

ample: a human head with one or two curls of hair signifies a female; deities, as shown by Schellhas, are represented by the head with the peculiar features found in their figures. The bird above mentioned (*Kuch*) is generally represented by a head, with certain lines about the eye, used in the complete figure to indicate the species. An idol is denoted by the character a head, which Dr. Schellhas erroneously supposes to be the symbol for a certain deity. The symbol for game quadrupeds is a rabbit's head mounted on the *Kan* or corn symbol; that for game-birds, a turkey's head on the corn symbol; etc.

Inanimate objects are usually denoted by conventional symbols having as the chief idea some characteristic of the thing represented. For instance: the symbol for house, or hut, found in all the codices, has as its chief characteristics broken lines indicating the thatching, and perpendicular lines suggesting the posts.

I have determined the signification of one character in which color plays a part. This is the symbol for *Ekkuuah*, the god of peddlers or travelling merchants. This is a basin-shaped character, indicating the half of a calabash (*Chu*, in Maya), surrounded by a heavy shading of black (*Ek*, in Maya). It is found accompanying the black deity in the Troano Codex.

A few of the written characters are truly phonetic, but my scant knowledge of the Maya language renders progress in this branch of the subject slow. That there are no true letter-characters, as supposed by Landa, must be conceded. I may add, in closing, that I have discovered in the Cortesian Codex the origin of this author's 'A.' It is the symbol used to denote the turtle (*Aac*), the conventional representation of the head of this reptile, and is in no sense phonetic.

A paper explaining these and other discoveries has been prepared for the bureau annual, and is now in the hands of the printer.

CYRUS THOMAS.

Youngsville, Penn., Jan. 10.

#### On the coloration of mammals.

I desire to call attention to the arrangements of the color-marks on the skin of mammals, and to attempt to show that some of them are correlated to the distribution of nerves and to the positions of the muscle-masses of the body.

The white stripe on the side of the trunk in *Tamias* is the region of distribution of the superficial branches of the intercostal nerves and those nerves in serial homology with them.

The white patches on the muzzle of the tiger answer to the distribution of the infra-orbital nerves.

The single black stripe on the withers of *Equus taeniopus* lies near the centre of the region of the scapula. In the tiger the abdominal stripes are in the same series with those on the flank. In the locality last named they range over the muscles and the depressions between them without regard to the anatomical conformation of the parts. On the anterior extremity it is quite different. In the lioness the depression between the radial extensor mass and the flexor mass is marked at the distal end of the region with a longitudinal black stripe which is about one-fifth the length of the fore-arm. The skin over the extensors of the carpus is marked by a number of spots, and that over the flexor mass by a few transverse bars. The contrast between the two divisions of the fore-arm is decided.

In both the lioness and the tiger the cervical mass and the gular region are separated by differences in coloration. Two oblique stripes are seen limited to the cervical mass. The depressions between the acromio-cephalic and the brachialis anticus muscles are marked by black stripes.

The general distribution of the spots and stripes on the skin over the scapula, and the muscles which are inserted into it and over the extensor aspect of the anterior extremity, form a separate group from those of the rest of the trunk.

The line of the malar bone of the tiger is distinguished by a broad, irregular bar. A more slender one lies vertically over the masseter muscle.

In addition to the above, it is found that the wrinkles and folds in one animal answer to the permanent skin-bands or pigment-lines in another. The dorsi-facial folds of *Phacochoerus* are in the same positions as the pigment-lines in the zebra. The bands on the trunk of the nine-banded armadillo are the homologues of the transient folds of skin seen in the instantaneous photographs of the hog taken at the time when the limbs of the same side are at the nearest point one to the other.

The medio-dorsal stripe which is so often met with in mammals is probably a sequence of the general deep-lying cause which determines the longitudinal type of the vertebrate form.

The disposition for the neck, withers, and the anterior limb to be more hairy than is the remainder of the trunk, is probably associated with the localization of the marks on the anterior extremity being better marked than are those on the posterior. The fore-limb has connections with the head as exact as with the dorsum as far back as the origin of the latissimus dorsi. In the bison the shaggy surface corresponds quite accurately to the proximal part of the fore-limb and its extrinsic muscles.

A mammal, in leaving the ground, from the hind-limbs hunches up the withers in a conspicuous manner. This region is more thickly haired and more brightly colored in many bats than is the rest of the trunk. Now, in the bat the shoulders and neck are permanently hunched, for the fore-limbs are scarcely at all used for support.

HARRISON ALLEN.

Philadelphia, Jan. 4.

#### Butterflies in southern Connecticut.

During the summer and autumn of 1884 and 1885, I was collecting butterflies in southern Connecticut. In the first season I found *Pyrameis cardui* very abundant, *P. huntera* comparatively rare, while of *P. atlanta* I saw only two specimens, both of which I secured. The next summer, on precisely the same ground and in the same time, I took all I wanted of *P. atlanta*, only two of the *huntera*, while I did not see a single specimen of *P. cardui*. I should be glad if some one would explain this. I do not imagine my collections could have been extensive enough to seriously affect the abundance of any of the species in the locality.

I might also say, that, of a large number of specimens of *Argynnis idalia* taken in the two seasons, a very great majority were females; and of the males, not one was in a perfect condition, most of them being badly torn and much faded. This would seem to indicate that they appeared before the females.

L. N. JOHNSON.

Evanston, Ill., Jan. 8.