

the south and the Travancore-Cochin boundary line in the north. They differ considerably from the ordinary hill tribes of India, and Mr. Painter considers them as Dravidian rather than Kolarian. In colour many of them are remarkably fair. The men average 5 feet 6 inches in height. Their features are, as a rule, well formed. The lips are thin and the nose frequently aquiline. Their villages are situated at a height between 2000 and 500 feet above sea-level. The houses are generally built of split bamboo and mud with grass thatching, but wooden houses such as those used by the inhabitants of the plains are not uncommon. They cultivate the surrounding lands with rice and vegetables.

Their religion and social customs differ considerably from other Malayalam-speaking people, more markedly so in places where they have not come under the power of those living in the plains. Thus in Malabar the law of inheritance through the sister's children prevails. Even the Musnud, or throne, is inherited in this way. But among the Arrians, except where they have been brought under the power of the Hindus, inheritance through the father's children prevails. Even where the former law has been forced upon them they evade the consequences by marrying cousins, so that the property remains in the family. They are divided into *illams*, or clans. Members of the same *illam* may not intermarry; men of a superior *illam* may marry a woman of an inferior *illam*, but the reverse may not be done. There appears to be no difficulty about eating together, but only about intermarriage.

Women occupy a much better position among the Arrians than among the Hindus. They are regarded as equals, move about unrestrictedly, and eat with their husbands, especially at feasts. The fact that a woman eats out of a man's plantain leaf is a sign that she is his wife. The marriage tie is considered sacred, and seldom broken. Polygamy is almost unknown. A man married two sisters, and was considered to have disgraced himself, and was shut out from all feasts, &c. Adultery is considered a great crime. Infant marriage is unknown amongst them, but a curious ceremony prevails, copied from the customs of Nairs and Chogans, though differing in several particulars. As soon as a woman attains maturity, relatives and friends are summoned to a feast. The propitious hour having been fixed, the girl is brought in and made to stand on a plank of jackwood (a tree considered sacred by the Arrians); the father's sister then ties the *tali* or thread round the neck, the feast is then partaken of, and the ceremony is considered complete.

The actual marriage ceremony among the Arrians takes place when the woman is seventeen or eighteen years of age. The horoscopes of the different parties are examined, and the day fixed by the astrologer. Invitations are issued, and a *pandal* erected and the bride placed seated inside. The bridegroom is then brought up by his friends, who demand to know who is inside. The reply is such and such Illakar, as the case may be. If the reply is satisfactory they advance inside, and the bride is brought and placed in the centre. The conductor of the ceremonies on the bride's behalf then proclaims in a loud voice, "I am about to give a woman of such an *illam* to a man of such an *illam*." On the bridegroom's behalf a similar announcement is made. And a set of new clothes is presented by the bridegroom to the bride, and afterwards the happy pair eat out of the same vessel or leaf. This is the crowning part of the ceremony. After a feast the bride is conducted by the wedding party in state to the bridegroom's house, where another feast is spread. The wife lives with her husband in his house.

The Arrians bury their dead. Ancestral worship being practised among them, the ceremonies connected with death are the most elaborate and important. Death brings defilement with it, and none in the house may eat until after the funeral. The body having been washed and betel-nut placed in the mouth, a member of the same clan is appointed, who undertakes to act as master of the ceremonies. He first carefully bathes, then takes a new cloth, and from it tears a narrow strip which he fastens upon himself after the fashion of the Brahminical thread. Going to the place selected for the grave he calls upon the earth to give up 6 feet. He then advances backwards and digs with a hoe, removing three hoeful of the earth. Afterwards he may dig facing the grave. This completed, the body is brought forth and laid in it, the head always lying towards the south. The earth having been thrown, he again advances backwards and draws with a knife three lines round the grave, which are supposed to protect it from evil spirits. A cocoa-nut is broken and some paddy is strewn on the top. In addition to this in some hills a light is placed at the head, another at the foot of the grave.

The master of the ceremonies again bathes and returns to the house; two sticks tied crossways are taken and rags soaked with oil tied in the ends and lighted. Taking them in his hands he walks in procession round the house three times, followed by the relations of the deceased. The sticks are then placed, one at the head, the other at the foot of the grave.

After the ceremonies at the grave are over, all concerned in them bathe, a clean new cloth is placed in an inner room of the house, and on it the dead man's property, knife, betel-box, topee, &c., are placed. A feast is prepared, plantain leaves are cut into narrow strips, rice, boiled fowl, plantain, fish, toddy, arrack, and parched rice are placed upon the leaves, lights are lighted, the master of the ceremonies then does obeisance to the spirit which is now supposed to be in the house. The door is closed and the spirit is left to feast. After half an hour it is opened and the things taken forth. At the conclusion of the ceremony the whole assembly partake of a feast consisting of flesh, fish, rice, and arrack. As soon as possible an image of the deceased is prepared, which is brought into the house. Twice a year similar offerings are presented; and in times of drought, ravages by wild beasts, or sickness, vows are made, and prayers such as, "O Ancestor, be not angry with us," are offered.

Female ancestors receive equal honours with males. Of what happens to a soul after death they have no certain belief. The doctrine of transmigration is unknown amongst them. Spirits of men and women for whom no offerings have been made are said to wander about working mischief. If a man dies from accident, such as the fall of a tree, or is killed by a man or wild beast, no ceremonies may be performed for him, nor in the event of a woman dying in child-birth. The spirit is said to wander about working mischief. Ancestral worship is the essential part of their religious system. It consists of a yearly feast and offering to the spirit of ancestors similar to that described as made on the eleventh or fifteenth day after death.

Besides worship of ancestors, there is also the worship of evil spirits or demons, which appears to consist in paying "black-mail" to avoid injury, or bribes to inflict injury on others. The chief demon worshipped by them is the goddess of small-pox, cholera, &c., and it is noticeable that in all their religious festivals and ceremonies strong drink plays a very large part.

ANCIENT MOUNDS AT FLOYD, IOWA.¹

ON the west side of the Cedar River, one half mile east from Floyd, Iowa, are located a group of three ancient mounds. These mounds, instead of being located on the highest eminence in the region, as is most usually the case, are arranged in a slightly curved line, on a high but level space, fifty feet above, and two hundred and twenty yards back from the stream, and midway between two points (from fifty to sixty rods from each) which face the river, and rise from twenty-five to fifty feet above this level space. The ground, between the mounds and the Cedar, has a rather gently sloping surface. At this point the stream makes a bend to the east, and the mounds thus occupy a position on the south side. The north side of the stream is occupied by a steep, and somewhat broken, wooded bank, which affords a limited though beautiful bit of scenery to this place.

This area, as well as the surface of the mounds themselves, was originally possessed by a heavy growth of timber, but which was cleared away more than twenty years ago, and the soil kept under the plough ever since. These mounds are low and circular, and twenty feet distant from each other. The east, or largest mound, is thirty feet in diameter, and was originally two feet high (so reported by Mr. Sharkey, who first cleared, and still owns the tract), although owing to degradation by the plough it now rises only one and a half feet above the surface of the ground surrounding the mound. The two remaining mounds are smaller and lower than the first one. The third mound—there may be some slight doubt expressed regarding its origin, for the reason that in the south portion of it there is embedded a drift boulder, weighing some seven or eight hundred pounds. This, however, may have been placed here by human hands in the long ago, or the mound may have been an intrusion upon the stone. A partial exploration of the two smaller mounds was made, but without discovering anything.

¹ Reprinted from *The American Naturalist*.

In making a thorough exploration of the larger mound, however, the remains of five human bodies were found, the bones, even those of the fingers, toes, &c., being, for the most part, in a good state of preservation. First, a saucer or bowl-shaped excavation has been made, extending down three and three-fourths feet below the surface of the ground around the mound, and the bottom of this macadamized with gravel and fragments of limestone. In the centre of this floor, five bodies were placed in a sitting posture, with the feet drawn under them, and apparently facing the north. First above the bodies was a thin layer of earth; next above this was nine inches of earth and ashes, among which were found two or three small pieces of fine-grained charcoal. Nearly all the remaining four feet of earth had been changed to a red colour by the long continued action of fire.

All the material of the mound, above and around the bodies, had been made so hard that it was with great difficulty that an excavation could be made even with the best of tools. The soil around the bodies had been deeply stained by the decomposition of the flesh. The first (west) body was that of an average-sized woman in middle life. Six inches to the east of this was the skeleton of a babe. To the north, and in close proximity to the babe, were the remains of a large, aged individual, apparently that of a man. To the east and south of the babe were the bodies of two young though adult persons. The bones of the woman, in their detail of structure, indicated a person of low grade, the evidence of unusual muscular development being strongly marked. The skull of this personage was a wonder to behold, it equalling, if not rivalling in some respects, in inferiority of grade, the famous "Neanderthal skull." The forehead (if forehead it could be called) is very low, lower and more animal-like than in the "Neanderthal" specimen.

This skull is quite small for an adult individual. The inner portions of the brow ridges are slightly prominent.

The distance from the lower portion of the nasal bone to the upper margin of the eye cavities is only four centimetres. A slight portion of this bone has, however, apparently been broken away.

The distance between the eye sockets at a point midway between the upper margin of the eye cavities and the lower portion of the nasal bone is two and three-fourths centimetres. One of the jaws, containing well-preserved teeth, was found. This was rather strong, but the teeth only moderately so. We were at first inclined to consider the strange form of this skull as due to artificial pressure while living, but a critical examination of it revealed the fact that it was normal, *i.e.* not having been artificially deformed. The teeth of the babe were very small, and the skull thick, even for an adult person.

The next skeleton was that of a man nearly six feet in height. The crowns of all the teeth had been very much worn down, some of them even down to the bone of the jaw.

As before stated, the remaining bodies were those of young adult persons, the skull of one of which was small for a full-grown individual. No relics of any description were found with the human remains in this mound. Their burial appeared to be a very ancient one, the limestone fragments in the floor of the excavation being nearly if not all decomposed.

In other mounds opened on the same stream, at Charles City, six miles below, fragments of the same limestone were not infrequently found, but in no case was decomposition visible, except as a thin outer crust, although the human bones, which were usually more or less abundant, were in no case very well preserved, but, on the contrary, often nearly or entirely decomposed. The fine preservation of the remains in the mound at Floyd was due to the method of burial. This being evidenced by the fact that over a small portion of one of the bodies the earth had not been so thoroughly packed, and as a consequence the bones were almost entirely decomposed away, while the other portion of the body over which the soil had been very firmly packed was well preserved. Judging from all the facts gathered, it seems not improbable to suppose that this represented a family burial.

The question has been raised, "How was it that these five persons were all buried here at the same time, their bodies being still in the flesh?" As we have no reason to suppose that these ancient people possessed any means for preserving, for any length of time, in the flesh, the bodies of their dead, it seems plausible to suppose that these individuals were all swept off at about the same time by some pestilence; or else,

upon the death of some dignitary of the tribe or people (perhaps represented by the remains of the old man) the other members of the family were sacrificed, similar to the custom which has prevailed among some ancient tribes or races of historic times.

On the same stream, a short distance below this mound, several other mounds occur which promise to yield interesting results, and which we purpose to explore as opportunity offers.

Charles City, Iowa.

CLEMENT L. WEBSTER.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 11, 1890.—"Determinations of the Heat Capacity and Heat of Fusion of some Substances to test the validity of Person's Absolute Zero." By S. U. Pickering.

Person made determinations with eight substances to show that the temperature at which their heat of fusion became nil, $t - \frac{l}{C-c}$ (t =temperature of fusion, l =heat of fusion at t° , C =heat capacity of liquid, c =heat capacity of solid), was -160° in all cases. This he called the absolute zero. His conclusion may for several reasons be questioned, the chief reason being that he determined C and c at any temperature which happened to be most convenient, and the value of these is largely dependent on temperature: they should both refer to the same temperature, and this is, necessarily, t° . The author deduces his values for C and c at t° from determinations made at a series of different temperatures. The substances examined were, sulphuric acid and its monohydrate, hydrated calcium nitrate, and naphthalene, and their temperatures of recrystallization were found to be -369° , -177° , -234° , and -214° respectively, thus refuting Person's conclusion. Benzene was also examined, but the heat capacity of the solid was found to be greater than that of the liquid; this is probably due to an incipient fusion occurring below the temperature of true fusion.

December 18, 1890.—"On the Generic Identity of *Sceparnodon* and *Phascalonus*." By R. Lydekker, B.A. Communicated by Prof. W. H. Flower, C.B., F.R.S.

In the year 1872, Sir R. Owen described two imperfect lower jaws of a large extinct Wombat, from the Pleistocene of Queensland, under the name of *Phascalomys* (*Phascalonus*) *gigas*. Subsequently he described certain imperfect upper incisors, from Queensland and South Australia, characterized by their peculiarly flattened and chisel-like shape, under the new generic name *Sceparnodon*.

In cataloguing the fossil Mammalia in the collection of the British Museum, the author was struck by the circumstance that, while the upper incisors of the so-called *Phascalomys gigas* were unknown, there were no cheek-teeth which could be referred to *Sceparnodon*, and it was accordingly concluded that the teeth described as *Sceparnodon* were probably the upper incisors of *Phascalomys gigas*, and on this supposition it was considered that the latter was generically distinct from existing Wombats, and it was accordingly entered as *Phascalonus gigas* in the Museum Catalogue.

The author now described incisors of *Sceparnodon* and lower jaws of *Phascalonus gigas* obtained at Bingera, New South Wales, from the evidence of which it was concluded that we are now justified in definitely regarding the so-called genus *Sceparnodon* as based upon the upper incisors of the gigantic extinct Wombat known as *Phascalonus*.

Geological Society, December 10.—Dr. A. Geikie, F.R.S. President, in the chair.—The following communications were read:—On some water-worn and pebble-worn stones taken from the apron of the Severn Commissioners' weir erected across the river at Holt Fleet about eight miles above Worcester, by Henry John Marten, Engineer to the Severn Commissioners. The weir referred to in the paper was built in 1844 of soft red sandstone, and some of the stones composing the apron of the weir showing signs of decay were removed in 1887. The average quantity of water passing over each square foot of the stones composing the apron has been estimated at about 2000 gallons per minute. A large proportion of the stones had been drilled through and through by the action of the current upon small pebbles lodged in hollows or between the joints of the stone; and the author estimates that, as a result of 43 years of erosion, six of the stones of the apron, which may be taken as