University of Calcutta

ANTHROPOLOGICAL PAPERS No. 1

PREHISTORIC ARTS AND CRAFTS OF INDIA

BY

PANCHANAN MITRA, M.A.,

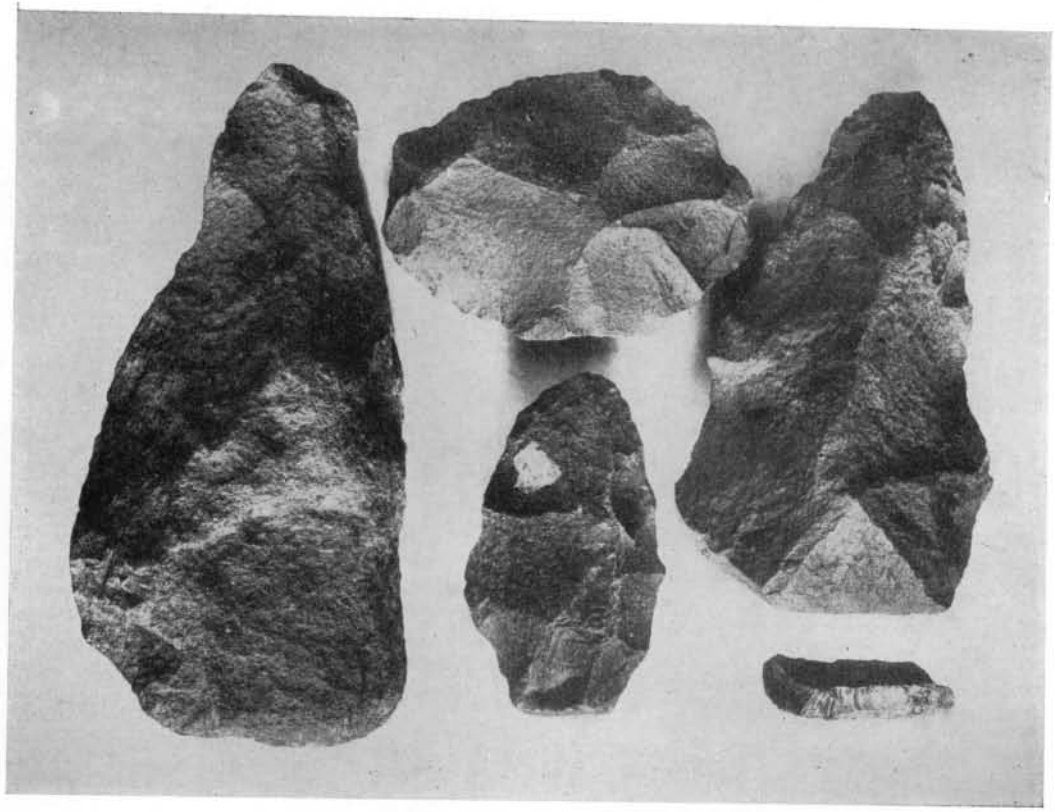
PREMCHAND ROYCAND STUDENT, LECTURER IN ANCIENT INDIAN HISTORY AND ANTHROPOLOGY, CALCUTTA UNIVERSITY.

Reprinted from the Journal of the Department of Letters, Volume III.

CALCUTTA UNIVERSITY PRESS

1920

PLATE I.



Coup-de-poing, Scraper leaf-shaped palæolith and Wynne's Godavari Chip.

Prehistoric Arts and Crafts of India*

Preliminary Notes

BY

PANCHANAN MITRA, M.A.,

Lecturer Prehistoric Archæology, Calcutta University.

INTRODUCTORY.

We cannot say whether it be too early or too late in the day to take a critical survey of the technique of the weapons and implements and objects of adornment of the pre-historic age of India. Within the last few years new finds are accumulating in the various museums of India, which are multiplying fast in distant corners of the vast empire, which are too important to be missed, as they often form connecting links of vital importance. And the Catalogues of the Prehistoric Antiquities already existing seldom attempt any differentiation or classification. Thus Coggin Brown's Catalogue of the Antiquities of the Indian Museum possessing a great value in itself as opening pre-historic studies gives us an array of only 'Bouchers' and 'Palæoliths' so far as the Old Stone Age is concerned and incorporates Banda and Marpha specimens which have been recognised by Sollas to be Azilian not to speak of the 'Pygmies' of Tardenoisian aspect with the neoliths. So Bruce Foote

* For earlier work, to which this is in a sense supplementary, see Prehistoric Cultures and Races of India, Calcutta University Journal of the Department of Letters Vol. I, 1920, pp. 113-200.

too trying to append a rough calculation of the cultures beginning with Chellean, gave a mutilated list where one missed a Pre-Chellean at the top, an Aurignacian at the middle or an Azilian at the end. Fortunately his sharp eye could often catch the different uses for which the artifacts were meant and naturally we get a little more variety of forms. But some time-worn ideas still creep in almost in every page such as the use of gold only in the late iron age or a talk of the 'Chelleo-Mousterian' types of Indian Palaeoliths. Our business here is practically to study these inestimable catalogues, published within the last few years, in the light of some personal observations, after a familiarity with the most up-to-date researches on the subject as well as to present the known data in a more readable manner, particularly to facilitate the study of affinities and ethnic movements which have become in these days the goal of prehistoric studies.

Still the need for a manual on prehistoric archæology or technology in India has been too urgent to postpone such a task. And with this view all the available data, which may prove to be of help, have been carefully incorporated. Though in making the first systematic clearing, some amount of speculation has crept in unconsciously, the end would be gained if India looms in the modern world-wide cultural studies in a proper perspective and not as now inspite of its ancient civilisation at times be rather badly treated in the lump with peoples without a history.

The following abbreviations have been used:—

N.A. ... Notes on the Ages and Distribution of the Foote Collection of Prehistoric and Protohistoric Antiquities in the Madras Museum by R. Bruce Foote, 1916.

C.P.A. ... Catalogue of the Prehistoric Antiquities of the Madras Museum, 1901.

C.R.I.M. ... *Catalogue raisonné* of the Pre-historic Antiquities in the Indian Museum, Calcutta, by Coggin Brown, 1917.

C.R.M.M. ... *Catalogue raisonné* of the Foote collection in the Madras Museum by R. Bruce Foote, 1914.

R.A.P. ... Mr. A. Rea's Catalogue of the Prehistoric Antiquities from Adichanallur and Perumbair 1915.

CHAPTER I

Pleistocene and Recent Geology and Prehistoric Archaeology.

A sudden depression of temperature putting an end to the warm life of Pliocene days marks the advent of the Pleistocene and it is well known that the Great Ice Age has become the chronometer of Palaeolithic cultures in Europe. In India the sudden extinction of the rich Siwalik fauna has become problematical as much as the indications of subsidences and upheavals in late geological times have been argued to be co-eval with sudden fluctuations in temperature that Europe has been proved to have passed through. The glaciated topography or rather the brilliant researches in Europe have correlated the Gunz, Mindel, Riss and Würmian ice epochs (leaving aside Geikie's Scanian, Norfolkian, Tyrolean, Polonian, Durentanian, Mecklenburgian Forestian and Turbarian) with palaeolithic industries[1] which are made to begin in the Mindel Ice Age or the next interglacial stage or according to some, still later at the close of Rissian times.[2]

The great Ice Age.

"Whether India, that is, parts lying to the south of the Himalayas, passed through a Glacial Age, is an interesting though unsettled problem.[3] "There is no physical evidence, so far as is known *of a geologically recent cold epoch*, and some geologists have doubted whether the

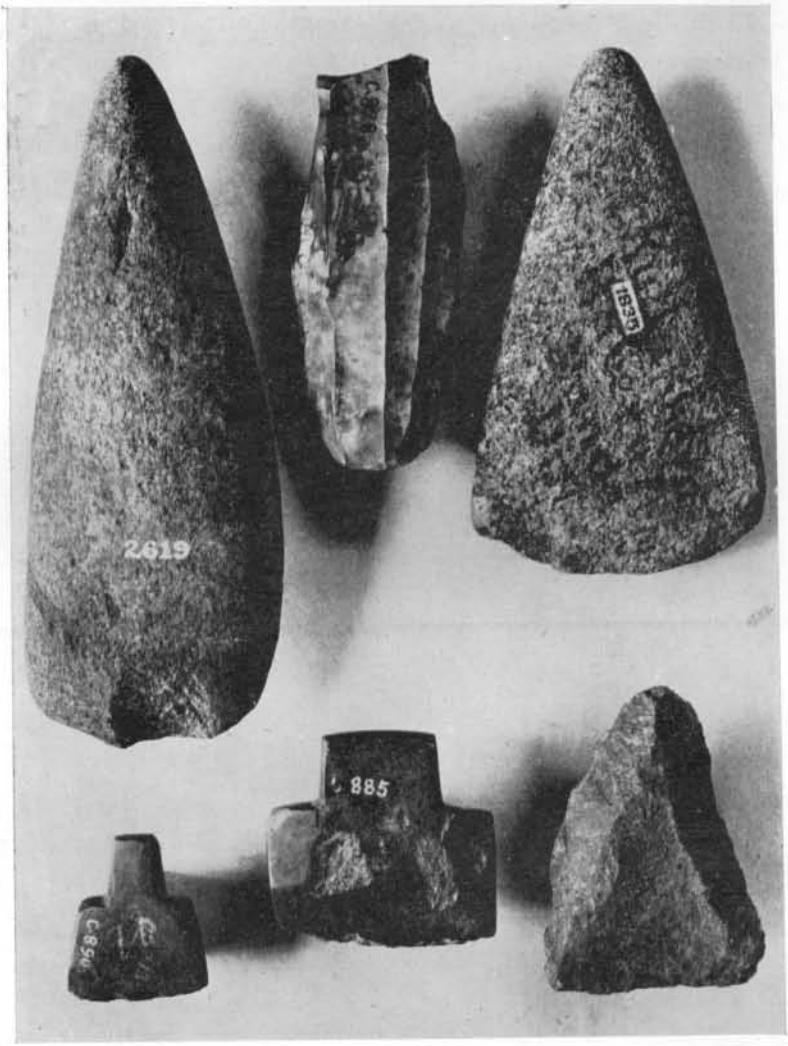
The glacial period in India.

[1] Vide Zeitschrit fur Ethnologie 1913, p. 128.

[2] Osborn, Men of the Old Stone Age, 1918, p. 107.

[3] Wadia, Geology of India, 1919, p. 243.

PLATE II.



A celt from Salem, core from the Punjab, celt from Banda, shouldered celts from Assam, a palæolithic celt form.

peninsula was affected by the glacial period ; but it does not appear hard to understand that a period of great cold in central and northern Asia, was in the south represented by a very wet period, a really pluvial epoch which was characterised by the formation of the great lateritic deposits of the east and west coasts of the peninsula," so remarked Bruce Foote.[1] There is no doubt that India witnessed in recent times great changes of levels of land, subsidences and upheavals which unfortunately have as yet been little studied with other problems of the pleistocene geology of India. It can be very well imagined that the great alterations of the face of the land-surface in extra-peninsular India witnessed in Tertiary times by the upheaval of the Himalayas or the formation of alluvial deltaic formations would set a-going oscillations which continued far late in pleistocene times. The change of climate is now ascribed to astronomical causes or rather to variations in solar phenomena or to land-movements and there is reason to believe that the Vindhya ranges and its outstretching arms have undergone great changes and possibly witnessed subsidence not on a small scale within human memory (and the interesting tradition of Agastya causing its pinnacle to lower itself in making obeisance to him may contain a germ of geological tradition handed down from primitive times to a myth-making age). However there is little denying at present that there was a severer climate at a time not far remote prevailing even in India. Thus Kropotkin says "There is reason to believe that the Pamirs were ice-bound and the great extensions of formidable glaciers in the Himalayas is fully proved in my opinion."[2] I think, the case as it stands, is soberly stated by Vredenberg thus : "Indications of the glacial period in the mountains of India have not

[1] N. A. p. 196.

[2] Report of the British Association, 1893, p. 775.

been clearly recorded, the question having scarcely received any attention. The Himalayan glaciers were far more extensive during the Glacial Period than at the present day, though they still include some of the largest glaciers of the globe. According to R. D. Oldham's investigations, there are indications of three great oscillations of the extension of the glaciers coinciding with some of the glacials and interglacials of the great ice-age in Europe."[1]

The data for recent glacial study in India.

In explaining the occurrence of certain Himalayan species on the mountains of Southern India and even further south and not in the intervening area, Blandford also was led to premise glacial conditions in Pleistocene India, which he said 'if accepted, will add to the evidence, now considerable, in favour of the glacial epoch having affected the whole world and not having been a partial phenomenon induced by special conditions such as local elevation.'[2] It is now very interesting also to turn to the Records of the Geological Survey which are valuable mines of information. So far as Europe is concerned the lucid statements of Sollas, the great geologist who also has become a no less famous prehistoric archaeologist are the best guides for us. They run thus:— "The great ebb and flow of temperature was at least four times repeated; four times have the glaciers enlarged their bounds, and four times have they been driven back in their mountain home."[3] After studying the river terraces he says "The four terraces are ruled, as it were, across the last page of terrestrial history; they are datum lines, which enable us to divide the Pleistocene or Quaternary epoch

[1] Vredenbreg's Summary of Indian Geology. p. 108.

[2] The distribution of Vertebrate animals in India, Burma and Ceylon, Phil. Trans. Roy. Soc. Vol. 194, p. 436.

[3] Ancient Hunters, 2nd edition p. 23

into seven ages, the first, second, third and fourth glacial ages, with their three intervening genial ages, [1] In Central Asia too, Messrs. Davis, Huntington and R. W. Pumpelly established independently positive proofs of at least three distinct glacial and interglacial epochs of the great Ice Age.[2] We know that as early as 1867 Dr. Verchere recorded the presence of erratic blocks in the Potwar at less than 2000 feet altitude [3] and Mr. Wynne's dissertations on 'Indus-borne crystalline fragments' as he tried to prove them, of boulder deposits scattered about on the ranges of Bagh and Choi at heights of 2,500 to, 3,000 feet, 'too numerous to be carried by humans, have become one of the curiosities of Indian geological literature. Mr. Lydekker [4] comes to the conclusion that in Kashmir 6,500 feet is about the lowest level at which undoubted evidence of former glacier-action exists and Mr. Wynne in the same volume divides the pleistocene deposits of the Punjaub into an upper, middle, and lower subdivision characterizing them as "Northern detrital drift," "Alluvium and river drift" and "Post tertiary valley or lake deposit." It is quite evident that this division tries to explain the sequence of three different groups of boulder beds in its own light of which the first represents the latest and the last is of the earliest pleistocence epoch and the intervening one a middle period. Theobald's masterly paper [5] established once for all that these are to be ascribed to glacial action and had it not been so early as 1880 we would have probably got as interesting a study of the Indian glacial stages from him as we have got of the six English stages from Prof. James Geikie. However his personal observations are of the highest value and he tries to establish that there was an extension of an isothermal

[1] Ibi, op. 29.

[2] Pumpelly Expedition 1904, Vol. I p. xxxvi

[3] Journ. Asiatic Society of Bengal, Vol. XXXVI p. 113.

[4] Records of the Geological Survey Vol. XIII

[5] Ibid Vol. XIII

line compatible with the existence of glaciers to so low a level as 2000 and 3000 feet in the Northern Punjaub,' The sections of the Kunhar river given in the plate accompanying the paper are very interesting as they show two glacial stages in the early fluviatile deposit period of Mr. Wynne and thus gives us practically all the phases in India. However the question is of great intricacy as even now there is a tendency to attribute some of the boulder conglomerates spread over a large part of Northern India to the fluviatile action of a great Siwalik river in Tertiary times. But still everything shows that there was a glacio-pluvial period and La Touche's paper in the Relics of the great Ice-Age in the plains of Northern India [1] and Huntington's physiographical researches in Turkestan clearly lead to it.

The significance of 'river-terraces.'

Sollas has well pointed out how the river-terrace enables to divide the Pleistocene or Quaternary epoch which is almost synchronous with 'Palæolithic' culture into several ages, giving there respective stages of the prehistoric archæologists. We all know how rivers cut through their channel and their banks are worn off by rain or stream action which are technically known as 'erosion' and 'denudation'. Now if any body visit rivers showing such process he would be struck by seeing various step-like ridges in the banks which are known as 'terraces'. In these would be found partly the alluvial or rocky soil of which the surrounding land is composed and partly gravel-beds. Now these are the most important things for us. "The gravel beds found in terraces up the side of river-valleys were deposited at different periods by the river to which must be attributed often a greater carrying power than it now possesses. And it will be evident that the higher

[1] Geological Magazine, 1910

terraces were formed before the lower, and consequently the higher the position of the terrace gravel the greater must be the antiquity of the implements contained in them, supposing no disturbing agencies to have been at work."[1] Besides the terraces are now shown to be indelible records of climatic conditions. For as Ellsworth Huntington says "It seems probable, as Park has suggested in regard to those of Asia, that the oldest terrace may represent the last glacial epoch, and that others represent the post-glacial stages, or minor epochs of glacial retreat. In as much as man is known to have existed prior to the last glacial epoch, the terraces preserve the record of a series of climatic changes which have played a part in shaping human destiny. If the oldest terrace dates back no more than 30,000 years more or less, to the last glacial epoch, the youngest cannot be more than 2000 or 3000 years old at most and may be much less".[2]

Bhangar, Karnul and Khadr pleistocene deposits.

But still now river-terraces especially bearing human artifacts in India have scarcely been begun to be studied and we are constrained to notice on a sure basis only three Palæolithic periods—a lower, a middle and an upper. The lower coincides with the older alluvium (*Bhangar*) of the *Ganges*, *Narbudda*, *Tapti*, etc., where the rich Siwalik fauna are still continued to a certain extent and fossils of extinct species of Elephas antiquus, Rhinoceros, Giraffa, &c., are found and in the lower alluvium (Khadar) we can distinguish some fauna still racially distinct from modern ones, while midway stand such fauna as show a transition from older to later forms as is witnessed in the fossiliferous stalagmite caves like Karnul, containing some living as well as extinct species.

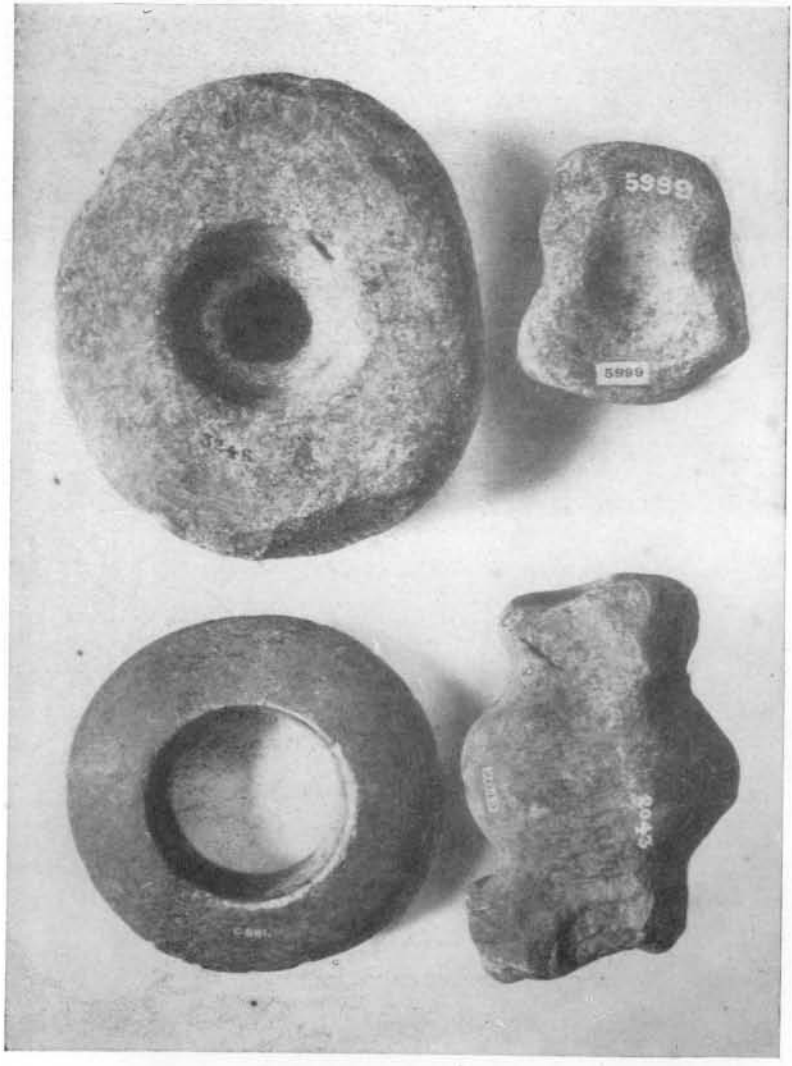
[1] British Museum Guide to the Antiquities of the Stone Age, 1911, p. 3.

[2] E. Huntington, The Climatic Factor, Washington, 1914, p. 36.

The two types of Indian alluvium.

A word of caution is necessary. It is not every swallow that makes a summer nor every river in India that would afford us old terraces or implement bearing gravels. In India the two types of river-beds and alluvium are sharply distinguished. The one which is the more recent is spoken of as the Newer Alluvium and still in process of formation. The other, the older Alluvium is the most important for us though they await systematic study by the prehistoric archæologists still, for there alone genuine palaeoliths would be found if it happened to be a human settlement in those far remote days. As their geological features become very important for us, I give below an excerpt from Vredenberg's excellent Summary : " The great depth of the Ganges alluvium, as revealed by borings, indicates that in its case also subsidence must have preceded simultaneously with deposition. Except in the neighbourhood of the delta, the greater portion of the alluvial plain is above the level of the highest floods of the Ganges and its tributaries, indicating that this area has been upheaved, or that the delta region has been depressed within relatively recent times. The presence of a mass of ancient alluvium, known as the Madhupur jungle north of Dacca in the midst of the delta region, further indicates that a certain amount of disturbance must have occurred. The existence of the ancient alluvial areas enclosed within rock basins along the course of some of the Peninsular rivers, such as the Nerbudda, Tapti &c. points to the same conclusion, and it is evident that a certain amount of irregular warping has affected India in Pleistocene times. In consequence of these physical changes, the ancient alluvium and and the one still in process of formation can be readily distinguished from one another. They are known in the

PLATE III.



Hammerstones from Marpha and Banda and Ringstones from Burma like American forms.

vernacular as "*bhangar*" and "*khadar*." In geological age, they correspond with the two main divisions of the Quaternary era, the Pleistocene and Recent. The Pleistocene age of the bhangar or older alluvium is clearly shown by the remains of numerous extinct animals amongst which may be mentioned *Elephas antiquus*, a characteristic species of the Pleistocene of Europe, and various extinct species of horse, ox, rhinoceros, hippopotamus. Contemporaneous with these are the earliest remains of prehistoric man in the shape of stone implements." (p. 109—110.)

Other pleistocene formations.

Besides these amongst the Pleistocene and recent deposits may be reckoned among others the high-level river terraces of the Upper Sutlej and other Himalayan rivers, the lacusrine deposits of the Upper Jhelum Valley, the Poravander stone of the Kathiawar coast and the *zeris* of Tinnevelly and Travancore coasts, the aeolian deposits of the Godavari, Kistna and Cavery, the loess deposits of Potwar-plateau, the cotton-soil or Regur of Gujrat and the Deccan and last but not least the perplexingly wide distribution of high-level laterites [1] all of which are too important for prehistoric archæology some having already yielded palaeoliths in abundance.

The peculiar case of 'Laterites' and raised 'sea-beeches.'

Laterite is also of great importance to us as it is easily found out in India especially in the south and often yields human implements. It has now been accepted that this is formed by action of water dissolving rich ferruginous masses and forming reddish concretionary masses consisting of hydrates of iron, aluminium or manganese. This has been found often in high levels and high level laterites are now being established as of great antiquity indicating fluviatile or lacustrine deposits of the Pleistocene

[1] Wadia, Geology of India, p. 262.

age and sometimes earlier. There is also a low-level laterite which is rather recent and in some places it is still in process of formation. As implements of antique amygdaloid types have been found in high level laterite, their antiquity is unquestioned and so also lateritic accretion in places where water-a tion is absent now is also a fair indicative of a great length of time which must have elapsed before the physical changes of upheaval could have accomplished this. So also raised beeches have been observed all round India which are now ascribed to Pleistocene times. It would be interesting indeed to study the upper strata of these, as now the question of migrating races is no longer looked upon as a heresy and the sea-craft of some of the earliest people of late Pleistocene and later times might have left some traces to serve as an important nucleus for the studies of 'ships as evidence of the migration of culture.'

Submerged forests.

So also submerged forests which have done so much for throwing light on late prehistoric times in Britain have been discovered in the Ganges delta, Pondicherry, and the Eastern Coast of the Island of Bombay and it may be hoped some future Reid or Munro would elicit much tellurine and human secrets from them.

CHAPTER II

Old Stone Age

The early history of river-drift finds and their sub-divisions.

It is a matter of common knowledge that in the year 1847 Boucher de Perthes of Abbeville began to discover rude stone things which he claimed to have been shaped by man in the long bygone ages before the deluge. In those days the orthodox Biblical dogma had caught so much hold of the geologists that no one would believe that the frail human body could withstand the rigours of a diluvial age, which it was held, had swayed the world in geologically recent times. In 1855 Dr. Rogillot of Amiens also published an account of the discovery of flint implements enclosing the remains of extinct animals. It is a source of satisfaction to us that Dr. Hugh Falconer, whose name would, as one would find later, figure prominently in the controversy regarding one of India's oldest artefacts, and Prestwich, turned the scale in favour of accepting the antiquity and 'humanity' of these finds in question. Since then nobody dares to deny when chipped stones are found in river-drifts that they bring forth evidence of the existence of man at the age calculated by studying the conditions of the bed in question. And of late years the balance has seemed to sway to the other side. For in ancient days the classification roughly was River-drift period and Cave-period which was called Palaeolithic (and formerly Archaeolithic *i.e.*, of Old stone)

and the surface period distinguished by the term Neolithic (or New stone) which have passed into general currency since Avebury's use of the terms. Since 1892 when J. Allen Brown brought forward a new term for forms considered earlier than Palaeolithic, the term Eolithic (Dawn-stone), the word has been a great bone of contention among prehistoric archæologists most of whom reject and some still hold to that term. The Twentieth Century has seen a great study of Palaeolithic forms, often to the neglect of Neolithic and Metalic ages and has brought forth these names for succesive phases of old stone culture, *e.g.*, Chellean, Acheullean, Mousterian, Aurignacian, Solutrian, Magdalenian and Azilian. Some forms from Strepy, Mesvin and Maffle have now been established mostly by the efforts of Mr. Rutot of Belgium, a great champion of 'Eoliths' and are now spoken of as 'Pre-Chellean' by the French savants like Boule, etc., who are reckoned the highest authorities in this matter. Mr. Rutot's proposed term 'Reutelian' is far from being accepted and we should do well to use the term 'Pre-Chellean' not only of shapes of the horizon of these early Belgium finds but to extend it to earlier forms still where the human hand in the chipping is not doubted.

1. The oldest authenticated Pre-chellean forms.

Though Eolithic types in general have not been accepted, we should know what a 'rostro-carinate,' the supposed earliest stone implement used by man, is, for round it the controversy raged very strong. In the words of its great champion Mr. Reid Moir "A rostro-carinate is an implement with broad posterior region, narrowed anteriorly to a quasi-vertical cutting age. This anterior narrow edge is strongly carved and gives the implement the form of the beak of an accipitrine bird. The form of the region of the implement may also be compared to that of the prow

Copper axes from Manipur and Pachumba like Egyptian neoliths.

of a boat (the boat being turned keel upwards)."[1] No beaked rostro-carinate types nor eoliths according to Bruce Foote have yet been found in India, though I had pointed out already that one of the Burma finds of Dr. Noetling of rectangular shape bore a remarkable resemblance to a similar Eolithic type figured in *Man*, 1908. As for the Burma finds by Dr. Noetling in 1894 though much ink has been spilt to show that they belong to Miocene and then later to Pliocene, the modern opinion seems strong to accept them as of the earliest Pleistocene times if not earlier. Not having the good fortune to study them first hand, all that could be made out from the plates is that there is not much of design there, though little doubt exists as to their being chipped, as was the opinion expressed by Professor T. Rupert Jones in *Natural Science* 1894, p. 345. The presence of nodules gives us reason to compare them with Chelles forms and absence of design to a little earlier stage.

(1) The very early shape of the Burma-specimens.

The next authenticated implement described in detail in Coggin Brown's Catalogue p. 57 is Hackett's Bhutra Boucher found associated with bones of extinct animals. It was found in a gravel bed about 6 ft. above the low-water level of the Nerbudda and that indicates the vast age that must have elapsed before the Nerbudda could find its present course allowing for the various changes of level by subsidence and elevation, denudation and deposition in the meanwhile. The ossiferous gravel in which it has been found has been assigned by competent palæontologistsis to a horizon just succeeding the last of the Siwaliks and it is immaterial whether it is called the latest Pliocene or the earliest Pleistocene

(1) The Prechellean Nerbudda Boucher.

[1] Journal, Royal Anthrop. Inst., Vol. XLVI. p. 198.

Dr. Hugh Falconer was disposed to consider it as Pliocene. What is the most remarkable about this is that it undoubted was of a time which can be called 'Pre-glacial' and yet its forms betray a finish of the Chellean type though probably Mr. Reid Moir would be disposed to detect also an accipitrine beak of the 'rostro-carinate' types. A large portion of original mass of unworked Vindhyan sandstone still remains and the specimen appears to be a little too heavy for its high finish.

The pre-chellean Godavari chip.

The next in order though scarcely less important in antiquity and authenticity comes an Agate chip $2\frac{1}{2}$ inches long and $\frac{7}{12}$ inches wide, described in some detail in C. R. I. M. p. 61. It was found at Mungi near Python. It is also a riddle for by its Palæontological associations it has been found to be of a horizon identical with that of the Nerbudda find (this may be found out to be wrong later for while the Nerbudda Boucher was found at a level about 6 or 10 ft. above the present water-level, this was extracted from a bed about 20 ft. from the present water-surface). Anyway if Indian palæontology is right, this and the Nerbudda boucher have been ascribed to a time scarcely less than 400,000 years ago. But though of such hoary antiquity, the shape inevitably suggests the fine form of a Levallois flake of Mid-Palaeolithic times of Europe. It had evidently been used, and being found *in situ* and having been considerably written upon, there is little doubt about its genuineness at present. The question is, whether it may be of Pre-chellean times or of Mid-Palaeolithic age. Palaeontological arguments leave no doubt as to deciding its place in the earlier phase for a considerable section was for holding that both this and the Hackett Boucher belonged to the Upper "Pliocene".

Some heavy two handed Coup-de-poings.

I had already insisted on a systematic regular gradation of culture discernible between the Burma and the Godāvari types while the Nerbudda type came in as an intervening step. Fortunately my recent excursion to Chakradharpur under instruction from Sir Asutosh Mookerjee and Prof. Bhandarkar has been very fruitful, for it has placed in my hands cases of two finds which. coming of the hills of the Singhbhum district, on the way to Nerbudda, betrayed far earlier shapes. One was a very heavy precursor of Chellean Boucher, which, could not but have been used except by both hands, which still forms part of Mr. Anderson's excellent private collection and the other a primitive heavy end-scraper (grattoir) which my friend Mr. Ghosh picked up from a high part of the river-terrace when I accompanied him on an axe-hunting expedition to the Sinjai-Binjai Valley. We await eagerly the publication of exact data about these, but to my eyes their forms left no doubt of the phase of culture they indicated being of the earliest Pre-chellean times. The Sinjai-Binjai Valley seems to have been inhabited by prehistoric peoples from almost the earliest times to the dawn of Neolithic age and several stages could be easily detected from the specimens with Mr. Anderson. The paper in the *Journal of Behar and Orissa Research Society in 1917* published an account of some remarkable Palaeolithic forms found associated with gravels at a height of about 18ft. from the present river bed where the fossil tooth of a wild horse of Karnul (mid-pleistocene) type was found. The palaeolith that we picked up had evidently been washed off from the highest existing gravel bed which is only about 2 or 3ft. from the top of the plateau whose total present height is present height is about 50 ft. Below it was another gravel bed after which we came to the third bed in which

was found the teeth of Equus of Karnul type. So stratigraphically also the great antiquity to the grattoir we picked up, can be arrived at. While the heavy boucher form betrayed traces of high level 'laterite' sticking to it, thus carrying it to the earliest prehistoric times. That such heavy forms were not uncommon in Palaeolithic India are evidenced by the presence of at least 6 such specimens (in a collection of over 2000 palaeoliths) in the Indian Museum. They came from Chanda and Sripur areas of the Godavari district[1] and various sites in the Chingleput and Arcot districts.[2] In the course of a recent excursion to Ghatsila, I extracted such a heavy coup-de-poing of very early shape and chipping design sticking *in situ* in a denuded earlier terrace of the river Kharsuti (in Singhbhum district) 3′4″ above the present high-water-level and 8′10″ above the low-water level.

The various subdivisions of palaeolithic artifacts in Europe.

We are not quite sure if the 'retouch'-test of R.R. Schmidt would hold good for other parts of Europe but they are too important to be given the go-by as we know that South African or Syrian artifacts are being studied and classified thus and it is desirable that science should have but one language. So Sollas has done well to quote from *Mannus*, 1910, p. 98 Schmidt's nice differentiations that *Chellean* retouches are coarse, broad, conchoidal, leaving strongly marked concavities which in *Acheullean* times though conchoidal are narrower, longer and fewer and persist up to Lower Mousterian times. In upper Mousterian we get 'stepped' in Aurignacian 'channelled' or 'fan-like' in Solutrian 'scaly' and in Magdalenian 'nibbling' retouches.[3] In this light

[1] Cat. No. 43 and 32, C. R. I. M.

[2] Cat. No. 416, 442, 479, 602, C. R. I. M.

[3] Ancient Hunters, 1915, Footnote, pp. 437-48.

a classification of the Palaeoliths in the Indian Museum all huddled together under one heading would not have been impossible, and would have given us an insight into the gradation and distribution of cultural activities in our land for thousands of years. Thus at the outset it is noticeable that bone-implements are very rare (they may be due to termites or other peculiarly destructive Indian conditions as suggested by Bruce-Foote) and earlier forms apparently abound, with Chelleo-Mousterian according to Bruce Foote or Chelleo-Acheullean facies according to Coggin Brown. But this roughness of forms might have been due to the Indian 'Palaeolithians' using the less tractable but easily accessible quartzite and not flint. Still I could discern Aurignacian retouches in C. R. I. M. No. 594 and 597[1] or Solutrian forms in C. R. I. M. No. 528,584[2] bearing in mind that these come from the districts of Chingleput and Arcot which have also yielded the earliest forms in abundance. The 'inferior chert flakes' already described at length in the J. B. O. R. S. 1917 present marked Mousterian characteristic and the finely worked specimens in Mr. Anderson's collection including some very nice arrow-heads and burins come from the just lower gravel bed. Nobody who has just had a look over the fine collection of arrowheads of pointed and leaf-shaped flakes would be disposed to doubt of their existence and subscribe to the sweeping generalisation of Bruce Foote that these were unknown to the Stone Age in India. It is rather interesting to turn to Evan's work[3] where we find an arrow-head from India, acutely pointed $2\frac{5}{8}$ inches long and tanged and barbed described, and also to

The several later stages of culture discernible in Mr. Anderson's collections.

[1] C. R. M. M., p. 40.

[2] C. R. M. M., pp. 37 and 40.

[3] First edition, p. 361.

notice that the specimens which raised doubts even in Bruce Foote's mind were those collected from Chota Nagpur by Mr. Wood Mason.

Besides the arrow-heads, beaked burins, keeled scrapers, strangulated spokeshaves, 'gravette' points, chatelperron points, elongated laurel-leaf points and the wonderful variety of the stone artifacts of middle palaeolithic shape in Mr. Anderson's collection all pointed to a great development of Late Aurignacian and Early Solutrian cultures in the locality. But what we missed was bone implements which had either disappeared owing to the destructive nature of the soil in which they were buried or by the quick action of the termites when exposed. What was still more striking that the locality was still strong with its populace, one of the most primitive (Pre-Dravidian) inhabitants of India whose huts well shaped were painted in rectangular patterns with inlaid figures or sometimes isolated figures of animals like the elephants which, inevitably (what with the gaudy colour what with the crude shape) suggest Bushman-like activities. So here we are face to face with palaeoliths and colouring materials suggestive of palaeolithic art and also an aboriginal tribe still carrying on rude artistic designs in a manner leading us to think of them as survivals though with many modifications and complications by later cultural and possibly ethnic contacts.

Classification and Distribution of Indian Palaeoliths.

Holmes has in his 'thorough' manner pointed out that the following methods of classification are possible :—(1) by geographical areas, natural and political, (2) by culture characterisation areas, (3) by peoples, as tribes, stocks and nations, (4) by successive geological periods as Tertiary, glacial, post-glacial, (5) by classes of artifacts as implements, utensils, weapons, (6) by the materials employed, as mineral, animal, vegetable, as bone, stone,

metal, wood, bone, shell, (7) by arts and industries as hunting, war, agriculture, quarrying, mining, building, (8) by successive steps in culture-development as savage, barbarous, civilized, (9) by function groups as practical, ornamental, sacerdotal, diversional.[1] And it should be remembered to arrive at historical truths if not for a complete study technological classifications should proceed along all these lines. However, Bruce Foote's studies have presented us with 14 different Palaeolithic forms, *e.g.* 4 kinds of axe, 2 forms of spears, digging tools, circular implements, choppers, knives, scrapers, cases, hammer-stones and strike-alights.[2] So far as the distribution is concerned he remarks "the localization of all the races has also been influenced in some measure by the distribution of the rocks yielding materials suitable for their respective implements. Thus there are far more numerous traces of the Palaeolithic race (*sic*) around the great quartzite yielding groups of the hills forming the Cuddapah series of Indian geologists and the great quartzite shingle conglomerates of the Upper Gondwana system in the Chingleput, North Arcot and Nellore districts than in other regions. In diminishing quantities traces of Palaeolithic man are found to the northward of the Kistna valley as also to the south of the Palar valley."[3] But we have already cited instances of early Palaeoliths from Chhoṭa Nagpur and Dr. Noetling's Burma finds as well as Wayland's Ceylon finds which has been ascribed to Palaeolithic Indians walking on terra firma to the island connected with the mainland in Pleistocene times shows that the whole of the Indian continent had been traversed by early Palaeolithic culture in Pliestocene times though it is noteworthy that the route possibly lay through

[1] Handbook of Aboriginal American Antiquities, 1919, Part I, p. 148.

[2] N. A., p. 9.

[3] N. A. p. 36.

the older rocks and by the older river-beds which in contrast with the other parts of India had been very little subject to orographical changes on a huge scale. So also that this cultural and racial movement continued till late Palaeolithic times can be maintained by showing that the Azilo-tardenoisian Pygmies (Sollas speaks of those from Banda and the Vindhyan area as Azilian) are obtainable from Central India to Ceylon not to speak of other parts of the world. To whatever psychological or ethnological causes the widespread distribution of the 'pygmies' may be ascribed, the occurrence of quartzite industries in flint-using countries such as Somaliland and Assuan (Egypt),[1] Morocco and France,[2] as well as Rhineland,[3] require more investigation when considering the question of first human migrations.

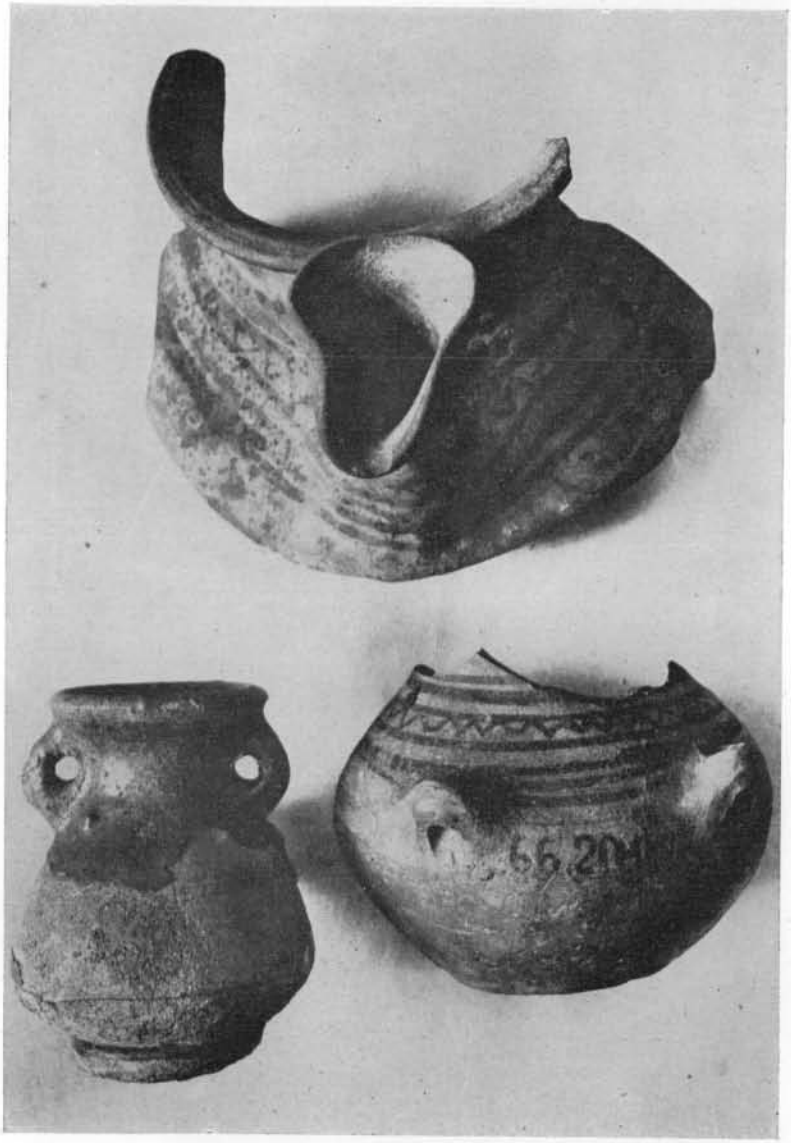
---

[1] Zeitschrift f. Ethnologie 1909, pp. 737-741.

[2] L'Anthropologie, 1908, pp. 166, 425; 1914, pp. 43 and 47.

[3] Zeitschrift f. Ethnologie, 1910, pp. 586, 591.

PLATE V.



Painted potteries from Beluchistan in Anan and Elam linear designs

CHAPTER III.

The Neolithic Types of India.

The most common of neolithic forms are polished celts.

Celts.

This name has been given to hatchets, adzes and chisels of stone. It has got no reference to Keltic people but is merely the English form of the Lat. *Celtis or Celtes*—a chisel. It has been suggested that they may originally have been some connection between the Lat. *Celtis* and the Welsh *Celt*, a flint; but this is merely accidental. The Welsh proverb says that there are three hard things in the world—maen-celt (a flint stone), steel and miser's heart. The general form of stone celts is well known, being usually that of more or less flat blades approaching an oval in section with the sides more or less straight and one end broader and also sharper than the other. They have been divided into three classes by Evans, *viz.*, (1) Those merely chipped out in a more or less careful manner and not ground or polished; (2) Those which after being fashioned by chipping have been ground or polished at the edge only; (3) Those which are more or less ground or polished not only at the edge but over the whole surface. There is a curious wide-spread belief all over the world amongst savage (uneducated) people that the celts wore thunder weapons. In the west of England people still hold that the thunder axes they find, once fell from thy sky. In *J. A. S. B.* 1909 there is an article by Coggin Brown showing how these celts are sold in Yunnan (Western China) for medicinal purposes. In most parts of Europe, Asia, Africa

and America these celts are looked upon with a great deal of awe and regarded as lightning weapons.

These were used hafted in various manners. The earliest handles seemed to have been made of horn into which the narrower end was inserted. Then more commonly wood was used in the early neolithic site of Robenhausen. We find blades often inclined towards the handle. Often we find an intermediate socket of stag horn used with the celt when inserted into the handle. Sometimes also similar tools were used in the hand without the intervention of any haft. The forms of polished celt are many. Sometimes as in the earliest forms they show facet at the edge but more often they are thin and highly finished with flat sides and oblique edge. They are generally triangular in section but rectangular and oval sections are also not unknown. Some forms are sharp at both ends. They were used chiefly for cutting down timber and for scooping canoes out of the trunks of forest trees ; for dressing posts, for huts, for grubbing up roots and killing animals for foods, for preparing fire-wood, for scraping the flesh from bone when eating and for various other purposes in the domestic arts. But they were also employed as weapons of offence and defence and sometimes for minning in chalk in pursuit of stones and probably also for religious purposes. (These two paragraphs like some others have been conveniently taken from Evans, *Ancient Stone Implements of Great Britain and Ireland*).

The stone selected for the celts in India is in the case of the polished ones, diorite, of varying degrees of fineness in some cases nearly approching porphyry. A perfectly distinct type roughly chipped is of a hard black basalt. As a rule while those of the one class are thick and show an ovate section, the basalt celts are comparatively flat. The basalt weathers differently

from the diorite. In rare instances celts of polished sandstone have occurred.

Rough hewn celts of basalt may be divided into three types : (a) heart shaped or cordate, rather an uncommon type, the edge alone highly polished and so much rounded as to be almost semi-circular. In many cases inequalities of the chipping have been partly removed, but in no case has the implement itself been entirely polished. (b) Lanceolate, long and comparatively narrow and coming to a point at the end, resembling the arrow-heads termed leaf shaped in European collection. The side edges have the appearance of being serrated owing to flakes having been taken off, on alternate sides. (c) Very flat and almost triangular in shape.[1]

Hammer-stones.

"Grooved hammers and axes are perhaps the rarest of numerous neolithic stone implements recorded from eastern Asia. Only one specimen of this type appears to have been described from India. It was found by J. A. Cockburn together with a number of other stones under a sacred tree 37 miles south west of Allahabad at Alwara. In form it somewhat resembles a modern hammer, being flat at the ends and slightly carved on the upper surface. A groove 50 inches in width and 5 inches in depth has been carefully carried round the centre. The base has been hollowed out in equal care in a gouge like form to the depth of about $\frac{1}{3}$ of an inch. The whole arrangement suggest that the hammer was attached by ligature to a wooden or withy handle, the ligature being kept in its place by the upper groove, while the lower groove held the hammer in position on the rounded haft.[2] Mr. Cockburn has pointed out certain minute marks especially on the lower

[1] J. A. S. B. pp. 228-29.

[2] J. Coggin Brown, Grooved Stone Hammers from Assam &c., J. A. S. B., 1914 p. 107.

groove, which suggest the possibility of metal implement having been used in the fashioning of the hammer and it may be that this implement belongs to the transition stage from stone to metal. These implements may be counted among the best known relics of the aborigines and specially in the rural districts of the older states of America they are very frequent. Red Indian stone tomahawks are familiar objects. In general they can be defined as wedges encircled by a groove usually nearer the butt than the edge. The grooves served for the reception of a withe of proper length which was bent round the stone-head till both ends met when they were firmly bound together by ligatures of hide or some other materials.

Another kind of hammer stone from India was also collected from Allahabad. It is a cubical mass of basalt measuring 2·50 inches each way. On each of its six sides is a hole or depression about one inch in diameter and ·25 in depth. The implements fit conveniently into the hand the depression affording a hold for the fingers and suggesting its use as a many-sided hammer, the faces of which were changed from time to time when the pit became inconveniently deep for use.

Another kind is seen in a flat red quartzite pebble, measuring 4·25 inches by 3 inches by 1·75 inches. The two ends are slightly flattened and the upper and lower sides exhibit a double groove or notch for the purpose of securing it to a wooden handle. On the upper and lower surface double cup marks or depressions which are not easily accounted for but may have been meant for hammering appear.

Another kind of curious implement is a wrought piece of basalt 3·50 inches by 3 inches. It bears the appearance of having been split into two either either by accident or design. A deep but narrow groove

PLATE VI.

Painted potteries from Beluchistan in Tripolje (A) and Egyptian style.

runs through the centre. Mr. Cockburn considers it a type of implement resembling the single Bolas or modern slung shot, and supposes the groove to have been intended for the reception of a thong. Mr. Cockburn found a card figure at Kalinjar bearing in his hand an implement which he considers resembles that now described. At the back of the stone is a small but curious depression hardly large enough to have been produced by hammering.

Another type very well known in Europe is a mace-end or ring-stone. It is sometimes made of quartzite and has got a central hole. On either surface towards the centre it narrows in the manner characteristic of the working of the implement of this description found both in India and in Europe. Many examples of this type are to be found figured by Evans and others in their works on 'Stone Implements'. Perfect specimens in some numbers have been found by Mr. Cockburn and Rivett Carnac, beside a large number of fragments. The perfect specimens are generally found under trees, deposited there together with celts, but numerous fragments have been picked up at the base of hills on the Kaimur plateau or in ravines together with fragments of celts and flint chips and other indications which usually mark the sites of ancient encampments. Large round pebbles with the drilling of the central hole in a more or less imperfect state have also been found in considerable numbers indicating that the process was troublesome and lengthy. Some exhibit a deep cup mark or depression on either side, others on one side only. They closely resemble the hammer stones found in Europe and America and figured in the various works on the subject. In many of these cases it seems doubtful whether it was intended to perforate the stone, which fitted conveniently enough into the hand as a hammer.

Four sided blocks of diorite ground to a rough point at the end bear all the appearance of having been used as picks or hoes and are well adapted for grubbing out roots or digging out holes. According to Rivett Carnac this implement may have been used in a rude state of culture. The fact of the point being unsymmetrical and the right side exhibiting a greater amount of the wear than the left favours this idea.

Long, tapering well rounded pieces of diorite measuring $9\frac{1}{2}$ inches in length are sometimes met with. It bears from top to base the marks of the chipping by which it has been worked into its present state. The implement has all the appearance of having been used as a pestle for pounding grain or other substances. It may possibly have been used as a stone club like those of the Merai of New Zealanders but is rather short for such a purpose.

CHAPTER V.

Prehistoric Art.

Bruce Foote while pointing out by the presence chert burin at Jubbulpore the possibility of prehistoric paintings in India had bluntly stated that none had as yet been reported. Though this is true very largely, as any cave scientifically explored seems to have been the Billa Surgam Caves which contained no trace of any etching or primitive figures; we find reported in Indian Antiquary, 1901[1] a remarkable paper on the Rock Carvings in the Edakal Cave, Wynaad, in the Journal of the Royal Society a no less interesting paper on the Cave Drawings in the Kaimur Range, North-West Provinces by John Cockburn and in the Journal of the Asiatic Society of Bengal for 1889, a big paper by the same author on an archaic rock painting from Mirzapore. Besides these, etchings have been reported from Bellary which have been noticed by Bruce Foote and caves have been reported in Kalat, and another paper, from Mr. Carlleyle seems to have reported notable discoveries of paintings from Berghelkhend, Bundelkhend and other places. From Ceylon and Tibet have also come informations of rock carvings. Similarly Cave paintings have also been reported in Hosangabad but the last and the most important of all in fulness of details is the paper of Mr. Anderson, in the Journal of the Behar and Orissa

Reports of Cave-paintings in India.

[1] Pp. 402-421.

Research Society for September, 1918. The paper has attracted world-wide attention and describes a rock-painting near Singanpur in the Raigarh district. Under instruction from Sir Asutosh Mookerjee and Professor Bhandarkar and on behalf of the Post-Graduate Council and Teaching of the Calcutta University I visited the place in November last in the company of Mr. Ghosh, Curator of Patna Museum. We had before this met Mr. Anderson and leant from him how when he discovered these paintings long ago he had invited the Indian Museum authorities to study them and Mr. Percy Brown of the Art section and Mr. Coggin Brown of the Geological Survey had also been taken by him to the spot and the latter had reported to the Asiatic Society of some paintings in the Raigarh which had already been noticed in *L'Anthropologie* in 1915, p. 304, thus :—" The Asiatic Society of Bengal in a sitting of the 7th April last has heard a communication of Mr. Brown in the walls of a cavern situated near Raigarh in the Central Provinces of British India. This cavern represents nothing but the ruins of a site once much used. The anterior portion has gone to give way to an ancient epoch and the debris in obstructing the openings has preserved the designs. They represent the scene of chase and resemble occasionally in an extraordinary manner the paintings of Cogul in Spain. From the point of view of technique there we have the approaches to the cross-lined 'pottery of prehisortic Egypt.' The paintings are of great interest and cannot be estimated by less than thousands of years —they are much older than all that have been hitherto discovered. Some agate flakes have been found in conditions which enable us to arrive at interesting geological conclusions." The Singanpur hill is well known to the villagers on account of the caves it contains. They told

The Singanpur paintings and our visit there.

us that there were three 'Mandirs' (temples or sacred places?) where the hermits used to reside and from one cave often appeared a white rider on horseback which disappeared mysteriously in the grotto. As is common with such places the tradition connected it with fairies and mysterious creatures. The caves are all well-suited to human habitations there being a pool of water inside. It seemed to lie on the highroad of people passing from the North of India to the South. It is however not in the caves but on a part of rock surface now thoroughly exposed to the sun by some apparent projections having fallen away, that numerous figures in red pigment occur. Unfortunately the majority have been washed off and there is no possibility of rescuing them. It is evident that all these scenes depicted were connected with some sort of magic or totemistic rites. Just getting up the surface on the left hand remains of a scene very interesting prehistorically for we have got the clear outlines of a *Kangaroo* and just beneath apparently the faded outlines of a still bigger one. This fact is very important as these marsupials, now restricted only to Australia, must have been known to the painters who have given quite a life-like reproduction in palaeolithic times. The other figures have been given in some detail in Mr. Anderson's paper who has however failed to catch the import of the Kangaroo scenes. The only perfectly preserved scene which is still to be seen is the bull or sambar-hunting scene where the people conventionally or probably dressed in masks, which according to Mr. Capitan was an widespread custom in quaternary times.[1] Another piece missed by Mr. Anderson is a spirited though a little conventionalised human figure with arms akimbo near the hunting scene. The right ankle is bent in such a way as to suggest a dancing posture. In one place appeared the

[1] *Vide* L'Anthropologie, 1914, pp. 106-113.

traces of a mammoth-like figure which is now too fragmentary to allow of any sure assumption. Almost all the paintings were in red pigment except the semi-circular figure of a sun (?) with divergent ray-like lines near the mouth of the grotto. All the paintings are highly interesting and have been figured by Mr. Anderson in his article in the J. B. O. R. S.

The Bellary "graffiti."

From the Kapgallu hills in the Bellary district have been reported more than 20 groups of figures of birds and beasts of various degrees of article execution. Some of them are described by Bruce Foote in *N. A.* pp. 88 & 89. In one group there are obscure human figures with a well drawn figure of a bustard. In another are figures of two elephants of a very lean type standing tail to tail to each other. A third group contains a bird with a big tail and a thin body with a high-humped bull near by. The most interesting of them all is a hunting scene depicting two men with upraised right arms as if for hurling javelins, having something like shields on their left arms proceeding towards a bull. There is also delineated in another part a six-rayed star. All the figures are interesting and occurring in a Neolithic site being more of conventional shapes and mystic outlines, they cannot be referred to the best art period of Palaeolithic times to which the Singanpur paintings most probably belong but to later artistically decadent neolithic times.

The Edakal rock carvings.

Probably to the same decadent culture horizon belongs the series of carvings occurring in the Edakal cave, Wynaad and situated about 56 miles from Calicut, about the same distance from Octamund and four miles S. W. from Sultan's battery. Mr. Fawcett, a Superintendent of Police has introduced the subject with some detail and several plates to readers of the Indian Antiquary in October, 1901. One

part of the cave contained inscriptions of ancient and mediæval historical times which were deciphered by Dr. Hulizsch. But of much earlier date are the carvings which had been partly covered up by a mould which was completely cleared up only after an excavation of 7 ft. which had accumulated under the roof rock during a long stretch of years. "After the rock carvings had been completed and indeed after the place had been abandoned." "The carvings clearly represent human beings and animals and objects for human use and symbols, but they so run into each other and are placed so closely together that it takes a protracted and close study to make anything of them. The most interesting features of the sculptures are the frequent human figures with a peculiar head-dress. There are several rather indistinct figures of animals. The usual Indian symbols are of frequent occurrence, *e.g.*, the *swastika* and specimens of the familiar circula 'sun-symbols.' There is evidence also of magic squares."[1] It appears that all the figures are but rude outlines conventionally drawn and probably associated with some magic or totemistic rites. Many appear to be men dancing in masks or masked head-dresses. The elongation of the figures are noticeable here as in the Singanpur figures. That they belonged to Neolithic times is proved by the find of a fragment of a well-shaped and polished celt from the place.

Rock-carvings in Ghatsila.

To the same culture horizon, at least so far as the style was concerned belonged a group of rockcarvings discovered by me in a village callad Maubhāndār accessible from Ghatsila, a town in the Singbhum district. Tradition goes that the five Pāndava brothers spent their year of recluded life there and the marks of their habitat had been left in the incised human figures on the black

[1] Ind. Ant., 1901, p. 413.

stone (See Plate). What was remarkable in the style was that the figures agreed extraordinarily in style with the dockcarrings of Australians as figured by Matthews in J. R. A. I., Vol XXV., p. 16.

As I could pick up fortunately a neolithic axe of campignian *facies* ticking in the matrix on a level with the carvings I am inclined to ascribe a neolithic date to these. **This group as well as the Kangaroo scene of Singanpore might go in support of an Indo-Australian culture-contact from late Palaeolithic up to Neolithic times, which the Philological studies of . W. Scmidt have just began to hint at.** (*Vide Die Gliederung der Australischen Sprachen, Wien 1919, p. 22*).

John Cockburn's discoveries of cave paintings in the Kaimur ranges of late Palaeolithic times.

Of unique interest are Cockburn's researche[1] which would have been invaluable if recorded fully with coloured plates but whose fragmentary descriptions are but preserved to us in two interesting papers in J.A.S.B., 1883 and J.R.A.S., 1899. It is evident that thanks to the liberality of Rivett Carnac, Mr. Cockburn long pursued his work in this direction and came across paintings in Ghormangar cave, Chunadry cave, Louri cave, Likhunia rock shelter and other places, fraught with great prehistoric interest, in the Kaimur ranges. From what can be gathered from the descriptions in the papers we can come to the conclusion that they belong to late Palaeolithic times and not mediaeval historical times as the writer was led to grope into. These are bound

[1] Mr. Dikshit, Offg. Supdt. of Archæology, kindly showed me several photos from various places of Mirzapore District, of rock-paintings in red haematite configuring hunting scenes. He was led to explore the sites following the clues given by Cockburn and though he came across quite different scenes, *e.g.*, huntings of elephants and not rhinoceros, it seems the Vindhyas when thoroughly explored would prove to be a classic ground of primitive if not prehistoric art like the Pyrenees.

PLATE VII.

A Kangaroo painting in Singanpore like Australian rock-paintings.

to shed much light on the late Magdalenian and later Azilian and Capsian cultures in India for the Vindhyan hills and Banda (which is near these caves) are recognised as Azilian stations by European savants.[1] It should be noted that Mr. Anderson showed to me a nice collection of white keeled scrapers collected from the Reva which less finely finished belonged probably to Azilian times when they were revived than to early Aurignacian times. The three very rude and unsatisfactory outlines in J. R. A. S. facing page 89 are of the highest value to us as they represent hunting scenes with weapons which are unmistakable. The first shows the hunting of a stag with prominent horns which played so great a part in providing the Azilian hunter with his characteristic harpoons with a spear tipped with what may be considered the late Palaeolithic modification of a Chatel-perron point. The second represents a man besides a leopard and curiously what the man holds in his hands has been suggested by Vincent Smith who communicated this paper to be a torch (!) though it and the weapon in the hand of the third figure are unmistakable varieties of late Palaeolithic harpoons. The sketches in the paper are too rude to build any hypothesis upon but the three weapons are unmistakable and the writer of the paper has testified to the lifelike portraiture of these groups, which occur in the caves, now as inaccessible as forming "veritable museums of prehistoric antiquities in the way of flint knives, cores, arrow-heads, celts, fragments of fossil and charred bone, etc., from which could be made a fine collection, sets from which might be sent to every museum in the world."[2] The paper in J. A. S. B. contains descriptions of cave paintings of great prehistoric interest

[1] *Vide* Sollas, Ancient Hunters, second edition, p. 529.

[2] J. R. A. S., 1899, p. 93.

and as they have been recorded nowhere else I quote at some length the several notices. First comes the details of a Rhinoceros hunt in the Ghormangar cave of which fortunately a plate is given. "A group of six men have attacked the rhinoceros. One of these the animal has tossed in the air and the position of the man sprawling in the air is comically like the drawings of people tossed.[1] A man wearing an unusually large head-plume[2] who is in the rear has tried to draw the animal off by plunging his spear into its hind-quarters. In front of the enraged animal are two men, the lower of whom in an attitude highly indicative of action has what appears to be simple spear of hardened wood with two supplementary barbs levelled at the animal's breast." Cockburn while emphasising that these were of the Stone Age could not shake off the idea that paintings in India must be very late. "*These spears I consider to have been made of wood and stone only,*" he writes in italics. It is not strange that it would be so as he was writing early in 1883 when Sautuola's discovery of Altamira cave paintings only five years before had probably not been heard of in India and the question of Palaeolithic art had to wait another 20 years to be fully understood and its possibility recognised even in Europe. He records another rhinoceros painting which he first thought to be a boar hunt-scene painted near the village of Roup in Pergannah Burhur about three inches long. "There is a group of three men attacking a boar whose tusk is planted on the tip of his nose like the horn of a rhinoceros. Two of the men who are in advance wear short skirts (but the form of their lance heads is on too small a scale to be defined) attack him from the rear is the

[1] Note—*Cf.* the similar fate of the man in the Singanpur hunting scene.

[2] Note—probably it is a mask.

obliterated figure of a man on a large scale and the form of lance head he is using plainly indicates the chip spear." Similarly he records another rhinoceros hunting scene from Harin Harna Cave near Bidjeygarh. Another hunting scene of a man 'spearing a sambar with a weapon, which is represented in the Likunia rock-shelter.' "The last evidence we can have in support of the idea that the drawings above alluded to represent stone weapons is the fact that stone implements occur in abundance mingled with the identical material with which the drawings were executed." The descriptions are all the more exasperating for though the author notes that the Rhinoceroses do not now range in the locality or any place near the painting sites, the sketches given in the plates do not afford us any clue as to whether they represent the atalodine variety esp. the *Rhinoceros deccanensis* or *R. Karnuliensis* which though now extinct had a wide distribution in Pleistocene and Prehistoric India. (*Vide Lydekker, Catalogue of the Pleistocene and Prehistoric Vertebrata of the Indian Museum.*)

The motives of palaeolithic art.

Before taking leave of this chapter, it is well to take note of the latest views as to the motives which led these men of so very early times to take to art. Was it for the satisfaction of some aesthetic tastes as in later times? Modern opinion seems to hold that these elaborate carvings and paintings executed in places under exceptionally difficult circumstances such as in a kneeling posture or with the aid of light must have been connected with some form of crude faith. Recently Mr. Wennert of Spain has brought forth a brochure which is quoted with approval in *L'Anthropologie*, 1916, pp. 117-120, by Breuil, the greatest living authority on Palaeolithic art that probably ancestors were represented either realistically or conventionally for some cult of ancestor-worship. The conditions of palaeolithic

discoveries in several caves of Europe oblige one to admit the existence of animistic and magic beliefs even at that early period. "So in the Upper Palaeolithic times we have but magic represented by art thus:—the human hands mutilated of fingers (rites), the animals pierced by dart (magic of hunting), the females in gestation (magic of reproduction), the masked dances (magic of chase), the generative organs (magic of reproduction), the animals struck with darts (magic of arms), etc. To the same ideas belong the employment of ochre, the cups cut in the skulls and the corpses in crouched positions. Considering the principles of primitive thought and taking note of the racial movements at that early epoch one ought to admit that there existed at that period certainly a great variety of religious manifestations founded on the veneration of ancestors (manes) of animals and totemic ideas." Mr. Capitan has also shown that the quaternary designs especially in France naturally lead one to assume that masks or ceremonial accoutrements were worn in those times.[1] As for the sociological and psychological needs that produced the stylised and schematic figures, Durkheim states: "It is in the Australian societies that we must seek the origin of these representations. Although the Australian may show himself sufficiently capable of imitating the forms of things in a rudimentary way, sacred representations generally seem to show no ambitions in this line: they consist essentially in geometrical designs drawn upon the churinga, the nurtunja, rocks, the ground, or the human body. They are either straight or carved lines, painted in different ways and the whole having only a conventional meaning. The connection between the figure and the thing represented is so remote and indirect that it cannot

[1] *Vide* L'Anthropologie, 1914, pp. 106-113.

be seen, except when it is pointed out. Only the members of the clan can say what meaning is attached to such and such combinations of lines. Men and women are generally represented by semicircles and animals by whole circles or spirals, the tracks of men or animals by lines of points."[1]

---

[1] Durkheim, Elementary Forms of Religious Life, tr. Swain, pp. 126-127.

CHAPTER VI.

Prehistoric Pottery and Terra Cottas.

The Ceramic art in India.

"The first appearance of vessels and other objects made of earthenware occurs in the neolithic age, no trace of them, having, in India as yet been found in any connection with the remains of the earliest representatives of mankind known, the palaeolithic folk," so wrote Bruce Foote (N. A., p. 29). But 'palaeolithic pottery' is a veritable contradiction in terms, the arts of weaving or pottery-making being held up to now to have originated only in the Neolithic age though Flinders Petrie would have 'Magdalenian pottery' from Egypt and 'Solutrian pottery' from Elam. From the Neolithic age onwards up to the Iron age, as we should think, ceramics as an art flourished but then it stopped and the modern patterns are after a lapse of so many thousands of years, often identical in form and design with degenerate prehistoric types. It is true indeed that some exotic motives in pottery decoration had a temporary survival and showed some curious forms in late mediaeval and Mogul times but pottery, though much in request as article of daily use by the mass of Indians has seemed to receive little attention from the artist within measurable historical times. Is it because it originated and developed amongst the 'Pre-Aryans' and became hard set in type-forms when the Aryans spread over India that this has been so? The contrast between

the great use of pottery and the low estimate of potters in the caste-scale seems well nigh to suggest this and Bruce Foote has well remarked thus :—"There had been a true evolution in the potter's art which then attained a stage of very real beauty. This was probably before the great Aryan invasion under which the potter's craft came to be despised and neglected, as it is now-a-days to a very great extent, as evidenced by the great plainness and often absolute ugliness of the present day pottery." (N. A., p. 34.)

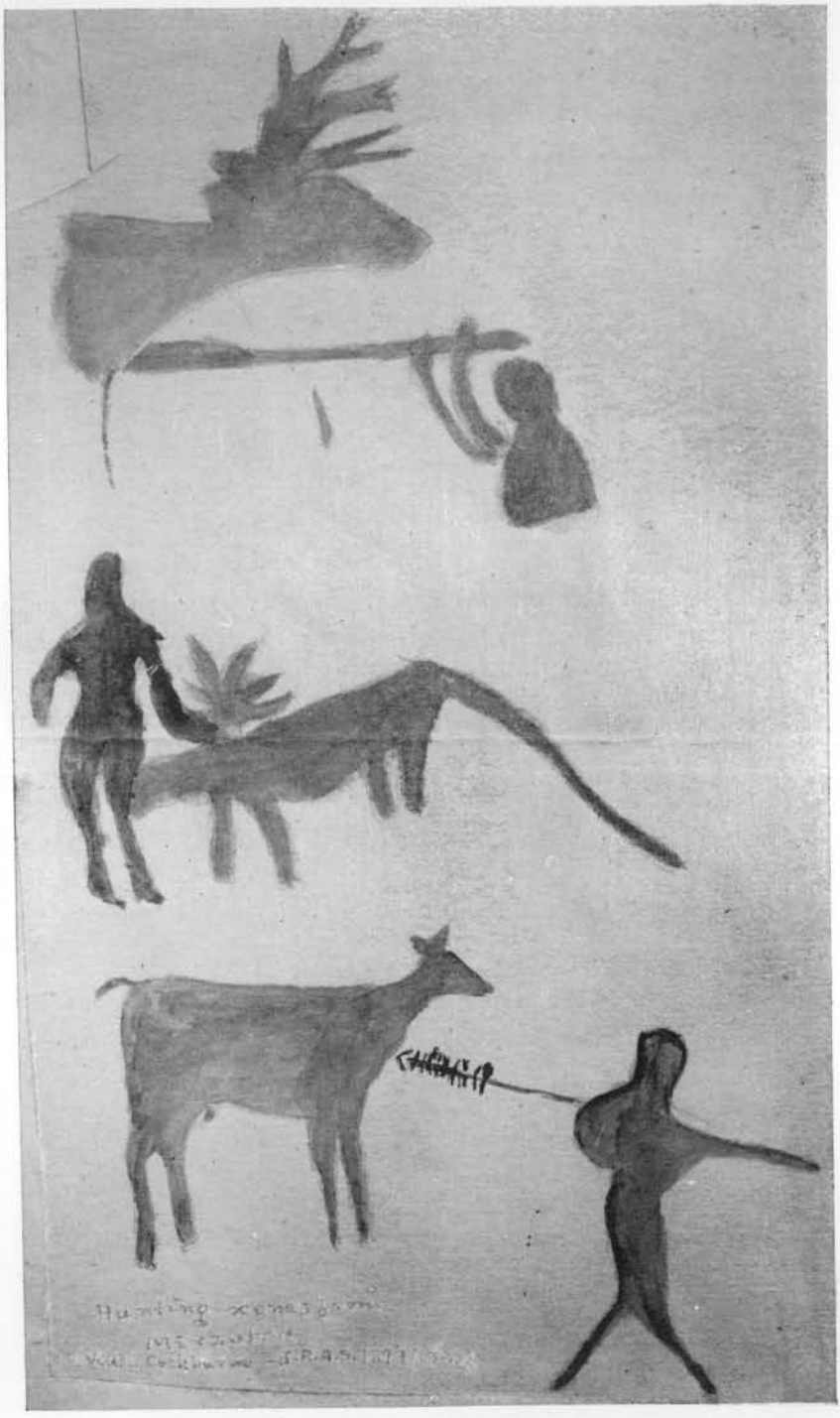
Pottery materials in India.

Culture, has more than once been labelled as the product of its environment and it is worth while to enquire why the triumphs of art which found expression so often in ceramics in other parts of the prehistoric world are missed in India. It has been already pointed out that steatite vessels are now found in many places and those from Calcutta, had they not been modern, would have been interesting. Then again porcelain is unknown from ancient India. That steatite vessels are largely used in ancient times can very well be seen from the relic-vases of early Buddhistic times (*e.g.*, the Peppé vase) often being made of this material. Besides this, it was often used for decoration of temples. From La Touche's excellent Bibliography we read as follows :—"Talcose schist or potstone is widely distributed in India among the crystalline rocks of India and is quarried at many places to be fashioned into bowls, plates and other utensils" (p. 456). "The coarser kinds of clay, so largely used by the native potters for making unglazed cooking utensils, water-jars, and the like, are to be found in the immediate neighbourhood or nearly every village throughout India and Burma" (p. 283). The finer varieties of clay, suitable for the manufacture of Chinaware or art pottery have been reported from various places in India

notably Assam, Bhagalpur, Manbhum, Jubbalpur, Madras and Mysore.

Main pottery-types in India.

It is remarkable how there are no less than 35 terms in the Dravidian languages to indicate various types of pottery, and from Madras side has come a host of various forms associated with various sites of prehistoric times. The potteries chronologically may be arranged as belonging to Neolithic, Chalcolithic, Early and Late Iron Age times. They may also be distinguished as (1) big sarcophagous type, (2) small offering cups and (3) intermediate forms, all associated with burial rites. Other articles for daily use are also found in prehistoric sites and as no prehistoric 'city' or dwelling place has as yet been unearthed the wealth of the earliest Indian pottery-types is still hidden from us. So instead of talking of various phases of culture we are perforce compelled to restrict ourselves to the mechanical geographical divisions of the find-places. But with the slippery index of style we can at times compare the potfabrics of India with those of foreign lands and arrive at some rough idea as to the probable age and succession of some occasional types. Thus we have been able to distinguish sarcophagous pottery in India bearing resemblances to very ancient Egyptian and Babylonian ceramic ware. There has come from Baluchistan types which are almost identical with the Kabyle pottery of ancient Africa. And lastly from a close study of the primitive potteries and terracottas in the Indian Museum as well as some pieces from Central Asia one cannot but notice the remarkable 'Mediterranean' affinities of several types. While the marks and scripts from the ceramic wares have but lent additional confirmation to these assumptions. New sidelights are likely to be opened on the earliest phases or prehistoric life in India by discoveries of these similarities.



Hunting scenes from Mirzapur with stone-tipped Spear,
Azilian and Copper harpoons.

The earliest Neolithic potteries of India with incised patterns.

"The facies of the typical neolithic pottery will, I believe, turn out to be dull-coloured and rough-surfaced with but little decoration"—such is the opinion of Bruce-Foote who had been a lifelong student of the prehistoric ceramics of the Deccan. (N. A., p. 34.) Coggin Brown, I think has a little overshot the mark when he states that "Many finds of prehistoric pottery are tentatively considered to be Neolithic. These are distributed through the district of Anantpur, Cuddapah, Kurnool, Tinnevelly, Salem, Bellary and across Mysore, Hyderabad, Baroda, Kathiawar, Baluchistan and other regions. In South India, pottery is often met with on the sites of Neolithic settlements and implement factories but the collocation of pottery and Neolithic implements is by no means an absolute criterion for determining the age of the latter, especially as it is exceedingly difficult to distinguish the Neolithic from the later Iron Age ceramic ware." (C. R. I. M., p. 8.) The three most important sites for Neolithic pottery appear for the present to have been Tinnevelly, Salem and the Bellary. The Tinnevelly fragment is of red colour and may have contained incised patterns. The Salem district abounds with Early Iron Age ceramics but some fragments of early red pottery seem to have been found. The Bellary is famous prehistorically for its cinder-mounds and as a neolithic manufacturing site and has yielded an abundance of good ceramics. Several forms appear to have been *impressed with finger-tips, five* (C.R.M.M. 444-24) or *four* (C.R.M.M. 444-7) or *three* (C.R.M.M. 386-2) or *two* (C.R.M.M. 1429-38) in number. A noteworthy form is vessels *pierced with a certain number of holes* in two pieces of grey pottery from the same place *four* or *ten* in number as in C.R.M.M. 386-6 and C.R.M.M. 386-11. Closely associated with these are forms analogous to the

fabric-marked pottery of which one has been reported in Travancore state and to which class may be assigned a large number of those described *as impressed with fillets* of the simplest type which appear to have been so common in Neolithic India.

An equally common form is the *grooved pattern, two* (C.R.M.M. 1353-1), *three* (C.R.M.M. 1213-17) or sometimes even *fourteen* (C.R.M.M. 347-1) lines incised which is often varied by *impressed* (C.R.M.M. 347-1) or *raised ring designs* (C.R.M.M. 1456-10).

The sarcophagous urns of India have attracted attention long since on account of their affinities with those of other countries. "There is a very remarkable resemblance between the oblong terracotta sarcophagi standing on short legs, found at Pallavaram in the Madras district, and probably of Neolithic age and certain terracotta coffins discovered near Bagdad, and also between the latter and more highly developed and ornamented Etruscan terracotta coffin-tombs. This similarity of internment in earthenware coffins, identical in shape, size and material, has given rise to interesting speculations connecting archaic Indian civilization with that of Babylonia and Assyria" (C.R.I.M., p. 7). Some very big types have been unearthed from Perumbair by Mr. Rea. "They are generally *oblong* cists of thick coarse red pottery, rounded at each end and on the cross section of the bottom, and supported by two or three rows of short roughly shaped cylindrical legs. These legs are hollow and sometimes have a hole perforated in the inner side for drainage of moisture. They are generally covered by an elongated dome-shaped lid" (R.A.P., No. 169). These are at times also of *ovoid* form (R.A.P., No. 169). Pyriform vessels varying in height from 2′-2″ to 3″ and circumference

The sarcophagous urns of chalcolithic times.

(*a*) the big urns like that of neolithic Egypt and Babylon.

from 5′-3″ to 7′-4″ tapering to narrow flat bottom indented at times with impression have been unearthed from Adichanallur in the Tinnevelly district (R.A.P., Nos. 611 to 616). Four fine specimens are now in the Indian Museum and what struck me was **their identity in form as well as in the style of the impressed signs with similar urns in Neolithic Egypt** as figured in Morgan ' *Recherches sur les Origines de l'Egypte* (*Ethnographie prehistorique*, p. 168). A remarkable form, rescued by Mr. Bruce-Foote is a four-footed vessel from Tungabhadra in Hyderabad state differing from other forms in having the long diameter of the oval body placed in a horizontal position instead of a vertical one and strongly resembling a grotesque elephant with a very small head ' (N.A.P. 128). Along with it comes for consideration the peculiar *legged vessels* (*vide* N.A., p. 68) so numerous in India whose strong resemblance to some prehistoric pottery unearthed from Hissarlik Troy had been noticed as early as 1875 in a paper in the Indian Antiquary by M. J. Walhouse. We have already seen how in the oblong cists the legs sometimes number 12 or more and smaller vessels with three or four legs of peculiar conical shape and Trojan facies evidently used as funerary urns have been obtained from various prehistoric sites. A similar case is of the hut-urns for funereal purposes, a fragment of which was discovered by Bruce-Foote from Maski in Hyderabad state and of which he reports later representatives from Harsani in the Baroda state and Mandir in the Surat district. They resembled a cottage with vaulted roof and are almost identical in shape with some of the earliest Etruscan hut-urns (N.A., p. 35).

(*b*) the legged vessels of Trojan facies.

(*c*) the hut-urns of Etruscan forms.

Other ornamented and painted designs of the Early Iron Age.

It is a matter of regret that good specimens of painted ceramic ware have not been found in good numbers but from some of the fragments in the Foote Collection it is quite evident that this aspect of the potter's or painter's art was not at all neglected in prehistoric times. First of all should be stated that the red polish on many vessels was often secured by painting rather than by good burning. A common design seems to have been several *horizontal or vertical bands* of pale purple or brown colour on the sides of vessels (C. R. M. M. 444-2, 444-3). Purplish brown *gratings* are also sometimes found painted on dark grounding in a fragment from Bellary (C. R. M. M. 386-7). *Diagonal cross-bars* often five in number are found painted in pale red over finger-bowl type of vessels (C. R. M. M. 1437-15 to 17). One of the most interesting specimens considered by Bruce Foote to be unique is a beautiful milk-bowl unearthed by him from Patpad a village in Banganapalle in Kurnool which looked fine with a prominent spout lip and was painted with faint purplish stripes near the spout lip. There are remarkable ornaments, cruciform in shape on the side of a large 'chatty' (C. R. M. M. 252-62) found in Lakshanpur Iron Age site which Bruce Foote regards as modified Swastika. Srinivaspur in Mysore state has also yielded much richly decorated pottery as with fillets of diagonal grating over fillets of dot bars (C. R. M. M. 202-38). Another great pottery site in South India is Tadpatri in Anantapur district from which has come wares of beautiful shape decorated with fillets or painted with gratings, or traced with other elaborate pattern (C. R. M. M. 2055-14 to 19).

In a corner of the prehistoric gallery of the Indian Museum are lying some fragments of pottery found in the

neighbourhood of Beluchistan about 50 years ago and described in some detail in Anderson's Catalogue and Handbook, Vol. II. What attracted my attention was the gorgeous combination of colours, the beautiful geometrical lozenge or rectangular patterns recalling strongly the 'Kabyle pottery' dating from very early times in Africa as reported in *Journal Royal Anthropological Institute* in 1902. All the potteries are of a much higher type of execution than other primitive patterns. The spouts are delicately formed and the shapes are very graceful. There is a bright glaze and glossy varnish of high finish. A small flask in yellow can scarcely be distinguished from early Egyptian specimens. The fragment No. 11.6.22.17 bears polychrome painting of green white and ochre patterns while the piece numbered 2.2.10.77, has got a nice spout and six black thick lines running round the vessel while between the third and the fourth lines are triangular patterns, the whole appearing very beautiful. The piece 19.3.70.77 is white in colour and shaped like a coiled rope. Anderson could not comprehend the prehistoric importance found as they were associated with fragments of bones, and reported under circumstances which leave no doubt of their early date. Coming from places on the high roads to India they enter largely into questions of prehistoric migrations of cultures and peoples from and to India especially as besides the other affinities mentioned, some marked Minoan features may be detached in some primitive Bhita pottery as well as certain pieces recently found from Central Asia.

Kabyle' decorations on some Beluchistan pottery.

Probably, if not the earliest, the most interesting series of prehistoric figurines occur in the Breeks Collection in Madras from the Nilgiris. The riders, the elephants, the leopards and other animal figures such as that of

Prehistoric terracottas and figurines.

the cock are highly interesting as belonging undoubtedly to some pre-Aryan cult whereas the ethnic types of the human figurine unquestionably call for interesting speculation on the mysterious connections between prehistoric India, Central Asia, Babylonia and Egypt. Some of them are figured in Bruce Foote's Catalogue of 1901 and reveal the hunter and warrior type of the race whose products they were and often showed a good grasp of art. Bruce Foote himself discovered two female figurines from Scotforth estate in the Salem district whose interest is unique on account of the style of head-dress they show having their hair dressed in short ringlets all round the head and wearing high combs on the top, recalling the Minoan fashion delineated in Hagia Triada in Crete. Of great interest are some primitive Bhita specimens, which lying in the Indian Museum afforded me special scope for study, by the courtesy of the Archæological department. The oldest specimens cannot be compared with anything known in later India but rather with specimens from prehistoric Egypt and Greece and are undoubtedly of great antiquity being found far below Maurya foundations. They belong to the *late chalcolithic culture of India* as the presence of neolith, whose very make suggests their use for ceremonial purposes, clearly indicates. Such undoubtedly is the case with the *bulging pot-bellied vessel* with flat bottom (diameter 5 mm.) and narrow neck (diameter 1 mm.) and only three depressions representing the arms and legs which is probably a vestige in India of the steatopygous race that was so widely distributed over prehistoric Africa and Europe. Of like interest are the other ethnic types which are as unmistakeably primitive as meant to differentiate clearly the different kinds of

(*a*) Nilgiri specimens.

(*b*) Scotforth Estate figurines.

(*c*) Primitive Bhita types.

people of those times. One of the commonest and most frequent of types is that of crude, small, bulging subbrachycephalous face with a crest at the top, bored invariably, probably for suspension and wearing as talismans. It is marked by a characteristically circular face and ears so pierced that the distended lobes extend up to the shoulder. The arms extend systematically from both sides as if forming a circle with the navel. There are no fingers, the palm being primitively formed by an oval indentation near the extremity. On the forehead between the two eyebrows there is often a tatoo with circular dots and a central dot. There are no ornaments and the make is strongly primitive in as much as there is a definite conventional reprseentation, complete in its own manner but not merely betraying artistic incompetency. N.S. 92, N.S. 535, N.S. 93, N.S. 513, etc., are figures of these types in the Indian Museum. Another not uncommon type is that of dwarfs with a raised coiffure at the top one hand at the hip and the other raised aloft or folded as if for benediction (*vide* figures numbered N.S. 574, N.S. 588, N.S. 600, N.S. 599, in the Indian Museum). In strong contrast to these dwarfs are the giant faces tall in stature and stout in build as in numbers N. S. 307 and N. S. 961. Another type quite interesting and undoubtedly of great antiquity and represented by at least 4 specimens, which are all *black incised* figurines with points pricked or raised all over. Of these three are of owl-shaped form and one (N.S. 861) is remarkable as having a proto-Phrygian helmet on the head and a peaked beard and distended arm and apparently attired in military cuirass. The presence of 'pintaderas' in the Bhita specimens and of some signs of probable Minoan affinities also turn our eyes to the cultural contact which may have existed in those days between prehistoric India and the Mediterranean area.

As no excavations in India have brought forth like Hissarlik in Troy different city-stages it is extremely doubtful whether a definite pottery-sequence can be built up. But the "ownership marks" recently studied by Mr. Yazdani, the signs, sometimes continuous enough to be called scripts have opened a chance of speculating on probable synchronisms. The Tinnevelly pottery bear marks in style and figure resemble so strongly Neolithic Egyptian marks, that barring the question which region influenced the other, may reasonably lead us to infer the sway of a common culture which would be correct within an allowance at the most of 200 years. This would give us *circa* 3000 B.C. Similarly *some* of the Bhita specimens would give us circa 1200 B. C. This may be called to set the limit of the chalcolithic culture of India and midway would come the Etruscan hut-urns or Kabyle Beluchistan pottery. As to the data on which these assumptions are made, they relate to provinces of ethnology and human palaeontology and combined evidence than an isolated study and I have dealt with the subject in some detail in a paper on India's Prehistoric Foreign Contact with Egyptian and Mediterranean Cultures, in Sir Asutosh Jubilee Commemorative volume. Meanwhile everyday is bringing in fresh materials strangely confirmative of some of my theories such as the studies of pottery and structure of the Asuras of Chhota Nagpur by Babu Saratchandra Roy. However slippery the question of date may be there is no doubt that the Iron Age or Chaleolithic culture began very early and reigned very long even I am tempted to say, up to pre-Buddhistic times over major portions of India and its ceramic ware, a splendid multiplicity of form rough or polished, painted or decorated, large or small, funereal or domestic, whose

Chronology would probably be settled by a study of the marks and signs on potteries.

subsequent history in later historical times, is but a sudden arrest of development and continuous conventionalisation and deterioration. Of special importance however is the fact that painted geometrical patterns of Elam and much more of Anau 'chess-board' type have come out of prehistoric Deccan and this Central Asiatic affinity, if any, has probably a chance of explaining the earliest Egyptian and still more perhaps the Trojan Aegean and Etruscan similarities met with here. The difficulties about holding forth a later cultural contact with these places are that in India we miss completely phyllomorph or anthropomorph designs which developed characteristically in the west just after the primitive phase.

CHAPTER VII.

Prehistoric Metallurgy.

The early knowledge of metals in India.

The 'wealth of Ind' and its 'barbarous pearl and gold' had always been before the eyes of the civilised world and the modern views are that prehistoric peoples were not blind to the beauties of the yellow metal. Savants led by Eliot Smith are trying to map out the trend of prehistoric migrations by the location of mines and attractive materials. The articles that came in for our consideration are Copper, Iron, Gold and Gem Stones. In all these cases we find not only that they are widely distributed throughout India but they had been worked almost from time immemorial. The difficulties for prehistoric study are increased for it is very difficult in India to associate the working of a particular metal with a particular set of people or fix its beginnings at a particular point of time. This much is known that the beginnings of metal for general use as distinguished from articles of ornamentation came into vogue gradually after the people had known the art of perfecting stone implements, taken to a settled life, learnt the art of weaving garments, began to use pottery and gradually inventing the use of the wheel for making it quicker in the end of the Neolithic age. But though it is true that copper (and much less bronze) and iron were totally unknown in the Neolithic age and were used for some time side by side with polished stones, the same can scarcely be said of the precious metals and shining beads for which as for coloured stones,

a fascination was never wanting from almost the earliest dawn of humanity probably in India.

Gold and gem stones.

For "Gold is very widely distributed throughout India, more so perhaps than any other useful mineral with the exception of iron ore. There is, in fact, hardly a province in which the washing of alluvial gold from the sands of the rivers is or has not been practised by the native inhabitants." (La Touche, *Art. Gold*). Gold is obtained also directly from quartz veins or schists of Southern India. It is well-known that the Deccan Palaeolithic peoples used quartzite and were very fond of milk-white quartz. "Many old workings have been met with along the out-crops of the veins in the Chota Nagpur with large number of grooved stones which had been used for crushing and grinding the quartz" (*Ibid*). Gold has been obtained at great depths from various prehistoric sites of Tinnevelly in South India. "India, at all times, has been regarded as a land of gold, yet the gold-bearing districts are almost exclusively confined to comparatively small areas in the South, so that the question naturally suggests itself, whether the gold was chiefly obtained by mining or by external intercourse. Gold certainly occurs in small quantities in the sands and gravels of many rivers and streams but the chief remains of ancient workings are found in the Wynaad district of Malavar and Nilgiri and in Mysore and Haiderabad. In the former, the country is covered with detritus left by ancient miners, who here were not content to treat only the alluvial deposits but sank shafts in the quartz veins" (Gowland, *Metals in Antiquity, Journ. R. Anthrop. Inst.*, Vol. XVII, p. 260). Its yellow colour was the cause why it was found in sporadic use in such early times. A like case is of several finely coloured gem-stones which were in demand for beads which were used for ornamental

as well as ritual purposes. Agates and Carnelians were great favourites and it may be said that diamond exercised like attraction as it occurs in districts of Anantpur, Bellary, Cuddaph, Kurnool, Kistna and Godavari which we know were great centres of human habitations even in early Palaeolithic times.

Copper.

Copper is also of wide occurrence throughout India though not in native sheets but as ores. What is of great interest to us is that copper ores have often been found associated with iron in India, so here the invention of the extraction *of copper probably had gone hand in hand with that of iron* at least in Northern India. Ancient mine workings have been found in many places which are still the seats of peoples who are accepted as the descendants of Pre-Aryans of India. Thus in Singbhum heaps of slags still bear witness to the fact that copper deposits had long been known and exploited by the primitive tribes living there. Mr. S. C. Roy has discovered copper slags from Pre-Dravidian 'Asura' sites. 'Their treatment (which may be considered to be substantially unchanged through ages) consists in four processes : (1) the ore is thoroughly pounded and washed ; (2) it is smelted with charcoal in a primitive furnace, so as to form a regulus, the slag being removed by cooling the surface of the molten mass with a wisp of wet straw ; (3) the regulus is pounded and mixed with cowdung, made into balls, and roasted with free access of air, (4) the roasted powder is resmelted in the original furnace ' (La Touche, Bibliography, II, p. 115). Old copper workings have been reported from the Shan States, Indore, Nellore, Nepal and Kangra, Singbhum, Sikkim and Kumaon. Vincent Smith in a paper in the Indian Antiquary, October 1905, has dwelt in detail on the large number of copper implements and weapons found and established conclusively the existence of a Copper Age at

least in Northern India which Bruce Foote had previously been led to doubt.

Bronze.

In the same paper Vincent Smith had as emphatically held also that India (in spite of there being reports of Bronzes at various place) *had no Bronze Age.* All the bronzes that occur here were used as adornments or mere exotics. "That the iron age in peninsular India was not preceded by a Bronze age, as in Crete, Greece and so many other Western countries, was very probably due to the land-loving character of the Neolithic people, for had they possessed any sea-faring inclinations, they would certainly have sailed across the Bay of Bengal, reached the Tenasserim coast and there become acquainted with the tinstone of that region. As copper is found plentifully in India, the art of making an alloy must soon have followed. As it fell out however, the discovery of the alloy was not made in India till after the art of Iron-smelting had been acquired and Iron weapons and tools had come largely into use (N. A., pp. 24-25)"—such is the opinion of Bruce Foote. Mr. Read in his Presidential address to the Royal Anthropological Institute in 1900 also harped on the probable precedence of Iron to Bronze specially referring to Mr. Gowland's paper on Early Metallurgy of Copper, Tin and Iron in Europe thus:—"One point of great interest that in his judgment is still undecided, is whether iron or bronze was first used by man though it is probable that many archæologists have made up their minds on the subject; but he dispels altogether the idea that there is any greater difficulty, by the most primitive process, in producing an implement of iron than in making one of copper or bronze and endorses Dr. Percy's opinion that metallurgically the Age of Iron should precede the Bronze Age." Six bronze weapons of which three are

harpoons, one a celt, one a spearhead and the last a sword have been noticed by Vincent Smith and no less than 123 Bronze objects are recorded by Mr. Rea and I found not quite a small number in the Patna Museum. Where did they come from ?

Iron.

If the predominance of any article is to give the name to any country, India should have been called 'the land of Iron' so widely distributed is the ore here and so many workings have been reported from various places. The question of the antiquity of iron in India has always been studied from the wrong side in as much as evidence was always sought from the literatures of 'the Bronze and Copper-using Aryans' whereas 'Pre-Aryan' India gives quite a different tale. Go to any part of *primitive India*, iron industry, the high quality of steel produced and the low state of civilisation of people producing them (*e.g.*, the Khasis, the Kols) would present a great riddle. It does not matter whether in the Vedas, the shining metal often mentioned *Ayas* would be 'steel' or 'copper' though as in the case of Homeric literature the case for Bronze or Copper seems to be more weighty than that of Iron. But there is also no denying that when some time had elapsed after the settlement of the Vedic peoples in this country they came in contact with the aborigines who prepared steel 'wootz' and this word might have soon artificially modified the meaning of Aryan 'Ayas.' This alone can explain why Iron according to Vincent Smith is not mentioned in the Rigveda but is evidently known by the time of Atharva Veda and Satapatha Brahmana on the one hand as well as the very important fact adduced by Bruce Foote that traces of Iron smelting have been noticed in many neolithic settlements in the Deccan, *e.g.*, the Bellary. Bruce Foote has also rightly observed that iron industry

is one of great antiquity in India, far greater indeed than in Europe, *e.g.*, at Hallstatt and La Tene. Primitive furnaces have been reported from various parts of India.

Its ancient smelting processes.

"The furnace is built of clay by the smelter and his family, and is of no great capacity, the maximum yield reported for a single furnace being about 30 tons per annum; while the blast is usually supplied by a pair of leather bellows. Only the softer varieties of one such as can be easily reduced to powder, and if necessary concentrated by winnowing, are made use of. These are gathered from the surface or dug out from shallow pits and trenches; or when available are collected in the form of iron sand from the beds of streams. The ore is reduced in direct contact with charcoal, and without the addition of a flux to a pasty mass or 'bloom' from which a slag is expressed by repeated hammering and re-heating; since the temperature at command is seldom high of the charge." (*La Touche, Bibliography*, Vol. II, p. 233.) Another special feature was the manufacture of *wootz* or crucible steel by the carbonisation of wrought iron as practised in the Trichinopoly district and other places of Southern India from time immemorial. The iron is placed in crucibles made of ferruginous clay and charred rice husk, with wood of the Avaram tree (*Cassia auriculata*) and leaves of *Calotropis gigantea* or *Convolvulus laurifolius*, and sealed with clay. The crucibles are arranged in the furnace in batches of 25, forming a flat arch, and are subjected to a continuous blast for about 2 hours. The steel is produced in the form of small conical ingots, each weighing from 8 to 11 ounces."

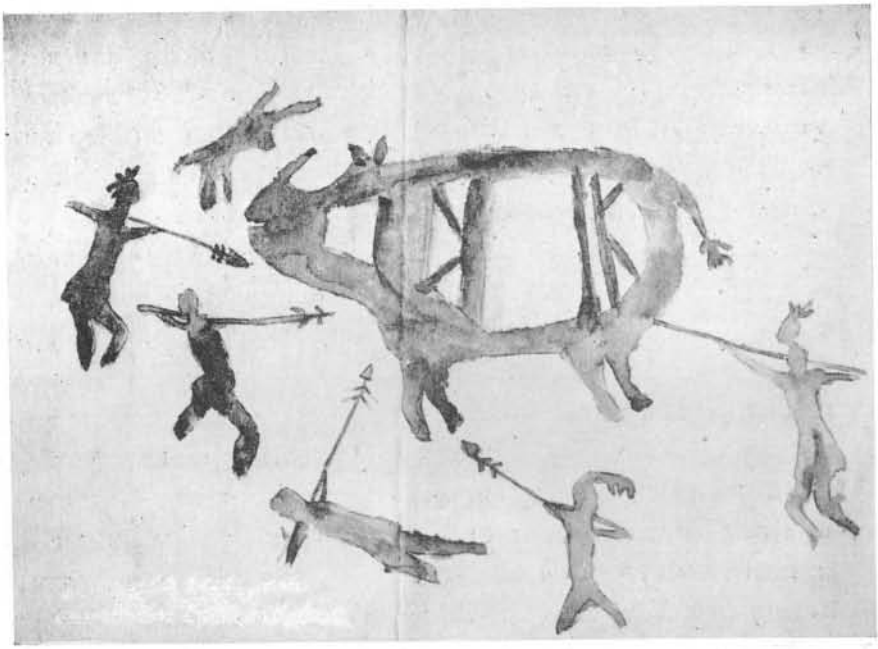
Dr. Panchanan Neogi, Professor of Chemistry, Rajshahi College, shows in his admirable monograph on "Iron in Ancient India" (1914) that the crucible process of making cast-steel is an Indian discovery. He says "It is evident

that the traditional Indian method of making steel was the crucible process of making cast-steel in a fused condition by cementation, which process should really be regarded as an Indian discovery. The chemical action that takes place is that during the application of heat to the closed crucible the dry wood and green leaves would yield charcoal as well as an abundant supply of hydrocarbons. This joint action of carbon and hydrocarbons greatly facilitates the formation of steel as the European method of cementation by means of *charcoals alone* used to take six or seven *days*, and even fourteen to twenty *days*, while the Indian process takes only four to six *hours*."

The antiquity of the Early Iron Age in India.

It is curious how 'wootz' is often spoken of in very ancient Greek literature as well as Egyptian dynastic literature as one of the metals imported from the East and has been generally interpreted as Electrum, but much more likely refers to Indian steel where we get the very name. Von Luschan in dealing with "Eisentechnik in Africa" (Zeitschr. f. Ethn. 1909) had described the Egyptian "Schalengebläse" the handled blowing instruments which were worked by standing on leather and maintained that these were the most primitive and the Egyptians had derived the knowledge of these from Negroid neighbours and from Egypt this had spread all over the old world. Now amongst the Kols of India *exactly identical processes* prevailed till a late day. Thus we read in the District Gazetteer on Santal Parganas (1910, p. 201) "In the ground on each side of the furnace a planted stake 8 or 9 feet in length had been driven. These were now bent over towards the bellows, and to the stake on the left-hand side was fastened a string which was attached to the goat-skin of the left-hand bellows, so that the stake, trying to spring back into place, pulled up the skin on the bellows. The stake on the right-hand side

PLATE IX



A hunting scene from Mirzapur with stone-tipped harpoons.

was similarly attached to the right-hand bellows. The skins each had a perforation. Then a man standing on the bellows, with one foot on each, depressed the right-hand stake, and at the same time closed the proforation in the skin of the right-hand bellows with his foot, and by means of his weight drove the air from the bellows into the furnace. He then leant over to the left and repeating the operations on the left-hand hand bellows sent a blast from the left-hand pipe into the furnace and thus alternately he threw his weight from right to left in a series of operations resembling a man in the tread-mill, and gave a fairly steady blast into the furnace." It seems as if we were reading a description of Egyptian treadle-blasts depicted in Fig. 7 of Luschan's article, so strikingly similar are the methods adopted by these Pre-Dravidians to that of the Egyptians. I had already given hints of some facts and data which go to show that the civilisations of early Sumer and Egypt might be due to some Neolithic Indo-Erythraeans whose home was likeliest to be round the shores of the Erythraean sea whom ethnically we may call with Ruggiri *H. Sapiens Indo-africanus* and with Elliot Smith as the *Brown Race*. The opinions of several Egyptologists are well known to be the same, though India specifically was not mentioned by them. Now it is a curious fact that iron though not in common use in Egypt till in the middle dynastic period, occurs as sporadic specimens undoubtedly in the earliest dynastic times. **If the mysterious ethnic and cultural connection between India and Egypt based on the similarity of some hyper-dolichocephalic skulls, identity of the shape of some funeral urns as well as Neolithic pottery-marks and affinity of agglutinative tongues is conceded, it must be also said that in predynastic times even**

the knowledge of iron was probably common to both countries. And as the one is possessed by India at large, we think steel, especially wootz was imported from India in Egypt as objects of high value in those early times about 3 to 4 thousand years before Christ. It seems that a great equatorial Pre-Dravidian race of India, of East African affinities, whom I called the Indo-Erythræans, probably evolved in the Deccan the process of smelting iron and that is why we find iron beads in Egypt in Pre-dynastic times occurring sporadically long before the times when they became more frequent when possibly trade-relations were re-established with the Deccan after a long lapse following the ethnic separation of the peoples on the African and Indian littorals. It would not indeed be impossible to think of the piece of iron of the Great Pyramid at Gizeh in the IVth dynasty as results of trade relations with India as was the case with the piece of Indian teak found in Mugir in a strata of about 4000 B.C. That the knowledge of iron did not spread from Asia Minor eastwards is proved by the Iron age in China (about 2357 B.C.) being much anterior to that, say in Hissarlik (about 2000 B.C.)

CHAPTER VIII

Survivals in Technique

One of the most reliable authorities on Indian art and technology, Dr. Coomarswamy, was never oblivious of the earlier strain in Indian art and a few excerpts from his work are only needed to show the true aspect of things. Thus he opens his work on the *Arts and Crafts of India and Ceylon* with these remarkable words "The oldest inhabitants of India are known to us by their stone and copper implements and pottery; they survive in the wild hill and forest tribes of many parts of India, and form quantitatively the most important factor in the origin of all those who are known now as Indians. Of the mainly non-Aryan Indians, the most important modern representatives are the Dravidians, especially the Tamils and Sinhalese, who already possessed a highly developed civilisation when the first Aryan teachers reached them, some centuries B.C. The origin of these Dravidians is not certainly known. Thus .we have got at the outset three strands of culture in India—the primitive, the Dravidian, and the 'Aryan.'" As there can be no people completely devoid of culture, these must have been a primitive element, some of which must have passed into Dravidian to merge still later into the 'Aryan' fold. When long years of systematic research would have unfolded the true tale of Indian culture, there would probably be found stages of progress and decline synchronous with peaceful or unquiet times brought

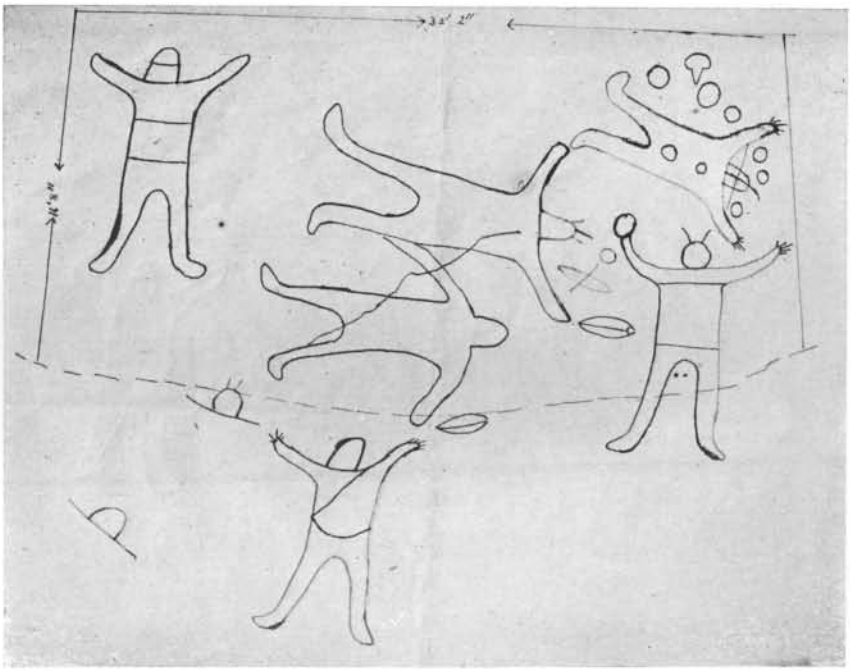
Much of Indian civilization—Pre-Aryan.

about by the disturbance of a foreign ethnic element which took some time to be received into the traditional current to open up new roads of future revival.

Cave paintings and delineations of extinct animals.

It is not very many years ago that the world has realised that in the dim past of palæolithic times reckoned in hundreds of thousands of years, humanity was capable of showing products of art, which according to some eminent authorities as Cartailhac and Breuil were scarcely inferior to the best productions of Greek or Roman times. The Cave paintings of India have been often admired, their antiquity in some cases have been proved to extend to 2000 to 2500 years. Cave shelters of a prehistoric type with early drawings are not unknown in India. Some of the cults though later admitted into the folds of Hinduism, such as that of Saivism seem to originate in the remote past of prehistoric times. Is it possible that a primitive tradition of cave-paintings had been handed down to very late times from the remote prehistoric ages? The negroid features of some of the people portrayed in Ajanta or for the matter of that, curved in Sanchi stupa give us cause to ponder about the ethnic element concerned being 'Pre-Aryan' or even 'Pre-Dravidian' or not. In the temple of Mallikarjuna dedicated to the antique cult of Siva we find the unmistaken figures of 'giraffes' which palaeontologists and prehistoric archaeologists know to have been abundant in India in early 'human' times and whose total disappearance from this land many thousand years ago has not yet been fully explained. But here as elsewhere more data are needed and there is indication that prehistoric research in India alone has probably a fair chance of explaining the sudden rise and great excellence of the earliest Buddhist art. The foreigner, be it the Hellenes or the

PLATE X.



A Neolithic (?) rock-carving near Ghatshila like that of Australia.

Persian or the Assyrian may have acted as the stirrer, as it always does in like case, but what was the thing stirred? More research alone can answer.

The probable influence of Megalithic monuments and earlier lost shapes on the earliest historical architecture.

Long ago Fergusson had drawn attention to the remarkable similarity of form and apparent origin of the earliest Buddhist 'stupas' in motive and design from the countless 'Rude Stone monuments' to be found in the Deccan. Dr. Coomarswamy has also pointed out how the prototypes of the earliest models of Indian Historic Architectures perhaps survive in the dairy-temple of the Todas, who, it must be remembered, are decidedly 'Pre-Aryan' if not 'Pre-Dravidian.' A study of some of the ruins of structure in Anuradhapura in Ceylon and some of the southernmost point of the Deccan have revealed an interesting fact that they were built probably after the earliest 'Ziggurat' type which were of four tower-stages and not seven or more as in the later times as has been found from the drawing on the fragment of a blue stone-vase found from Adab (Jastrow Jr., *The Civilisation of Babylonia and Assyria*, p. 53). Jhering in his *Evolution of the Aryan* (Eng. Transl., 1897, p. 181) aptly remarks how 'other Indian structures built after that (Babylonian) pattern must have preceded those preserved to us.' Thus our attention is turned to the search of such pre-Buddhistic monuments as the Cyclopean walls of Raigir which may at some later date come up to reveal some lost motives which were identical with those inspiring the prehistoric monuments of Pre-dynastic Egypt, pre-Semitic Babylon and pre-Hellenic Greece!

Potteries sometimes also present to us the same riddle.

The case of the early pottery and other decorations.

As soon as we step the bounds of historic times we are led at once to some forms which inevitably suggest the designs of the prehistoric periods of the early seats

of culture in the Euphrates or the Nile or in Crete. The following paragraph from Dr. Coomarswamy's *Arts and Crafts* (p. 39) is very significant. "The most ancient part of Indian art belongs to the common endowment of "Early Asiatic" culture which once extended from the Mediterranean to China and as far south as Ceylon, where some of the most archaic motifs survive in the decoration of pottery. **To this Mykenean facies belong all the simpler arts of wood-work, weaving, metal-work, pottery, etc., together with a group of designs including many of a remarkably Mediterranean aspect, others more likely originating in Western Asia. The wide extension and consistency of this culture throughout Asia in the second millennium B.C. throws important light on ancient trade intercourse, at a time when the Eastern Mediterranean formed the western boundary of the civilised world.**" Whatever be the place of origin of this very early motive, once for all is here recognised the prehistoric element in the decoration which underlies much of later work, as the author says later on (*Ibid*, p. 186) "The unglazed earthenware all over India is of the remotest antiquity, in form and technique unaltered since prehistoric times. The forms are of exceptional simplicity and dignity, while the decorative ornament, especially in Ceylon, is of great interest as preserving many archaic (Mykenean or Early Asiatic) motifs." The Minoan affinities of the Bhita pottery and the Kabylian aspects of some pieces from Baluchistan deposited in the Indian Museum have also been noticed by me while the legged vessels have been more than once pointed out to resemble strongly some Trojan potteries (*vide* Walhouse's paper

in the Indian Antiquary, Vol. IV). Bruce Foote's objection (*vide* his Note, etc., p. 68) does not count as three-legged vessels and loop-handles also are known now in several specimens from the Indian Museum.

The textile fabrics.

Any one who has gone carefully through Decandolle's '*Origin of Cultivated plants*' must have noticed the greater antiquity of linen over cotton and how the ancient peoples of Egypt used linen stuff, how the perennial variety (*Linum Angustifolium*) found wild from Canary Island to Palestine was cultivated in Switzerland and northern Italy by peoples more ancient than the conquerors of the Aryan race and how the annual variety (*Linum usitatissimum*) cultivated for at last 4 or 5 thousand years in Mesopotamia and Egypt and found wild in the districts between the Persian Gulf, the Caspian Sea and the Black sea was introduced into Northern Europe by the Turanian race. Cotton has also been often taken on philological grounds to be an Indian invention of remote antiquity. Baines in his Ethnography (p. 62) points out how the weaver castes (in India) occupy a low position, considering the character and utility of their function. This is doubtless due to the fact that the latter originated amongst the "Pre-Aryan races." Now the weaver castes generally are known "Patve" as in Gujrat or Pator as in Orissa or Pattunurkaran as in the Tamil country, words which suggest the manufacture of 'Patta' a coloured stuff which in all probability was linen. It is worth enquiring whether a linen industry was flourishing in India from prehistoric times which later merged into the cotton and muslin industry which won for India a world-wide reputation as the great industry centres are found to be rather the easternmost and southernmost parts than the midlands so much influenced by the "Aryan" sway. However conjectural the above

may be, it is worthy of note that it is from the pre-Buddhistic and primitive potteries of Bhita that there has come numerous 'pintaderas' as well as 'the oldest and most beautiful of the terra-cotta medallion' as Dr. Coomarswamy calls it (*Arts and Crafts*, p. 187) which with its motley character might have been used as earthenware hand-blocks for printing of costly garments.