tions of his woodcraft, to learn to chop timber right and left handed; and the carpenter may be frequently seen using the saw and hammer in either hand, and thereby not only resting his arm, but greatly facilitating his work. In all the fine arts the mastery of both hands is advantageous. The sculptor, the carver, the draughtsman, the engraver and cameo-cutter, each has recourse at times to the left hand for special manipulative dexterity; the pianist depends little less on the left hand than on the right; and as for the organist, with the numerous pedals and stops of the modern grand organ, a quadrumanous musician would still find reason to envy the ampler scope which a Briareus could command." That all this is true is abundantly shown by the numerous examples cited by the author, — from the greatest of artists, the left-handed Lionardo da Vinci, to the distinguished ex-president of the American scientific association, Prof. Edward F. Morse, and (we may add) to Dr. Wilson himself, both of whom are known to be accomplished draughtsmen with this too-neglected hand. In view of these facts, it is evident that few more important subjects can be offered for the consideration of educators than that which is presented in this impressive essay.

THE HUPA INDIANS: AN ETHNOGRAPHIC SKETCH.

ONE who has charge of a museum is frequently told, "I should be delighted to help you if I only knew what you want." In the former articles of this illustrated series special arts have been elaborated in order to explain the completeness desired in anthropotechnic collections. The present paper appeals to the traveller, the missionary, the army or navy officer or private, and shows what any one of them may do at his leisure.

Since his expedition to Point Barrow, Lieutenant Ray, U.S.A., has been stationed at Fort Gaston, in north-west California, on the lower Trinity River. Here is the Hupa reservation, and here dwell what are called the Hupa Indians, — bands known by various names, but nearly all belonging to the Pacific coast branch of the great Athabascan stock, represented by the Kulchin and Tinné on the north, and by the Apache and Navajo on the south. Before these aborigines were terrorized by the white miners and fishermen, they were, in the language of Stephen Powers, the Romans of California. Although they have been calmed down to the normal stagnation of a government reservation, there remains a great deal of the old art and civilization among them. They are really in the neolithic age, and may tell us much about the way in which Frenchmen of the Robenhausien epoch lived.

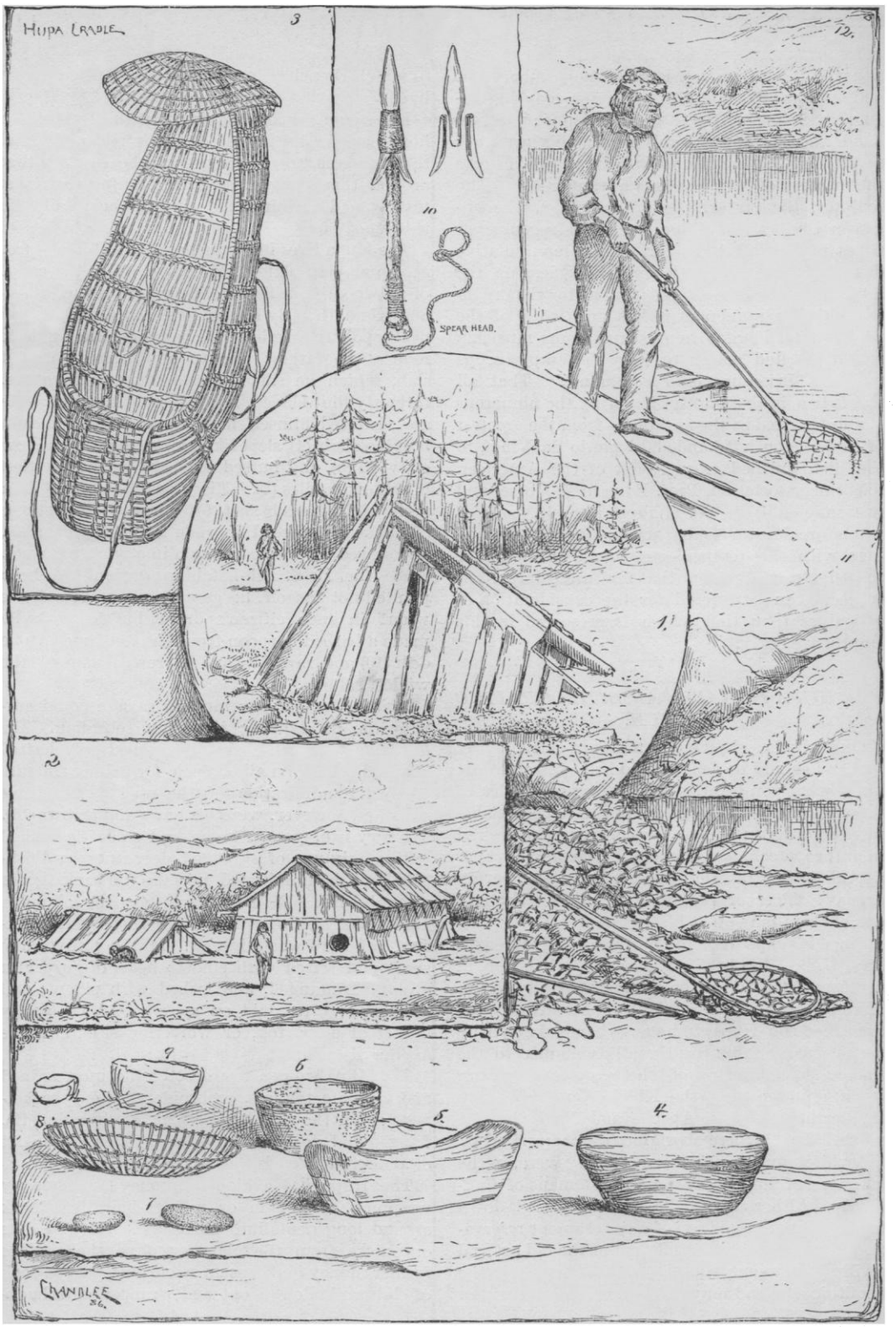
If we commence by saying that their mountain homes are in the midst of giant redwoods, that their streams are the resorts of the salmon, that around them grow the materials for the finest textiles and clothing, the story of their daily life is blocked out.

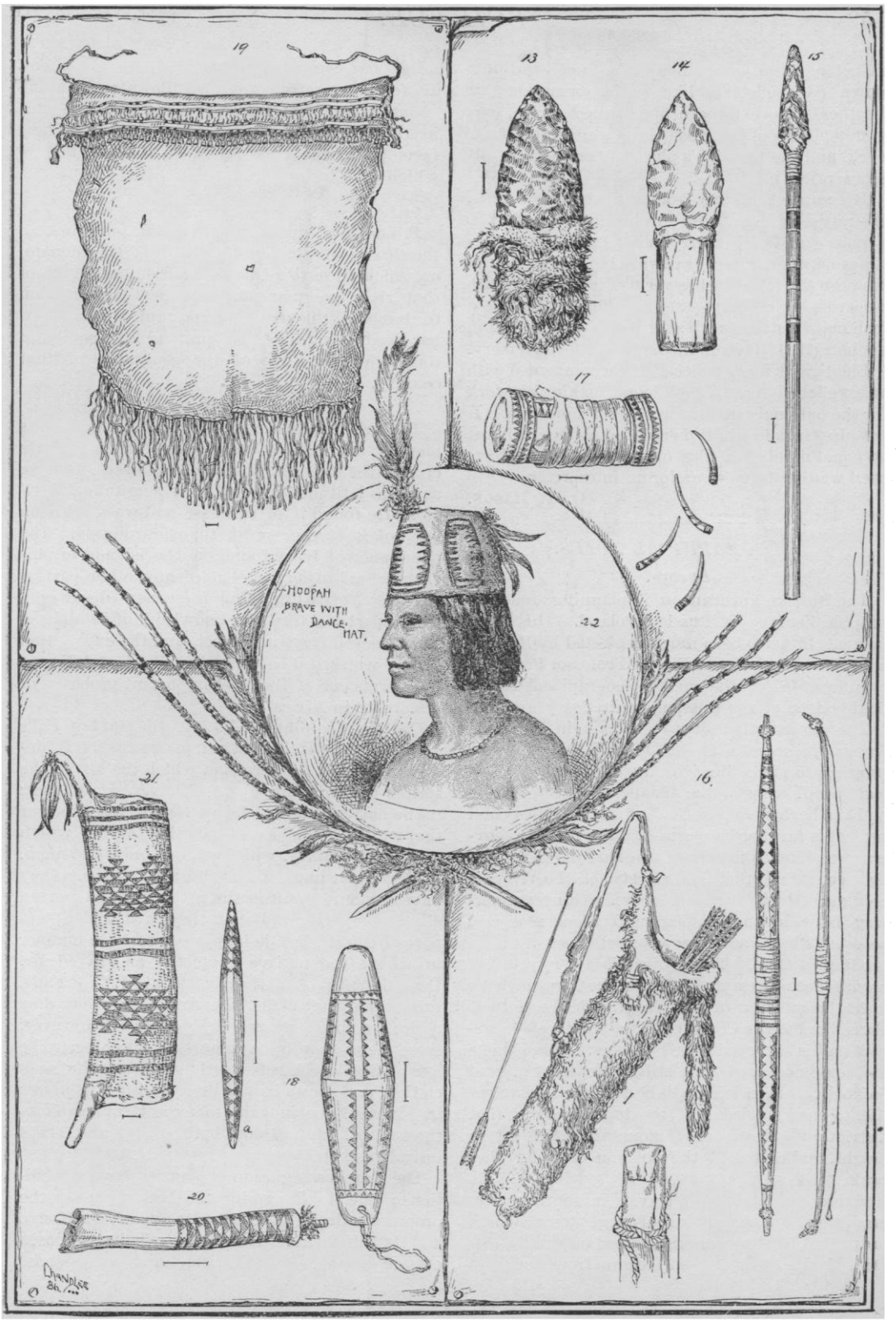
The Hupa lives in a puncheon or slab house (see accompanying plate, 1, 2), and paddles his canoe of redwood in the fish-prolific waters of the Trinity and Klamath. By means of elkhorn wedges and neatly polished, bell-shaped hammers, he is able to reduce the largest tree to any desired form of slab, which he smooths and shapes with adzes, formerly flint-bladed, now edged with steel. He also cleansed himself in a sweat-house, sat on a humble chair (4), slept like an oriental on a pillow of wood (5), and nursed his baby in the prettiest of willow cradles (3). His mush he cooked in a water-tight grass basket (6) by means of hot stones (7), baked his bread in rude soapstone pans (9), and served his roasted salmon in a wicker tray (8). Since the U. S. fish-hatching station has been planted not far off, he gently scoops around the wharf in rude citizen's dress; but formerly he made a barbed harpoon from the leg-bone of the deer (10) and rawhide, and therewith landed the wildest salmon.

Neither ancient nor modern savage could surpass him in chipping jasper and obsidian. His *lames de silex*, whether fur-wrapped (13), hafted in wood (14), or on a long pole for fishing (15), are justly the admiration of the world. His finest weapons, however, were his bows and arrows (16). The bow is of yew or cedar, and so deftly backed with a mixture of shredded deer-sinew and fish-glue that the uninitiated mistake the backing for a tough bark. His arrow consists of the following parts: shaft of willow or other soft wood; foreshaft of hard wood, inserted in the pith of the shaft and seized with sinew; head of jasper or obsidian, untanged, and lashed with sinew; and the feather often laid on spirally. Add a pretty quiver of otter, fox, or wolverine skin, and the artillery is complete.

The Hupa women are among the most refined and delicate tanners, embroiderers, and basket-weavers in the world. A cloak of deerskin (19), fringed and decked with colored grass, or a skirt of pine-nuts, etc., is a most graceful drapery.

The Hupa has a kind of money (17) made by wrapping snake-skin or maiden-hair fern bark around long dentalium shells (17). He also cuts out disks from the clam or olive shells. The former money he keeps in a curious pocket-book of elkhorn hollowed out and wrapped with buck-


HUPA CRADLE
3
10
SPEAR HEAD.
12
11
1
2
9
6
8
5
4
7
CHANDLEE
86


19
13
14
15
17
HOOPAH
BRAVE WITH
DANCE
HAT.
22
21
16.
18
20.

skin: the latter he strings on a thong and rubs down on sandstone, like a Marquesas-islander. Feathers, however, are his greatest pride, and gaudy plumes of the woodpecker's crest, the duck's neck, and the blue-jay's plumage, are held at fabulous prices (22).

His music he draws from the whistle of bone, the rattle, and the drum; in his dances he carries a queer wand of basketry in his hand (21); sometimes he wears a 'spritsail yard' in the septum of his nose (20); he crushes vermin in his head with a spatula of elkhorn (18); and, finally, he has a fashion of putting very sharp pins of elkhorn in his hair (18*a*) to pierce the hand of the adversary.

Lieutenant Ray's collection is accompanied with an excellent descriptive catalogue, making his work for the national museum worthy of imitation. It has also the additional merit of explaining almost an equal number of nice old specimens that have been waiting forty years for an interpreter.

O. T. Mason.

GEOGRAPHICAL NOTES.

Europe.

The Russian government is planning an ethnographical survey of Russian Poland. This province has hitherto been much neglected by Russian scientists, and is, according to Professor Petri, not even included in the great 'Geographical statistical lexicon of the Russian empire.'

The construction of two canals in southern Russia is projected. The Duke of Leuchtenberg proposes to pierce the isthmus of Perekop. This canal would shorten the distance between Odessa and the harbors of the Gulf of Azov. The second project is far more important. The Russian government intends to connect the Don and the Volga by a canal, and the country between the rivers is being surveyed for the purpose. Thus, a waterway between the Caspian and Black seas will be established, and a new outlet opened to the produce of Asia. The project is a very old one, having been attempted by Peter the Great in 1696.

At the meeting of the Geographical society of Paris, Jan. 7, the Count of Saint-Saud gave a report on his surveys in the Pyrenees. Large tracts of these mountains are still little known, and Saint-Saud's researches will be a valuable contribution to our knowledge of the topography of that district. He discovered a mountain 9,500 feet in height, and corrected the position of some other peaks.

Feddersen, during his travels in southern Iceland, found the remains of large trees, which prove that forests formerly existed on that island. Dr. Labonne, who crossed Iceland from south to north last summer, makes a similar statement. He found some remains of willows and birches about sixteen feet below the surface, embedded in the silicious deposits of the Geyser. These facts prove the correctness of the old 'Sagas,' which refer to forests in Iceland.

Asia.

P. Lombard, missionary in Siam, publishes, in the *Missions catholiques*, a map of the Menam, on which all settlements situated on the banks of that river are marked. The new information contained in this map is important, as Lombard has lived a long time in Siam, and has acquired a thorough knowledge of the geography of that country.

Africa.

Junker's exploration of the Welle makes its identity with the Obangi very probable. He crossed the river six times, and followed its course as far as latitude 3° 13′ 10″, and longitude 22° 47′ 40″. He found it to run east and west, with no part of it farther north than latitude 4°. The abundance of ivory found on the islands of this river is said to surpass that of any other part of Africa. Notwithstanding these new discoveries in this part of Africa, our knowledge of its hydrography is still very imperfect, and the exploration of the watershed between the Shari and Kongo still forms one of the most important problems of researches in Africa.

Captain Coquilhat, who visited Stanley Falls after the Arabs had taken possession of it, describes the moral impression which the loss of the station has made upon the natives, as follows: "The natives admire the persistent resistance of the whites. The losses of the Arabs, which amounted to sixty, while we lost only two men, made a great impression upon the negroes. They have seen and felt that the white man is not an ally of the Arab, and that they will find a support in him against their oppression. The manner in which the natives protected and saved Mr. Deane, the chief of the station at Stanley Falls, proves that they detest the Arabs, and that they desire to be governed by whites." However, these views seem to be somewhat sanguine. The loss of Stanley Falls is a serious affair to the association, and shows how little established its power is. It would be in vain to expect support from the natives, who consider both whites and Arabs intruders in their country.

The Kongo association is planning two expeditions; one, to determine the best route for the proposed railroad; the other, to explore the Kongo and its tributaries. The latter will be composed of geologists, agriculturists, and commercial