

ances, shows the same tendency to heredity. Likewise, supernumerary fingers, toes, teeth, and breasts in both male and female, and the presence of a short tail, are all undoubtedly capable of hereditary transmission.

The thinly haired African, or the hirsute Tasmanian, as also the great variations in the pilosity of the civilized races, present questions more within the province of the anthropologist; bearded females and beardless males, that of the physiologist, or, possibly, of the suffragist. S. W. WILLISTON.

New Haven, Conn., Jan. 8.

Fort Ancient, Warren county, O.

Following the letter of Mr. Cyrus Thomas in *Science*, No. 201, if Fort Ancient be of as late date as he there suggests, an explanation of its uses, and of the fact that the *débris* which usually marks the site of prehistoric villages is entirely wanting in and about the work, may possibly be found in the river-valley both above and below the fort. The Little Miami valley is, for twelve or fifteen miles north of Fort Ancient, very rich in the remains either of the mound-builders or Indians, or both if they be distinct races. Upon the bluffs and in the surrounding high lands are numerous mounds, many of them of considerable size.

In almost every gravel-pocket which has ever been opened on the river-hills have been found human bones. In several places in the valley are burial-grounds, often of many acres, where the interments were as regularly ordered and as closely crowded as in a modern military cemetery. Pottery, celts, pipes, etc., are frequently found with these remains. On a high bluff about eight miles above Fort Ancient is said to be the site of an ancient village of considerable extent, marked by an accumulation of broken and charred bones, mussel-shells, pottery, etc., varying in thickness from twelve to twenty inches. There are many reasons for believing that the valley for many miles above the fort was not only densely peopled, but that these people were permanent residents.

Recent 'finds' of copper and other implements about the town of Morrow, eight miles below Fort Ancient, give weight to the supposition that the river-valley was peopled in that direction also, and that the work in question served as a refuge or fortress, situated near the centre of a populous and powerful community. I merely make the suggestion that the numerous remains hereabout may have some relation to the origin and purposes of Fort Ancient.

CHAS. A. HOUGH.

Waynesville, O., Jan. 10.

The remarks by Professor Thomas in *Science* for Dec. 10, 1886, remind me that in the spring of 1870 I made a rapid inspection of Fort Ancient, walking completely around its circumference. My sketch shows several corrections and additions to Dr. Locke's map as published by Squier and Davis, notably the long stone steps leading down to the water's edge. My original map is now in the archives of the Ohio historical society in Cincinnati. A general account of my visit was published at the time in the *Cincinnati Commercial*.

It seems to me plausible, that, if this was not a fortified town, then, in the organization of the mound-nation, there may have been, in the latter days of its

existence, a distinct standing army, and that this fort was occupied by such army only for the purpose of protecting the community living in the rich valleys to the southward against the hordes invading them from the north.

CLEVELAND ABBE.

Washington, Jan. 12.

Star rays and the corona.

Mr. Randolph's communication a few weeks ago escaped my attention at the time of its appearance. The difficulties to which he refers may be due partly to the structure of the human eye. Dr. LeConte has resolved that relating to the phenomenon of long rays or streamers appearing around an electric light, due to refraction rather than reflection at the exterior surface of the cornea next the eyelid. The appearance of short rays around a star, Mr. Randolph will find explained in Helmholtz's 'Popular scientific lectures,' pp. 217-219, and an instructive diagram in the same author's 'Physiological optics,' French edition, p. 34, or German edition, p. 24.

Telescope lenses have been made greatly superior to the human eye as an optical instrument. Whatever may be the final explanation of the solar corona, the number of chances is almost infinite that it will not be referred to defects in the structure of telescope lenses and tubes. W. LEC. STEVENS.

Brooklyn, Jan. 7.

To authors of text-books on physics.

Recently, in examining students for admission to college, the writer was again reminded of a small, but, as far as his observation goes, universal error in text-books on physics. It is stated that "the velocity of sound varies as the square root of the *elasticity* divided by the density." In illustration, it is usually stated that the velocity in air is about 1,000 feet, in water about 4,000, and in iron about 8,000. The first two are perfectly elastic, and the second is the more dense: hence, by the rule, the velocity in water should be less than in air. Iron is less elastic and more dense than either of the others, and hence, by the rule, the velocity should be least. The rule will be correct if for 'elasticity' we read 'co-efficient of elasticity,' which may be defined as the force which would double the length of a bar, or compress a liquid or gas to half of its volume. I. O. BAKER.

Champaign, Ill., Jan. 8.

The swindling geologist.

The swindling geologist was this week in Springfield, Mass., where he passed himself off as Capt. C. E. Dutton. I cannot learn that he succeeded in victimizing any one except the hotel-keeper of the house where he stopped, owing to the fact that he was early exposed by the commanding officer of the armory, who luckily happened to know Captain Dutton.

He later inflicted himself on me, playing the deaf-mute, calling himself Ivan C. Vassile of the Russian museum, and offering to sell me odd volumes of Hall's 'Geology of New York state.' Suspecting that they were stolen, I declined to buy.

He is a square-faced, smooth-shaven, light-complexioned fellow, of rather short stature, and wore a white felt hat and an army cape. His names and clothes, however, would perhaps hardly serve to

identify him, as he probably has a variety of both. He claimed to be on his way to Albany.

Perhaps if he can be exposed all along the line, he may soon be rendered harmless. F. W. STAEBNER.

Westfield, Mass., Jan. 8.

The West Indian seal.

Mr. Henry L. Ward, a son of Prof. Henry A. Ward of Rochester, N.Y., has recently returned from a special trip to the Gulf of Mexico in search of the little-known West Indian seal, *Monachus tropicalis*, bringing with him a good series of skins and skeletons, including those of both sexes and a suckling. Professor Ward, who has been on the alert for several years for this, until recently, almost mythical species, on learning of the probable locality of a small colony of them, promptly organized, with his usual energy in such matters, an expedition to procure specimens, in which enterprise he was joined by Mr. Fernando Ferrari-Perez, naturalist of the Mexican geographical and exploring commission, who, with Mr. Ward, procured a schooner at Campeachy for a trip to the three little keys north-west of Yucatan known as The Triangles (Los Triangulos). Owing to bad weather, they had but three days at the keys, but their efforts were well rewarded; and the West Indian seal is now in a fair way to be soon represented in several of our leading museums. The only specimens hitherto known to be extant in collections are the one recently acquired by the U. S. national museum (see *Science*, iii. 752), and the imperfect skin without skull presented many years ago by Mr. P. H. Gosse to the British museum. So little was known of the species until recently, that even its generic relations were in doubt, its reference to the genus *Monachus* having been regarded as provisional.

The material obtained by Mr. Ward, at much risk and expense, having been kindly placed in my hands for description, I am able to throw some further light upon this interesting species. Its cranial as well as external characters show it to be unquestionably referable to the genus *Monachus*. The color of the animal proves to vary much with age. The young are at first wholly intense black, remaining of this color doubtless during their first year. As they become older, the color changes to lighter; the dorsal surface becomes grayish black, through a slight gray tipping to the black hairs, shading on the sides of the body into the yellowish white of the ventral surface. The front and sides of the muzzle, and the edges of the lower lip, become yellowish brown; the whiskers change from black or blackish to yellowish white, a few only of the shorter ones remaining dark, either wholly or only at the base. In the younger animals the whiskers are not only much darker than in the adult, but much longer and heavier.

The skull is depressed, broad, and heavy. In general proportions it differs from that of *Phoca vitulina* in the longer, more sloping, and much broader ante-orbital portion, and the much greater thickness of the inter-orbital region, and the auditory bullae are less swollen and relatively much smaller. The dentition is very heavy, the length of the largest molars being 16 mm., with a breadth of 10 mm. The molars are crowded, set somewhat obliquely to the axis of the jaw; the second, third, and fourth have one small accessory cusp before, and two behind, the larger or principal one. These are well marked in

the younger or middle-aged specimens, but become worn and even wholly obliterated in old age. Gray's description of the dentition of the Mediterranean species (*M. albirostris*) applies in every particular to that of the present species.

The nails of the fore-feet are large and strong, the largest being from three-fourths of an inch to an inch in length; those of the hind-feet are rudimentary, being reduced to minute horny points, scarcely visible except on close examination.

The flat skin of the full-grown male measures about seven feet in a straight line from the end of the nose to the point of the tail, the free portion of which latter has a length of three inches. The adult female has a length of about six feet.

Mr. Ward obtained a young one only a few days old, and found nearly ripe foetuses in several of the females taken. This would indicate that the young are born in December.

The Triangles are about a hundred and fifty miles from the Alacranes Reefs, where the species was found in abundance by Dampier about two hundred years ago. Small colonies doubtless still exist on the uninhabited reefs and keys of the Gulf of Mexico and Caribbean Sea. It has been met with off the coasts of Cuba and Jamaica, and has been reported as an occasional visitor to the Bahamas and the Florida Keys.

Mr. Ward calls my attention to the fact that Columbus not only met with it in the West Indian waters, but that his sailors killed these seals for food, nearly four hundred years ago. It is therefore a remarkable fact that the first discovered American seal should be the latest one to become known satisfactorily to science.

The present notice is preliminary to a more elaborate account of the species now in preparation, which will be illustrated with plates of its osteological and external characters. The American museum of natural history of this city has secured skins of an adult male, an adult female, and a young example, and a fine adult male skeleton, which will soon be mounted for exhibition.

J. A. ALLEN.

New York, Jan. 6.

Early forms of writing.

Your remarks (*Science*, viii. No. 202) on Dr. Brinton's paper relating to the early modes of writing must form my excuse for this note.

I have made some discoveries, since the publication of my 'Notes on certain Maya and Mexican manuscripts,' which seem to confirm Dr. Brinton's opinion that the mode of writing which he designates the 'ikonomatic system' was practised to some extent by the Maya scribes,—a fact I had noticed previous to seeing his paper. For example: I find on plate xvii. of the Codex Troano the name of a bird (*Kuch*, in Maya) designated by a compound hieroglyph consisting of two parts, one of which is Landa's letter-character *Ku*, the other the symbol for the cardinal point west, or *Chikin* (according to Rosny). The name of another bird (the quetzal or *Kukuitz*) is denoted simply by a duplication of Landa's *Ku*. A few other characters formed in the same way have been discovered. But, so far as determined, most of the characters are symbolic, where the object intended is designated by a single characteristic, the head being the part or feature usually selected to represent persons and animals. For ex-