three years time he discovered by a pan-test that the same pile had gold in it, whereupon he treated several tons with the approximate result of one dollar per ton. After this last treatment he declared the tailings were barren of gold so far as he could detect by the mechanical means at hand. In order to convince him I selected an average sample, which on assay gave 2 pennyweights, 20 grains gold per 2,000-pound ton. This was considered not worth the working. But my friend maintained that the gold would grow again in two or three years.

True to his word, in two years he was at the pile again, and by his crude but sure method was saving one dollar per ton from the ore that would yield *nil* by his methods two years before. Again, I took samples for assay and was somewhat surprised to find the value had increased just 50 per cent, as the result of my determination was 5 pennyweights, 16 grains per ton. On investigation, I found the sulphurets to be of a character readily decomposed by the elements; in fact to such an extent that, as I afterwards calculated, over one-half of the pile must have been decomposed or washed away, so that with the decomposition a certain rapid concentration was maintained by the action of heavy rains, and the natural advantage this particular ground offered causing the gold to remain behind while the oxides were carried away in suspension by the water. My explanation has failed to convince my friend of the pick and shovel. As the gold in the tailings has become about exhausted, his last attempt to make pay was a failure. He remains strong in the conviction that a few years will grow it again.

Gold Hill, North Carolina, October, 1892.

CURRENT NOTES ON ANTHROPOLOGY.—XVIII.

[*Edited by D. G. Brinton, M.D., LL.D.*]

The Early Age of Metals in Europe.

As has been previously remarked in these Notes, there is a growing tendency in European archæology to rate the civilization of Europe at the dawn of the historic period decidedly higher than has been heretofore supposed, and to regard it more and more of indigenous development. Those old theories which attributed pretty much all that deserved the name of culture to Asiatic or Egyptian sources are diminishing in favor.

An instance of this is seen in an article by M. Salomon Reinach in *L'Anthropologie*, 1892, No. 3, in which he discusses with his accustomed wealth of erudition the derivation of the name "Cassiterides," and with it the origin of tin and bronze in western Europe. He claims that this name is of Celtic origin, and means "Remote," or something of that kind. It was applied by the Gauls to the portion of western England whence came the tin. This conclusion proves several points, if once accepted. As Homer talks of the Cassiterides, it shows that before his time the tribes of western France spoke Celtic; that they worked in and exported metals; and it gives room to inquire whether one of the centres of the discovery of bronze was not in western Europe.

Other archæologists of ability, such as Franz von Pulszky, in the *Archiv für Anthropologie*, Bd., XX., have called attention to the fact that the specific civilization of the Celts was higher than is generally recognized. Their heavy iron swords, for striking, not thrusting, their ornamentation, derived from the circle and the triangle, and their use of torques, wound metal neck-rings, reveal positive ethnic art-capacity. Their presence in Hungary is well marked by such remains in the tombs of an early epoch.

Figurines of the Stone Age.

The glyptic art goes back far into the stone age, far even into the old or rough stone age. In the *Antiqua* for 1887–1890, R. Ferrer has discussed and depicted the earliest human statuettes from the European bronze and stone ages. The oldest always represent the individual naked, and the parts of sex very prominent. This is also the case with the Phœnician bronze figurines from Ellora, in Portugal, while those from the north are clothed.

Last December there were found some interesting remains near Brunn, Germany, at a depth of four and a half meters, amid bones of the mammoth, rhinoceros, and reindeer. They were a human skull, and adjacent to it a human figurine 20 centimeters high, carved from the tooth of a mammoth, and bored through, evidently for the purpose of suspension. The figure is naked and prominently masculine, though the mammæ are clearly represented.

The skull presented an index of 65.68, and was therefore singularly dolichocephalic; its estimated cubical capacity was 1,350 cubic centimeters; it was not prognathic, but the frontal sinuses were very prominent, and the glabella also, thus presenting an inferior character.

When the head of the figurine is regarded in profile, it presents this peculiar appearance of prominence in the glabellar region, thus showing that it was carved to imitate the then prevailing type of humanity.

These and other interesting facts about this noteworthy find are given in the Proceedings of the Niederrheinische Gesellschaft, 1892, by Professor Schaaffhausen of Bonn, who adds an engraving of the skull. Like all his articles, this one is prepared with the most satisfactory care.

The Study of Hair.

The study of the hair on man offers a most extensive field of inquiry, and one which presents many unsolved problems of the first order of importance. Some of these are discussed by F. Lapille in *Le Naturaliste* and by Dr. Bartels in the *Zeitschrift für Ethnologie* of recent dates.

Why man as a species should present the amount and kind of hair that he does is variously explained, and the differences between the varieties of the human race are so great in this respect that, as is well known, one of the most popular subdivisions of the species is founded upon it. Most mammals have more hair than man, but some less, as the Cetaceæ and the Sirenidæ. The anthropoid apes have, as a rule, much hair where man has little, as in the arm-pits and around the sex-organs. In some localities, as the ears and nose, the hairs are clearly protective organs, while around the genitals they appear to be merely ornamental. In monkeys, the females are bearded, but such examples are rare in the human species. Bearded women, however, are not otherwise masculine, but have the sentiments and the capacity for motherhood. Bartels describes a very hairy Gypsy girl, only seventeen years old, but already the mother of three children. With her the hairiness was from a naevus pigmentosus of extraordinary extent; and why these naevi should develop hairs is worth inquiry. Man has the longest hair of any animal, and why he lost it over most of his body is the subject of much curious speculation. The loss led him to the inventions of painting and tattooing his body, of covering it with clay or clothes, to depilation, to the sense of modesty, and to many other unexpected results. The history of hair in man is thus an extraordinary one for the evolution of the species.

On Quarry-Rejects.

For two or three years past there has been in the air — I mean the air which archæologists breathe — a low but menacing sound, threatening some dear theories and tall structures, built, if not on sand, at least on gravels offering a scarcely more secure foundation.

These menaces bear more directly on what is classically known as the "old stone age," that of chipped implements, and particularly on that period of it which is alleged to be characterized by very rude — and which are therefore supposed to be very old — types. The new views come from a study of the aboriginal quarries, the sites where the ancient tribes collected the materials which later and at other localities they worked up into finely chipped or polished implements. This part of the work they did not perform at the quarry; and pieces which after a few test-blows by their skilled hands they saw could not be utilized at all, or only at the cost of considerable labor, they threw aside and left on the spot. These are "quarry-rejects," and after you have handled and studied several hundreds of them you can always see why they were thrown away; you can recognize, as did the aboriginal artist, why they would prove worthless or troublesome in further working.

Now the alarming discovery has been made that a great many of what we have heretofore called "palæolithic implements" display with fatal clearness the peculier earmarks of these "quarry-rejects," hinting, therefore, that they never were real implements at all. What is worse, like the rejects, they show no signs of use, and clearly never could have been employed as implements, and consequently do not in any way illustrate the industry of the chippers, no matter of what age they are. If found in gravels, the gravel-bed was the quarry, and they the refuse. It has even been hinted that the famed gravels of the Somme and the "palæolithic floors" of the Thames and the "Trenton gravels" of our own land, may have to lose their laurels in the light of this discovery.

The Builders of the Southern Mounds.

Those who have looked at the archæological collections of the Smithsonian with any attention, cannot fail to remember the extraordinary specimens of copper work from the Etowah valley mounds, in northern Georgia. The figures they delineate have an unquestionable family resemblance with those inscribed on shells obtained on the lower Mississippi, so accurately presented in Mr. Holmes's essay in the Report of the Bureau of Ethnology, 1880–81. Both present curious analogies to Mexican and Maya art, and I have been almost constrained to believe in a connection, either ethnic or commercial, between these peoples.

Dr. Eduard Seler, however, who is a most competent authority on these questions, expresses a different opinion in a recent article in *Globus*, Bd. LXII., No. 11. He analyzes with care the mode of wearing the hair, the headdress, the clothing, and the weapons of the figures, and shows that in several of these points they correspond with the descriptions of the early voyagers of the natives they found in these localities. He also compares the same features with similar relics from ancient mounds in the Ohio valley. The conclusions he reaches are, that the builders of the Etowah mounds and the artists of the inscribed shells were probably related to the builders of the Ohio mounds; that they were not the direct ancestors of the tribes found in Georgia at the discovery; that there is not sufficient reason to suppose connection with Mexico or Yucatan; that probably the mound-building and copper-working tribes were destroyed or driven to the remote sea-coast by invasions from the north and west at a period not very remote from that of the discovery of the continent.

LETTERS TO THE EDITOR.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

"Ancient Mexican Heraldry."

PERMIT me to place before the readers of *Science* an interesting fact kindly communicated to me on Oct. 17 by the Rev John Woodward, LL.D., F.S.A., the learned author of "A Treatise on Heraldry, British and Foreign," referred to in my article on "Ancient Mexican Heraldry" in *Science*, No. 503, Sept 23. That gentleman has just informed me "that the late Mr. Ellis, in his book on 'The Antiquities of Heraldry,' 1869, made reference to the Armory of the Ancient Mexicans and gave a plate (iv.) of the symbols from the works of Lord Kingsborough and Mr. Stephens." "There is not, however," my courteous correspondent adds, "any evidence that the use of such devices was hereditary; they were, so far as we know, merely personal distinctions" This agrees with the general conclusions, based on special investigations, of Mrs. Zelia Nuttall, who was doubtless, like myself, unaware of the publication of Mr. William Smith-Ellis's views on Mexican heraldic emblems nearly a quarter of a century ago. I endeavored in vain to consult a copy of his work when studying the subject of my communication to *Science;* and, as other students may experience the same difficulty, I will reproduce the Rev. J. Woodward's observations respecting ancient heraldry on page 26 of the Introduction to Vol. I. of his recent Treatise on Heraldry in general.

"Mr. W. G. (*sic*) Ellis, in his 'Antiquities of Heraldry,' has collected a mass of interesting matter relating to what he calls the heraldry of ancient times and of all nations of the world, and he certainly succeeds in showing to how great an extent pictorial symbols, which had originally a meaning, have been in use among all nations of mankind, civilized and savage. His plates are curious as showing the occasional occurrence among these manifold devices of some resembling modern figures of blazon. The crescent, the mullet, the lozenge, the quatrefoil, and the fleur de lis are traced by him to counterparts existing among Egyptian, Chinese, Indian, and Japanese emblems; and among the figures on Etruscan vases he shows us what, in heraldic language, would be called a bull's head caboshed and a not unheraldic-looking demi-boar."

Furthermore, it is noteworthy that the Rev. John Woodward considers "there is some reason to believe that the use of the hereditary badge must have long preceded hereditary heraldry" (p. 589). Additional instances of their use as military distinctions rewarding the capture of prisoners in European warfare may be cited from his interesting work. Two fleur de lis with other "augmentations" were granted to Sir John Clerke because he took captive Louis Duke de Longueville on the field of Therouenne, better known as the battle of the Spurs, and fought a month before the eventful fight of Flodden. A still more interesting case is that of the "Crampet," or metal termination of the scabbard of the sword, sometimes borne as a device. One was assigned to Sir Roger La Warr about the same time as the buckle was granted to Sir John Pelham in recognition of his aid in the capture of King John of France. It is somewhat remarkable that the descendants of these gallant knights, who fought side by side at Poictiers, still hold lands and earldoms in the same County of Sussex. Some members of the ancient house of De la Warr passed over to America in the fifteenth and sixteenth centuries, hence the more familiar name of Delaware. AGNES CRANE.

Brighton, England, Oct. 21.

Reticulated Protoplasm of Pelomyxa.

SINCE the publication of Dr. Stokes's article myself and colleague, Mr. W. F. Pentland, have had several opportunities of examining Pelomyxa Palustris. The difficulties of the investigation are so great that at his suggestion I tabulate the methods and their results.

1. Examination of unstained preparations (50 slides). Utterly useless as far as the detection of reticulation is concerned. 2. After treatment with osmic acid, usually 1 per cent solution, one organism was found destitute to a great extent of ingested material. An ⅛ Powell and Leland water-immersion and Zeiss 12 compensating occular failed even with critical light, with an immersion condenser, and ammonia sulphate of copper solution as modifier, to detect the slightest trace of reticulation. 3. In the same preparation we found some Amœbœ resembling Proteus. The coarseness of the enclosure in these specimens we found would lead a neophyte astray, as it frequently resembled reticulation. 4. Determined to leave no stone unturned, we tried the usual aniline and carmine dyes, with no result. 5. One-half per cent solution of chloride of gold (no osmic acid) was tried on over twelve slides. I must certainly confess I glimpsed reticulation in two specimens, but owing to the protracted investigation was compelled to desist.

So far with regard to amœbic organisms. It is in the field of pathology that reticulation of protoplasm is most frequently observed, as far as my experience goes. The more rapid the morbid process the greater certainty of reticulation. Fifteen years ago I was working with my lamented colleague, Dr. Bookey of Dublin, on the effects of bichloride of mercury on blood corpuscles; but fortunately we did not follow out Dr. Klein's suggestions to the letter, as we found epithelium cells beautifully reticulated as described by Dr. Stokes. We found the nucleus in the blood discs, but, as usual in scientific investigations, forgot to look for reticulation. However, on a future occasion the late Sir Robert Macdonald submitted to us for examination a portion of tumor of then unknown nature. The portion was placed in Muller's