

author has brought together much curious and useful information on the piscatory, as well as other habits, of our prehistoric ancestors, and with considerable ingenuity applies the method of evolution in tracing the progress and development of "the gentle art."

AT Steeten on the Lahn (near Runkel) interesting discoveries have recently been made in a cave. They consist of seven human prehistoric skeletons and animal remains. The latter must have belonged to the Tertiary period. They were found in such enormous quantities that several generations must be represented. The spot positively teems with remains of the Cave period, so that it is highly desirable that the State should order that more extensive scientific excavations be speedily made.

THE writer of the article on Lieut. Collet's work on the Compass in last week's NATURE, asks us to make the following correction: p. 383, col. 1, line 8 from bottom, delete "only," and in line 7, instead of "whereas it is three times as much in" read "which is about twice as much as in."

THE additions to the Zoological Society's Gardens during the past week include an African Brush-tailed Porcupine (*Atherura africana*) from West Africa, presented by Mr. J. Cheetham; a Black-necked Heron (*Ardea atricollis*) from Cape Colony, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; two Blossom-headed Parrakeets (*Palaeornis cyanocephalus*) from India, presented by Mrs. Francis Fox; a Waxwing (*Ampelis garrulus*), European, presented by Mr. W. H. St. Quintin; a Carrion Crow (*Corvus corone*), British, presented by Mr. F. H. Worsley Benison; a Rhesus Monkey (*Macacus erythraus*) from India, a Bonelli's Eagle (*Nisaetus fasciatus*), European, deposited; two Common Buntings (*Emberiza miliaria*), two Black-headed Gulls (*Larus ridibundus*), a Common Curlew (*Numenius arquata*), a Bar-tailed Godwit (*Limosa lapponica*), two Knots (*Tringa canutus*), British, purchased.

OUR ASTRONOMICAL COLUMN

THE EARLIEST DAY-LIGHT OBSERVATIONS OF STARS.—In No. 2616 of the *Astronomische Nachrichten* Prof. Winnecke has an interesting note on the question, Who first observed stars in full daylight? The credit of the observation has been generally accorded to J. B. Morin in 1635. Arago, for instance, says: "Il est évident que c'est à Morin qu'il faut remonter pour trouver la première observation authentique d'une étoile vue en plein jour;" Zach and many other astronomical writers have held the same opinion. Morin's observations are found in his work, "Longitudinum Terrestrium necnon Coelestium nova et hactenus optata Scientia," first published, as it appears, in an extended form at Paris in 1638. At the end of March, 1635, he saw Arcturus half an hour after sunrise. This observation of Morin's appears to have been overlooked in France, since in May, 1669, we find Picard expressing his surprise that he had been able to observe the meridian altitude of Regulus thirteen minutes before sunset; his observation is printed in Lemonnier's "Histoire Céleste": "Le 3 mai (1669), hauteur méridienne de Regulus 54° 42' 50", cette hauteur méridienne fut prise en plein jour à 7h. 5m. du soir, environ 13m. avant le coucher du Soleil, ce qui ne s'étoit encore jamais fait." On July 23 following he observed the meridian-altitude of Arcturus, while the sun was 17° above the horizon, and speaks of the observation as a remarkable one, concluding: "il est maintenant facile de trouver immédiatement les Ascensions droites des Etoiles fixes non seulement par les horloges à pendule, mais aussi par l'observation du vertical du Soleil au même temps qu'on observera la hauteur méridienne d'une étoile fixe."

Prof. Winnecke points out that Morin was preceded in his discovery that the stars may be observed in daylight by more than one person. In a letter written from Amsterdam to Gassendi, by Martinus Hortensius, and dated October 12, 1636, he mentions that observations such as Morin had claimed to be the first to make, were by no means new to him, and from the dates of the publications in which he records his own observations it is

clear that his claim of priority to Morin is justified, though when his earliest observation was made cannot, as Prof. Winnecke remarks, be certainly inferred. Schickard, Professor of Hebrew and Mathematics at Tübingen, whose first work, the "Astroscopium," appeared in 1623, and was frequently reprinted, saw Arcturus in broad daylight as early as 1632. In the "Historia Coelestis, ex observationibus Tychoonis Brahe," by Albertus Curtius, at p. 956 we read: "1632 Martii 2. Nota. Cor Scorpii claro die adhuc à me visum per conspicilla tamen cum Saturnus ægre cognosceretur: nec acër fuit omnino purus."

Prof. Winnecke concludes that Schickard, as well as Hortensius, had observed fixed stars in daylight previous to Morin, who, as we have said, has been generally credited with this advance in astronomical observation.

BINARY STARS.—Mr. J. L. Casey, U.S.A., has calculated first approximations to the orbits of ϕ Ursæ Majoris and Σ 1757 (Piazzii xiii. 127). The former is one of O. Struve's discoveries, his first and last published epochs being—

1842.34, Pos. 4.4, Dist. 0.46.
1875.48, ,, 295.5, certainly oblong.

The apparent motion being direct, or with increasing angles, these indicate a change of 290° in thirty-three years.

Σ 1757 was measured by Struve in 1825. For comparison with his first epoch, we add Prof. Asaph Hall's for 1879—

Struve, 1825.37, Pos. 10.0, Dist. 1.60
A. Hall, 1879.40, ,, 68.9, ,, 2.34

The elements are as follow:—

	ϕ Ursæ Majoris.	Σ 1757.
Periastron passage	1877.12	1797.42
Node	105° 18'	344° 43'
Node to periastron	72° 7'	315° 28'
Inclination	57° 5 7'	29° 32'
Excentricity	0.788	0.5079
Semi-axis major	0".54	2".29
Period	115.4 years.	401.0 years.

GEOGRAPHICAL NOTES

AT the meeting of the Geographical Society on Monday last, Major J. E. Sandeman, B.S.C., read a paper on recent explorations of the sources of the Irawaddy. He referred first to Mr. R. Gordon's able report on the hydrology and hydrography of the river, in which the old theory of the Saupo, or great river of Tibet, being the main source of its vast stream, is revived, and then to what has lately been done, showing that the Saupo more probably unites with the Kihong. Major Sandeman next dealt with some endeavours to reach the source of the Irawaddy, more especially that made by a Burman named Alaga, who had been trained by himself. This man started from Bhamo in October 1879, and was absent six months. He brought back a good deal of information respecting the western and eastern branches of the Irawaddy, but we cannot see how he can be said to have explored their sources. It was somewhat unsatisfactory to learn that "political considerations"—the old Indian bugbear—prevented Major Sandeman from stating why the explorer was compelled to turn back before doing what he was sent to do. Though the geographical results of Alaga's journey are not what might have been expected, he has brought back some very interesting information regarding the domestic habits, religious customs, &c., more particularly of the Kachins, or Kakhyens. In concluding his paper Major Sandeman summed up the various attempts which have been made to reach the sources of the Irawaddy, and to discover the true outlet of the Saupo.

COL. VENIUKOF has informed the French Geographical Society that M. Lessar, a Russian engineer officer, has completed the levelling of the country between Askabad and Sarakhs. This operation has proved the practicability of constructing a railway between these two places, and even for some forty miles beyond Sarakhs, in the valley of the Heri-rud (Tejend). It is estimated that the cost would not exceed 320,000*l.* At the same time M. Gladycheff, the astronomer of the expedition, has determined the geographical position of thirteen points between Askabad, Sarakhs, and Meshed. At Meshed he is said to have purchased the plan of the town which Mr. E. O'Donovan had made, but apparently lost. Perhaps Mr. O'Donovan may enlighten us on this point, when he gives his account of his varied