though the average price of zinc was lower in 1928 than in 1927.

The quantity of crude ore treated in 1928 was 3,770,070 tons, which was about 569,000 tons more than in 1927. Only about 200 tons of gold ore were treated; the larger portion of the remainder was zinc ore, lead-zinc ore and copper ore sent to concentrating plants. The total quantity of copper ore concentrated and directly melted amounted to 833,325 tons. The pyritiferous magnetic ore of Pennsylvania yielded a large output of copper concentrates containing some gold and silver.

The mine production of gold increased from $17,074 in 1927 to $35,097 in 1928. The gold recovered from placer mines was $820 from small mines in Georgia, North Carolina, South Carolina and Tennessee. There was more development at gold lode mines in 1928 than in 1927. Siliceous ores, all from Georgia and North Carolina, yielded $1,120 in gold; pyritiferous magnetite ore from Pennsylvania yielded $20,506 in gold, and copper ore from Tennessee and North Carolina yielded $10,810 and $1,841 in gold, respectively.

With the exception of 16 ounces, all the silver output (102,501 ounces) in 1928 from lode mines was derived from copper ore and pyritiferous magnetite ore. Tennessee yielded 75,556 ounces, North Carolina 19,040 ounces and Pennsylvania 7,905 ounces. Placers yielded 3 ounces of silver.

The quantity of copper produced increased from 22,327,734 pounds in 1927 to 29,559,146 pounds in 1928. The output from Pennsylvania was 4,977,885 pounds and the remainder was from ore smelted by the Tennessee Copper Co., and the Ducktown Chemical & Iron Co., in Polk County, Tennessee. About half the copper recovered at Tennessee smelters was from copper ore mined and shipped from the Fontana mine in Swain County, North Carolina.

As there was only one shipper of lead ore or concentrates in the eastern states in 1928 the output can not be given. Lead-zinc ore was mined and milled at the Austinville mine of the Bertha Mineral Co., in Wythe County, Virginia.

The mine production of zinc increased from 118,170 tons in 1927 to 144,045 tons in 1928, most of which is derived from zinc ores containing little or no lead. The large producing zinc properties in the eastern states are those owned by the New Jersey Zinc Co., in New Jersey, the St. Joseph Lead Co., in St. Lawrence County, New York, the Bertha Mineral Co., in Wythe County, Virginia, and the American Zinc Co., of Tennessee, at Mascot, Jefferson County, Tennessee. Other shippers of zinc ore, mainly carbonates, in 1928 were the Universal Exploration Co., F. C. Caldwell, and the Embree Iron Co., all of Tennessee.

COLLECTIONS FOR THE FIELD MUSEUM FROM EASTERN ASIA

THE work of the William V. Kelley-Roosevelts Expedition to Eastern Asia for the Field Museum of Natural History has been concluded with the return of Herbert Stevens, leader of the last of its several divisions to remain in the field, according to an announcement made by Stephen C. Simms, director of the museum.

Mr. Stevens is now at the museum supervising the work of unpacking the collections he brought back, comprising some 500 mammals, about 1,100 birds, some 500 reptiles and fishes, approximately 5,000 butterflies, 2,000 moths, 500 beetles and bugs and about 10,000 flowers, plants and shrubs. Many of these are rare species, some unknown to science. These collections were made by him during a little less than a year's journeyings through the Chinese provinces of Yunnan and Szechuan, and along the Tibetan border. In the course of his work Mr. Stevens traveled more than 1,700 miles by trail across China, about 1,000 miles on foot and in addition traveled many miles by water. He was the only white man in his division of the expedition, and headed a caravan of native skinners, porters and other servants, with a train of pack animals consisting sometimes of yaks, but more often of mules and ponies. At times only human porters could be used.

The country which Mr. Stevens traversed is infested with bandits, and inhabited by a half-starved population suffering from the chaotic conditions in China. The journey through this region was fraught with many perils, but Mr. Stevens and his caravan came through all difficulties safely. At one time between camps their food supplies ran short, and for some three weeks they were forced to live on half rations, but by piecing out with food intended for bait in animal traps they were able to tide over until new provisions could be obtained.

Mr. Stevens, who was formerly connected with the British Museum, started into the interior with Colonel Theodore Roosevelt and Kermit Roosevelt, who were in command of the expedition as a whole. He separated from them to perform his special work shortly after entering Yunnan. From then on most of his traveling was done in a mountainous country averaging between 10,000 and 15,000 feet elevation, intersected by many rivers and heavily forested in many places. The larger part of it was in the land of the strange and exclusive Tibetan lamas, who despite their forbidding reputation Mr. Stevens found quite hospitable, though he could never be sure when trouble might arise. It is a land practically untouched by civilization, with no ordinary means of transport or communication, no Christian missionaries and much

of it never before explored by white men. Mr. Stevens was cordially received by several lama kings, who assigned numbers of their subjects to assist him in proceeding from one camp site to another. In several places he stopped overnight under the roofs of lama monasteries.

At one point along the Yalung River, a tributary of the Yangtse, an extraordinary means of crossing had to be employed. There is a gorge here several hundred feet deep, and the only means of getting over is by sliding down an inclined bamboo rope which is stretched across. Men, animals and baggage were fastened into slings and sent flying perilously across by means of a sleeve support which slid along the bamboo rope, their progress being accelerated by the fact that the rope was oiled with butter.

In many villages famine was so rife that when Mr. Stevens and his caravan entered the people would fall on their knees and beg them not to stay more than one night, fearing that they would cause further food shortage.

At one time, while aboard a boat on the Yangtse River, Mr. Stevens and his party were fired upon by soldiers to force them to come into a tax station, but no one was struck by the bullets. To reach Shanghai for embarkation to America, Mr. Stevens had to make a long journey by bamboo raft on the Ya River, and then by Chinese junk and river steamer on the Yangtse.

ELECTRICAL APPARATUS PRESENTED BY COLUMBIA UNIVERSITY TO EDISONIA

MORE than one hundred and ninety pieces of historical electrical apparatus have been presented to Henry Ford by Columbia University for display in Edisonia, the museum Mr. Ford is founding in honor of Thomas Edison at Dearborn, Michigan, according to an announcement recently made by Professor Walter I. Slichter, of the department of electrical engineering.

The gift was authorized by the department of engineering after Mr. Ford had visited it and had personally inspected the collection of old electrical apparatus. It constitutes practically the entire museum formerly housed in the electrical engineering laboratories and collected through the efforts of Dr. Francis Bacon Crocker after he had founded the department of electrical engineering in 1889. Many of the pieces had been particularly desired by Mr. Ford, because of their connection with the early stages of Mr. Edison's work on the electric lamp. Because of lack of space, the apparatus and machinery were not easily available for public inspection in the Engineering Building at Columbia.

Among the most valuable apparatus sent to Dearborn are one of the several Wallace arc light generators now in existence, the two Edison bi-polar generators which supplied Columbia University with electricity when it was located at Forty-ninth Street and Madison Avenue, and the original loading coil invented by Professor Michael I. Pupin at Columbia and destined more than any other single factor to perfect the quality of speech transmitted over telephone lines.

Other important pieces are a die used by Mr. Edison to press out the carbon filaments of his early electric lamps, an Edison chemical ampère-hour meter which was designed to measure current commercially, but it proved to be inaccurate, and three models demonstrating the Edison 3-wire system of the flow of electricity by the analogous flow of water.

Two photographs were included, one an autographed photograph of Mr. Edison and the other a group picture of Mr. Edison, Professor Pupin, Dr. Crocker and C. S. Darling, formerly superintendent of buildings at Columbia. Mr. Darling left the university to become general manager of one of Mr. Edison's laboratories and was killed soon afterwards by an explosion in the plant.

The group picture was one of a series of portraits of famous engineers collected by Professor Morton Arendt, and was relinquished by Professor Arendt after Mr. Edison had agreed to replace it with a new photograph of himself.

Inscribed on the photograph of Mr. Edison is the original version of the inventor's famous paraphrase of Milton. He wrote: "My dear Crocker—a new motto for your boys—they also serve who hustle while they wait." Mr. Edison's admonition has been repeated to thousands of engineering students throughout the country.

After his visit to Morningside Heights, Mr. Ford carried away in his own car several pieces which he especially wanted. They were a 250-watt Edison bi-polar motor, a 1.5 kilowatt Edison bi-polar generator, a 7.5 kilowatt Edison bi-polar generator, the autographed photograph of Mr. Edison, the Wallace arc light generator and an Edison solenoid ammeter.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE OF SOUTHERN CALIFORNIA

MEMBERS of the Society for Experimental Biology and Medicine residing in Southern California met recently at the University Club in Los Angeles for dinner, at which time they discussed the advisability of holding meetings at regular intervals. Eleven members were present and gave brief discussions on the following topics of current research:

B. M. Allen, University of California at Los Angeles, Factors that Control Growth and Development in Tadpoles.

O. L. Sponsler, University of California at Los Angeles, Molecular Structure of Protoplasm.