of the Yalung, the ox-head design is said to commemorate the death of the faithful animal whose soul is thought to reside in the figure. Considerable attention is paid to designs representing the Heavenly Bodies, and the last hierogiyphic of the first line is the sun rising over the earth. No doubt we have here not only ornaments, but talismans also. The last figures of lines 6, 7, 8, and the first of line 9, are window designs. It is interesting to remind readers that the Tibetan name for window is "The white hole".

Between here and the Yalung, apart from the above designs, fragments of white quartz are as prominent as in the Min and Kin valleys. They are invariably the means by which praying flags are supported, and the material of which incense stones are made. Then they adorn walls, graves, tops and corners of houses, shrines and the praying pyramids of inscribed stones. And on the hillsides the Tibetan letters of "Om mani pad me hum" worked on white quartz are not uncommon. But what is even more peculiar, the pyramids of manure are often adorned with a large conical, oblong or square piece of white quartz. Very often, also, where quartz is not plentiful, white-



QUARTZ ORNAMENTAL DESIGNS

wash takes its place; and the sacred juniper invariably emits large quantities of white, fragrant smoke during the daily morning sacrifice.

White is undoubtedly a sacred or lucky color and it may be the snow mountains, so often the fancied abode of gods, have sanctified both the color and the material under discussion. But in this part of Tibet the quartz, although sacred, is not a god. It is more of the nature of a fetish like the prayer flags and the fir poles with tufts of leaves at the top. Indeed, the prayer flag is probably an imitation of the moss draped trees of the sombre forests. In making inquiries about the meaning of the white quartz, the answer has invariably been "It is the capping stone". In other words it gives a beautiful finishing touch to all structures and eminences as the snow capped peak does to the mountains. But the "Mountain God" and the "Sky-God" both had dwellings far beyond the abodes of men and could any place be more suitable than those grandly beautiful and inapproachable regions of eternal snow so common on the eastern frontier of the Marches. That this is not all theory may be proved by the Tibetan custom today of piling up mounds of quartz and granite fragments to tempt the "Sky God" and the "Mountain God" to dwell among men. Such Bethels are common on all the great passes, and as they are passed by, the travellers energetic expressions of thanks and appeals for further mercies are uttered (*Gsol lo, gsol lo*). And it may be that in a former day the quartz cone being a suitable and desirable dwelling for the god, the soul of the sky or the mountain was a guarantee of safety and prosperity; and later when the original faith was forgotten the fetish and talisman phrase remained. But this only refers us back to pre-Buddhist animism, when very much in Nature, the sky, mountains, forests and rivers were given souls modelled on that of human beings, which like men had abodes where they dwelt.

Notes on Wei Chow

A. J. BRACE, F.R.G.S.

While visiting Wei Chow and other "inside" places in July, 1921, in company with Mr. J. H. Edgar, F.R.G.S., the writer was struck with the antiquity of Wei Cnow, and the mention of this observation was enough to start the veteran traveller and investigator of the Tibetan Marches on an interesting résumé of some of the ancient history of this most historic spot. We walked together to the middle of the old walled city of now less than a thousand people, and turning down a narrow alley came suddenly upon a venerable temple building with the two large gilded characters confronting us, 仁壽 Ren Sheo, or the Temple of "Benevolent Longevity". Here is situated the Hall of Brahm, with the characters 梵王 Fan Wang, over the doorway. Within is a famous tablet of the Tang Dynasty, A. D. 830. The pillar is octagonal. Quotations from the Sanskrit "Sutras" are clearly discernible. It is claimed to have been brought by a celebrated priest from Kabul. The writing is in Chinese script, but in the style of a famous senior wrangler of the Tang Dynasty. Right opposite is an obelisk of the Song Dynasty, made of carved Buddhas of rather unusual workmanship. In the Hall of Brahm there are three fine idols, excellent specimens of Tibetan workmanship. Also at the back is a brass idol apparently of Syrian or Persian cast of countenance.

On the hill above Wei Cnow there are extensive and interesting ruins. The mud walls reinforced with timber are still from fifteen to thirty feet thick and twenty five feet high in spite of the weathering of centuries. It is surrounded by a formidable moat. There are three great earth terraces also surrounding the ruins that were evidently used for defensive purposes. The position commands the two rivers and was strongly fortified from every angle of approach. Manifestly very ancient tradition makes it the capital of a very famous frontier warrior, 姜維 Chang Wei, of the Three Kingdoms. From references in the Wen Cnuan history it may represent the site of ancient Wen Cnuan Hsien. In Duhalde's History of China (1741 edition), Wei Cnow was for two hundred and fifty years the Eastern Capital of Tibetan kings who had an Imperial palace here. The remains and architecture would indicate that this is the site. With little effort quite ancient bits of pottery can be dug up. While on a brief visit for the purpose of photographing the ruins Mr. Edgar, with his cane, turned up a valuable piece of glazed pottery of ancient symmetrical design. We secured fair photographs. Overhanging clouds prevented our taking really good pictures. This very interesting ruin awaits scientific investigation.

N	Diar "	Fa "	Phy	Dia "	Diar "	Nos t	No "	Na	Mou	Ches Circ	Che none	Ch	L none	L	Ha	L	L	F	I Cir
1	14.8	82.4	73.2	12.5	12.7	5.4	4.2	77.7	6.	93.			19.	9.5	50.	24.6	10.8	43.9	
2	14.3	81.8	81.7	12.1	11.6	5.6	3.5	62.5	5.2				10.8	8.	47.6				
3	13.7	77.3	80.1	13.3	12.4	4.8	3.9	81.2	5.2				17.2	8.8	51.1				
4	15.5	81.9	76.7	13.7	12.7	6.5	4.	61.5	6.3	92.			20.4	9.8	41.1	25.7	11.	42.8	
5	14.9	81.8	73.4	11.5	11.7	5.2	4.2	80.8	5.4	84.7			19.7	9.8	49.7	25.	12.	48.	
6	15.	82.	73.8	14.	13.3	6.	4.	66.6	6.	88.			18.	8.8	48.8	24.5	10.5	42.8	
7	14.	82.1	73.3	11.5	11.4	5.	4.3	86.	5.2	78.			10.8	8.5	50.5	22.5	10.	44.4	
8	13.9	85.6	72.	11.2	11.4	5.2	4.3	82.7	6.	87.			19.	9.	47.3	24.7	11.	44.5	
9	14.2	92.2	69.2	13.2	12.7	5.	3.8	70.	5.	94.			18.	8.7	48.3	26.	10.5	40.3	
10	15.4	77.2	77.	13.1	12.5	5.1	4.	78.4	5.2	87.5			18.5	9.	48.6	25.3	10.2	40.3	
11	14.	83.5	74.8	12.4	12.1	5.	4.2	84.4	5.3	83.			17.	8.8	51.8	24.	11.	45.8	
12	14.2	95.	66.	12.7	12.	5.1	3.9	76.4	5.8	96.5			19.2	9.2	47.9	26.	11.5	44.2	
13	14.8	87.8	73.6	13.2	12.6	5.1	4.	78.4	5.5	89.			19.3	8.8	45.6	24.8	11.	44.3	
14	13.7	86.	68.1	11.2	11.2	4.8	3.8	79.1	5.	87.			17.8	8.7	48.9	24.	10.5	43.7	
15	13.7	114.	68.5	11.4	11.7	5.2	3.8	73.	5.3	85.			18.4	8.2	44.5	24.8	9.7	39.1	
16	14.	83.5	73.5	12.3	12.5	5.	4.8	96.	5.2	90.5			17.	8.8	51.7	25.	11.	44.	
17	14.	97.8	71.8	11.7	11.8	5.	3.3	66.	4.4	81.			19.	8.3	43.7	25.	10.5	42.	
18	12.9	82.1	70.5	11.9	11.2	4.6	3.	65.2	3.9				16.7	8.5	50.9	21.2	9.7	47.7	
19	13.8	71.7	75.4	12.7	12.1	4.6	3.2	69.5	4.9				17.5	7.9	45.1	23.2	10.	43.1	
20	14.	83.5	77.3	12.5	12.	5.	3.8	76.	5.2				18.	8.4	46.6	26.	11.	42.3	
21	13.9	82.7	76.3	13.1	12.7	4.9	3.8	77.5	4.9				18.	9.	50.	23.3	10.5	45.	
22	14.9	85.2	76.3	13.3	13.3	5.2	3.5	67.3	5.	98.			19.	9.3	48.9	25.	11.	44.	
23	14.8	79.	79.1	13.	13.5	5.	4.	80.	5.5	88.			17.4	9.	57.4	24.	10.	41.6	
24	15.	82.	77.3	13.2	12.9	5.	4.	80.	5.3	88.5			19.5	9.	46.1	26.3	11.2	42.9	
25	14.5	82.7	71.2	11.9	12.4	4.9	4.9	100.	5.1	84.			18.	8.9	49.4	24.	10.5	43.7	
26	14.5	87.5	73.9	12.7	11.8	4.9	4.	81.4	5.	83.			20.	9.4	47.	25.5	12.	47.	
27	13.7	92.7	71.7	11.7	12.7	5.	3.2	64.	4.9	84.			17.2	8.2	47.	23.	10.	43.4	
28	13.7	81.7	75.2	11.7	12.7	5.	4.	80.	5.3	87.			18.	9.	50.	24.	9.5	39.6	
29	15.	85.	71.4	11.5	13.5	5.1	4.1	80.3	6.	95.			18.	9.	50.	23.	11.	47.8	
30	14.9	106.	83.2	12.7	13.1	4.9	4.9	100.	5.2	88.			19.	9.3	48.9	25.2	11.	43.6	
31	14.7	79.6	76.9	12.8	12.8	5.2	3.9	75.	5.2	89.			18.5	8.2	44.1	26.7	10.7	40.	
32	14.7	80.2	76.5	13.2	12.7	5.2	4.	76.9	5.				17.5	8.3	47.4	23.	10.	43.4	
33	13.7	74.4	85.6	12.2	12.2	4.6	3.7	80.4	5.				15.7	8.	50.9	23.	10.	43.4	

ANTHROPOLOGICAL DATA ON TRIBESMEN OF EASTERN THIBET

W. R. Morse, M.D.

This data, which is only a preliminary report, therefore not analyzed, was secured at Tatsienlu with the aid of Dr. Andrews.

After data is secured from a larger number the full report will be published at a later date. It was thought advisable to publish this report now, as the writer is proceeding on furlough at an early date and will not be in China for the next two years.

Number	Name	District	Sex	Approx. Age	Stature	Max. Span	Excess of Span over Height	Sitting Height	Sitting Height per cent. of Total Height	Head: D. Ant. Post. Max.	D. Lateral Max.	Cephalic Index	Height Base of Meatus Line to Bregma	Mean Cephal. Height Index	Cephalic M. Module	Cephalic Mod. vs Height	Face: Mention-nasion	Mentoncrinion	Height of Fore-head (Nasion-crinion)
1.	Ma	Mina	M.	44	173	187	14.	92	53.2	19.4	15.7	80.9					12.2	20.2	7.8
2.	Ndru	Mina	F.	35	149	147		79	53	18.9	15.5	82.					11.7	17.5	5.2
3.	Ma	Mina	F.	21	153.5	154.5	1.	83.2	54.2	18.1	14.8	81.2					10.6	17.1	6.7
4.		Mina	M.	53	172	182	10.	96	55.8	22	16.3	74.					12.7	20.2	8.3
5.		Damba	M.	45	176	179.3	3.3	89	50.5	19.5	14.8	75.8					12.2	20.3	8.5
6.		Chambo	M.	44	173.5	173.4		91.5	52.7	20.5	17.3	84.4					12.3	20.3	8.3
7.			M.	65	154	145.5		82	53.2	17.8	14.8	83.1					11.5	19.1	7.6
8.	Re		M.	61	171	171		88	51.4	19.3	15.3	79.2					11.9	19.3	7.8
9.		Gantze	M.	30	160.5	168	8.	87	54.2	18.5	15.3	82.7					13.1	20.5	8.8
10			M.	25	163	164	9.	90	55.2	19.8	15.8	79.9					11.9	20.	8.3
[illegible]			[illegible]	34	165	157		83.5	[illegible]	[illegible]									
						[illegible]77	7.1	85.2											
						[illegible]4.5	1.	87.2											
						65.5		87.2											
						65.5	5.5	84.2											
						[illegible]		81.2											
							4.5	83.8											
								79.2											
							1.8	86.7											
								86.7											

Number	n. Bizygom Max.	cial Index	siognomic Index	m. Frontal Min.	n. Bigonial	e: Height Nasion	se, Widt Max.	sal I	th L	t, (umferer	st, D. A Post.	est Index	eft hand Length	eft hand Width	nd Index	eft Foot Length	eft Foot Width	oot Index	eft Leg cum. Max.

No.	Skin Color	Hair				Moustache and Beard		Eyes		Forehead	Supraorbital Ridges
		Color	Character	Gray	Lost	Color	Character	Iris	Conjunctiva		
1	52	black	straight	no	no	black	wavy, scanty	brown	yellow white	slope. med.	not pron.
2	39	"	"	"	"	none	none	"	"	straight	" "
3	40	"	"	"	"	"	"	lt. brown	white	straight	" "
4	25	"	"	"	"	black	moust. heavy beard, scanty	brown	yellow white	sloping, med.	slt. pron.
5	46	"	"	"	"	"	scanty	"	" "	straight	slt. pron.
6	39	"	"	yes	"	"	"	"	white	med. slant	fr. pron.
7	53	"	"	"	"	"	"	"	yellow white	slt. slant	not pron.
8	47	"	"	"	some	gray	"	lt. brown	" "	" "	" "
9	32	"	wavy	no	no	black	"	brown	" "	" "	" "
10	31	"	straight	"	"	"	"	"	" "	" "	" "
11	26	"	wavy	yes	"	"	very scanty	"	" "	med. slope	" "
12	24	"	"	no	"	"	" "	"	drt. yel. white	" "	" "
13	40	"	"	"	"	"	" "	"	" " "	" "	" "
14	39	"	"	yes	"	brownish	" "	gray-brown	" " "	straight	" "
15	40	"	"	no	"	black	" "	brown	white	"	" "
16	24	"	"	"	"	"	" "	"	"	slt. receding	" "
17	30	"	"	"	"	"	" "	lt. brown	pearly white	straight	" "
18	53	"	"	"	"	none	none	" "	yellow white	"	" "
19	47	"	"	"	"	"	"	brown	white	"	" "
20	39	"	"	"	"	"	"	"	"	low. slt. reced.	" "
21	24	"	"	"	"	"	"	"	yellow white	" " "	" "
22	53	"	"	"	"	black	very scanty	dk. brown	" "	" " "	" "
23	24	"	"	yes	"	"	quite heavy	" "	" "	" " "	" "
24	47	"	"	no	"	"	very scanty	brown	white	receding	" "
25	47	"	"	"	"	"	" "	"	dirty white	"	" "
26	47	"	"	"	"	"	" "	"	" "	straight	" "
27	24	"	"	"	"	"	" "	"	" "	slt. receding	" "
28	32	"	"	"	"	"	" "	"	" "	" "	" "
29	32	"	"	yes	"	"	scanty	"	" "	" "	" "
30	29	"	"	"	"	gray	rather heavy at mouth cor.	"	inflamed	" "	" "
31	24	"	"	no	"	black	scanty	"	white	" "	" "
32	47	"	"	"	"	"	quite heavy	"	"	" "	" "
33	52	"	"	"	"	none	none	"	"	" "	" "

No.	Eye-slits	Malars	Nose	Nasion Depression	Lips	Alveolar Prognathism	Chin	Angle of Lower Jaw	Calves
1	straight	fairly pron.	straight	fr. well mrkd.	medium	straight	straight	medium	small
2	"	" "	flat	none	"	medium	"	"	"
3	"	medium	straight	slight	full	"	"	"	"
4	"	pronouuced	long, st.	"	medium	slight	narrow, slt. reced.	"	"
5	"	med. pron.	thick tip	"	full	"	slt. receding	"	"
6	"	not pron.	curved	"	medium	"	straight	"	"
7	"	fairly pron.	retrousse	"	"	"	slt. receding	"	"
8	"	Not pron.	straight	very slight	thin	no teeth	straight	"	"
9	slt. slant	" "	Roman	none	medium	slight	"	"	"
10	straight	pronounced	straight	"	"	"	protruding	"	"
11	slanting	"		slight	thick	marked	receding	"	"
12	"	slt. pron.	"	"	medium	slight	protruding	"	large
13	straight	" "	"	"	"	med. pron.	slt. receding	"	small
14	"	pronounced	"		"	slight	straight	"	"
15	slanting	"	"	very slight	"	"	very slt. reced.	"	"
16	straight	slt. pron.	"	depressed	"	"	" " "	"	"
17	"	" "	"	very slight	"	"	" " "	"	"
18	"	" "	"	" "	"	"	very slt. protrud.	"	"
19	slt. slant inner canthus lower	" "	"	medium	"	"	" " "	"	"
20	straight	pronounced	"	"	full	"	" " "	"	"
21	"	"	"	"	medium	"	" " "	"	"
22	"	slt. pron.	"	slight	"	"	straight	"	"
23	"	pronounced	"	depressed	"	"	"	"	"
24	slant (See 19)	slt. pron.	"	slight	thick	medium	slt receding	"	"
25	straight	pronounced	"	depressed	"	"	" "	"	"
26	"	slt. pron.	"	slight	medium	slight	" "	"	"
27	"	not pron.	"	none	"	"	" "	"	"
28	"	slt. pron.	crooked	slight	"	"	" "	"	"
29	"	" "	"	"	thick	"	straight	"	"
30	(See 24)	pronounced	flat	very marked	"	marked	protruding	"	"
31	straight	not pron.	straight	slight	medium	medium	straight	"	"
32	"	slt. pron.	"	"	thick	"	slt. receding	"	"
33	"	pronounced	"	"	"	"	straight	"	"

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slt. receding
straight

thick

not pron.
slt. pron.
pronounced

straight

31
32
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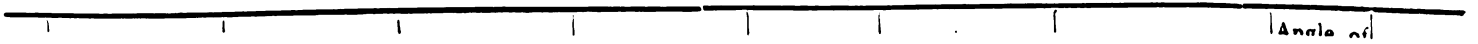
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