

GEOGRAPHY

Historic Maps of Interior China Now Gift to Library

Surveying Documents Outlining Topography Of 2,800 Square Miles Were First Ever Made There By Whites

WHITE men's first maps of interior China, made under military guard years ago while the smoke of the Boxer Rebellion still hung in the oriental sky, have just been turned over to the Library of Congress by R. H. Sargent, veteran topographic engineer of the U. S. Geological Survey.

For thirty-two years Mr. Sargent has treasured these maps while he journeyed all over the Americas surveying and mapping. Now, as he leaves Washington for his 27th trip to Alaska, his original plane table maps of China go to the national library for safe keeping.

Stocky, with tanned cheeks and a thatch of snow-white hair, Mr. Sargent's eyes twinkled as he went over the maps he has treasured so long.

"Bailey Willis, Eliot Blackwelder and I got into China just after the Boxer uprising had been quelled," Mr. Sargent said. "The Carnegie Institution asked us to make a geological and topographic study of the mountain country west of Peiping near the Great Wall."

Bailey Willis is the nationally known geologist now emeritus professor of that science at Stanford University. Dr. Blackwelder is the present professor of geology in the same school.

The expedition entered China in propitious circumstances. Official China, at least, was very, very well behaved just after the Boxer episode. From Tientsin to Peiping travel was by train. And then a hundred miles westward the three Americans came to the railhead.

Military Protection

Out came instruments and the party went to work. And work they did, fast and furiously, under protection of a military escort to keep off Chinese bands who still didn't know the Boxer affair was over.

The first bench mark, Mr. Sargent recalled after a look at his time-worn maps, was at 42 feet above sea level. That was on January 2, 1903. Fifty-eight days and 200 miles later their survey showed an altitude of 10,000 feet. In only 21 working days they had obtained observations

on enough peaks, crests, ridges and valleys to map, for the first time accurately, some 2,800 square miles of territory! Perhaps that's not much as judged by present-day aerial mapping, but in 1903 walking was the mode of transportation in China.

What Willis, Blackwelder and Sargent accomplished in three weeks' working time is comparable to the normal mapping progress of decades of time and generations of men in better known countries.

Finally at 10,000 feet they reached Wu-tai-shan, then the largest Buddhist center in northeastern China. Its 28 statues to Buddha stared mystically down on them.

Slept in Temples

"We slept in temples that night," Mr. Sargent recalled.

"Didn't you have trouble with the natives, Mr. Sargent?"

"No, we didn't. The word passed ahead of us from town to town that white men were coming. At Wu-tai-shan only seven white men had visited there before. At the more remote places we were the first.

"Because news of our coming preceded us, what corresponds to the town's mayor greeted us at each place. If we didn't sleep in his house the town's temple was at our disposal. And while we slept a runner raced ahead to prepare for our arrival at the town where we would stop the next night, some ten or twenty miles away. The Chinese, you know, don't live in scattered houses. They like their towns.

"At each settlement I would seek out the oldest, and supposedly the wisest graybeard and have him tell me the name of the place. I would write it down phonetically, as it sounded to me, and have him write down the Chinese characters for it. When we came back to America Chinese students in our universities took my spelling, and the Chinese characters, and figured out where we stopped.

"From the mountain country we took a cross country jump some 225 miles.

As far as the Hwang Ho (Yellow River) we traveled in the Chinese two-wheeled carts. My principal recollection of that stage of the journey was the absence of springs in the carts.

"Then, crossing the Hwang Ho we kept on to the Hwan River farther west. On this stretch the trails were so narrow that even the burros had difficulty.

"Finally reaching the Hwan we floated down stream for a hundred miles on boats, taking time traverse measurements of the distance covered.

"That stage of the journey was comparatively easy but we had yet to reach the Yangtze River, another hundred miles to the south. The only way to get there was on foot. And we walked all the way taking stadia traverse measurements en route.

"How do you take stadia measurements? Well your surveying telescope has two spiderweb threads inside it spaced closely together. As you look through the instrument the tiny space between them will cover larger and larger objects as you move away. At one hundred yards a small tree may just be enclosed in the field of view. At two miles the whole side of a house may cover the same angle.

"To take stadia measurements your aide goes ahead with his surveying rod and holds it up while you see how much of it is enclosed between the cross hairs inside the instrument. Then by similar triangles you can calculate how far away the rod is. Finally you pick up your surveying telescope, move ahead of the rod and sight back at it. Thus the party works its way across country as we did.

"The rest of the trip? Well, there's not much left to tell. We hit the Yangtze river at the head of steamer navigation some 1,100 miles inland from Shanghai and caught the next boat."

The geological and topographical results of the expedition have been published in two volumes by the Carnegie Institution of Washington under the title "Research in China." Much of the material is still the best known on the region today.

Science News Letter, June 15, 1935

MEDICINE

Egyptian Drug Addicts Now In Grip of Tea Addiction

DRUG addicts in Egypt have turned to tea. They are spending almost all their wages on tea and cannot work without it. Their health and physique are breaking, and a village headman reports that where formerly four men hoed an acre it now takes eight.

Strong tea dust is boiled and reboiled, and the resulting beverage is taking the place of the morphine and cannabis formerly consumed by many laborers, reports the London correspondent of the Journal

of the American Medical Association, who gives as his authority Russell Pasha, chief of police of Cairo. (*Journal American Medical Association*, June 8).

Science News Letter, June 15, 1935

PHYSICS

Einstein's Equivalence Law Is Again Proved Correct

Cornell University Scientist Using Theoretical Method Reaches Same Conclusion as Did Aston

NEW PROOFS of Einstein's law that mass and energy are the same thing in different forms has been evolved by Prof. H. A. Bethe, of the Cornell University department of physics.

The Cornell work removes an obstacle from one of the most important advances now under way in science, the investigation of the atomic nucleus. In the disintegration of the lightest elements, such as deuterium and lithium, the loss of mass was offset by an equivalent amount of energy, thus confirming Einstein's law.

Apparent contradiction to this law had arisen when investigators disintegrated heavier nuclei, such as beryllium and boron. Not enough energy seemed to be given off when these elements were disintegrated. This cast doubt on the validity of the Einstein formula and caused consternation in this field.

Starting from the point that most nuclei disintegrate into helium, Dr. Bethe

suggested that the mass of the helium nucleus was greater than previous measurements had indicated.

He was able to compute the atomic weights of all light elements to a greater accuracy than any previous method in chemistry or physics had given. With these more accurate masses Einstein's law was found to hold for every nuclear disintegration thus far investigated.

By a coincidence an independent investigation, conducted by Dr. F. W. Aston, well-known British physicist, confirmed by direct measurement the most important of the new atomic weights which Dr. Bethe had arrived at by the theoretical method. With confidence again restored in the validity of Einstein's law of the equivalence of mass and energy, the path is now open for probing the remaining secrets of the structure of matter which are bound up in the invisible nucleus of the atom.

Science News Letter, June 15, 1935

PALEONTOLOGY

Quintuplet "Loch Monsters" Fossils Found on Sakhalin

QUINTUPLETS in the "Loch Monster" field feature the newest reports from the Japanese-owned end of the Island of Sakhalin, just off the coast of mainland Asia. To be sure, they are all dead—have been for something like thirty million years. They are only fossils. But quintuplets!

The find, made by Dr. Ko Nagao, Japanese paleontologist, is rated as one of the most notable fossil discoveries of recent times, because the creatures represented by Dr. Nagao's five perfect skele-

tons had been known hitherto only as fragmentary remains.

They appear to have been animals more or less like sea-cows, but with flipper-like limbs aft as well as forward, perhaps permitting them to get about to some extent on land—therefore true amphibian "dragons." They are known to scientists as *Desmostylus japonicus*.

Dr. Nagao is a professor of geology in the Imperial University of Hokkaido, Japan's northern island. He gained distinction several years ago through his dis-



QUINTUPLET "LOCH MONSTER"

Fossil bones of great creature found on the Japanese-owned end of the Island Sakhalin.

covery of a fossil of an ancient, dragon-like monster, known as *Dracodon*.

Not much has been known about *Desmostylus*. The skull of one was unearthed in Mino Province, Japan, back in 1898; then, in 1907, another skull was discovered in the United States.

It began to look as if these would be the only *Desmostylus* fossils to be discovered. So with this meager material geologists set about conjecturing the creature's appearance and habits. They came to the conclusion that it must have been an herbivorous mammal, with the sea for its home, and similar, perhaps, to the manatee, or sea-cow.

In May, 1932, someone brought another head-fossil of *Desmostylus* to the University. This led Dr. Nagao, in the summer of the same year, to begin his search for a perfect and whole specimen. Up the River Kami, up its tributary the River Keton, he searched; finally his zeal was crowned with success.

His discovery is considered particularly valuable, because the excellent condition of these new fossils will enable scientists to make more accurate deductions as to the habits of these animals.

Dr. Nagao's conclusions differ from those previously accepted. It can not be like the manatee or sea-cow, which has flippers in place of fore-feet and only rudimentary signs of back feet; for in the case of *Desmostylus* the construction of the pelvic girdle indicates the creature had back flippers as well as front ones, and consequently was an amphibian.

From the rock strata in the neighborhood, Dr. Nagao is inclined to think that the *Desmostylus* became extinct in the middle of the Tertiary period.

Science News Letter, June 15, 1935