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IDEAL CROSS-SECTION OF A RIVER VALLEY showing the relationship of the three impenetrable plateau beds (Boulder clay, Middle glacial gravel and Red Crag) to the later river gravels and alluvium. The plateau beds at one time extended across the space now occupied by the river valley -

THE ANCIENT FLINT IMPLEMENTS OF SUFFOLK.

BY J. REID MOIR, F.R.A.I.

To give an account of the varied flint implements found in the county of Suffolk, is to review nearly the whole of the activities of man from the remote period when he first began to shape flints to his needs, until the comparatively late epoch when the momentous discovery of the means to manipulate metals to his use, brought to a close the long story of the Stone Ages. In this great and remarkable story the area which is now called Suffolk played a not unimportant part. As early as the year 1797, Mr. John Frere, F.R.S., with great prescience and ability, described, to a no doubt incredulous world, the discovery of a number of flint implements embedded in certain geological strata in the valley of the Waveney at Hoxne where he lived, and which implements, in his opinion, were referable "to a very remote period indeed, even beyond that of the present world."¹ Since Frere's discovery a large number of archæologists have followed with success the spoor of ancient man in Suffolk, until to-day we have at our disposal a mass of evidence to show that there has been an almost continuous occupation of our county from the far distant days when the Pliocene epoch was drawing to a close, and what is known as the Glacial Period was but a thing of the future. It is not perhaps difficult to account for the unique richness of Suffolk in prehistoric remains. From the earliest appearance of man in our area in Pliocene times we know that large quantities of fine, flakable

flint, were available from which he could fashion his various implements, and these relics have been preserved in certain widespread deposits not readily found in many other parts of the country. Thus we can in a measure understand how it is that Suffolk possesses such unique records of our primitive ancestors. But when the inevitable question is asked as to how many years have elapsed since the earliest East Anglians commenced "the daily round and common task," no one who values truthful statement can frame an answer. We have at present no means at our disposal for gauging the amount of time which separates us from the Pliocene epoch. But a realisation of the magnitude of the geological and climatic changes which have occurred since man first set foot in Suffolk will leave no reasoning person in doubt that this event took place at a period the remoteness of which is great indeed.

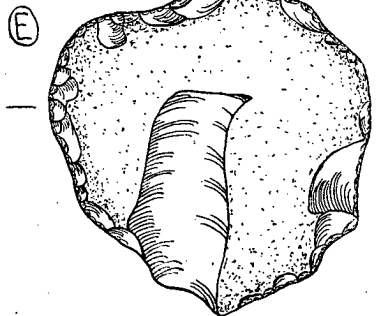
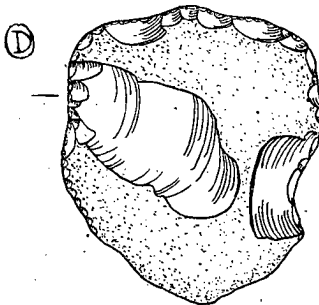
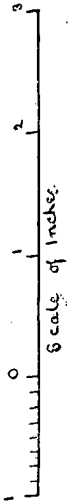
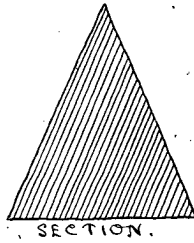
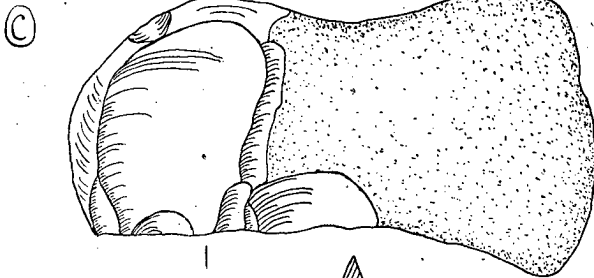
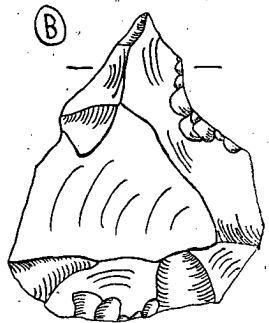
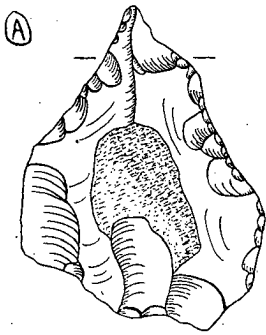
It is the object of this paper to set forth the evidence in favour of the great antiquity of man in Suffolk, and to attempt to unfold the truly wonderful and entrancing story of the long ages when man, armed only with weapons of the crudest kind, and with the scantiest personal comforts, triumphed over the numerous and ferocious animals with which he was associated, and withstood the drastic climatic conditions to which at times he was subjected. It is, however, impossible, within the limits of such an article as this, to give any really detailed account of the vast and complex history of the primitive inhabitants of Suffolk, but at the end of the paper will be found a list of authors whose works deal with pre-history, and the reader who wishes to gain a more intimate knowledge of this subject will be able to do so by consulting the books and articles mentioned. It has been decided to illustrate this paper by means of clear and diagrammatic drawings, which, while

not perhaps of great artistic value, will give a reliable idea of the technique adopted by the ancient flakers of flint, and show how this technique differed at different periods in the past.

The diagrammatic cross-section of a Suffolk river valley, though violating all, or nearly all, the laws of perspective, will, it is hoped, nevertheless be found to be of interest in showing the nature of the beds forming the plateau, and the relationship of these beds to the later deposits laid down by the river when excavating its valley. The numerals in the text refer to the various works of reference already mentioned, and a corresponding number will be found at the end of the paper against the particular work to which attention is drawn. It will be noticed that a sectional drawing is given below each implement figured, the line of section being indicated by horizontal lines in the usual manner.

As is clearly demonstrated in Pl. 1, the beds forming the plateau must be of a greater antiquity than those laid down by the river while excavating its valley through that plateau. Any flint implements, therefore, found in the plateau beds must be more ancient than those made by races of people living while the valley erosion was in progress, and which are now found embedded in the terrace-gravels and other deposits within the valley.

We will commence then, by describing the flint implements discovered in the detritus-bed at the base of the red crag, which as will be seen from Pl. 1, is the lowermost and oldest of the three implementiferous plateau deposits. The excavations in search of the implements of pre-palæolithic man have been conducted almost exclusively in the eastern portion of Suffolk, and especially in the immediate neigh-



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PLATE 2.

bourhood of Ipswich. The diagrammatic cross-section of a river valley shows therefore, the beds forming the plateau in this particular area. But the Red Crag is only found in the more easterly portion of our county, and a cross-section of a river valley situated in another part of Suffolk would not show the same succession of plateau beds. It is necessary also to point out that these beds in the Ipswich district do not represent a true sequence in point of time. The shelly Red Crag overlying the implementiferous detritus-bed is a Pliocene deposit, and between it and the Middle Glacial Gravel occurred a long period of time during which strata of great thickness and extent were laid down, and some of which can be seen and studied in the classical exposures in the cliffs of the Norfolk coast. The Middle Glacial Gravel and Chalky Boulder Clay, both Pleistocene deposits, do, however, represent a proper time sequence², and it was after their deposition that the races of people existed who fashioned the earliest palæolithic flint implements.

The sub-Red Crag detritus-bed generally occurs as a more or less continuous deposit, upon the surface of the underlying London Clay, and is supposed to represent in part the débris of an ancient pre-Crag land surface which at one time existed upon the surface of the clay. This land surface was eventually slowly submerged beneath the waters of the advancing Crag sea, and the various specimens of bone, "coprolite," box-stones, foreign rocks, flint nodules, flint implements, etc., lying upon this land surface were quietly swept into hollows and "pockets" in the London clay. The flint implements found in the detritus-bed are remarkable examples of man's knowledge and skill in flint-flaking. It appears that the flint was flaked to the desired shape by means of powerful blows removing large flakes, and anyone who has experimented in the flaking of flint will at

once realize the amount of practice necessary to guide such large lines of fracture so as to produce a particular form of implement without having to have resort to the usual method of removing numerous secondary flakes. The pre-Crag people, however, were able to consistently fracture flints in this way, and though their implements are found sealed down beneath a definite Pliocene deposit, it seems necessary to suppose that such proficiency in flint flaking was not acquired quickly but must have been the outcome of long periods of time during which less skilful methods were in vogue. It would thus appear that the earliest efforts of man to shape flints to his needs must be looked for in deposits more ancient than the Pliocene sub-Crag detritus-bed. The diggings which have been conducted in this deposit have brought to light a definite Pliocene industry in flint.

The dominating type of implement is the now well-known rostro-carinate³ (Pl. 2 C.) associated with borers (Pl. 2 A), choppers, pointed implements (Pl. 2 B), rubbers, scrapers (Pl. 2 D and E) and flakes⁴.

We may conclude from this assemblage of worked flints, and from the primitive bone implements which have been found⁵, that the pre-Crag people were engaged in the various occupations and pursuits of savage life. The wide fertile plains of the old London Clay land surface upon which they lived supported a large and varied fauna and flora, and if the climate was genial, as it appears to have been, the life of these ancient people must have had its pleasant aspects. The sub-Crag implements are associated in the detritus-bed with the remains of various mammals, of which the gigantic and elephant-like creature *Mastodon avernensis* is one of the most widely known. The remains of early forms of pigs, deer, and some

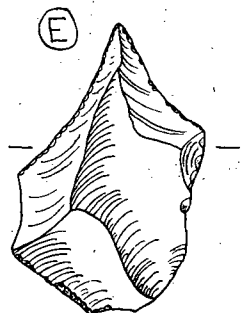
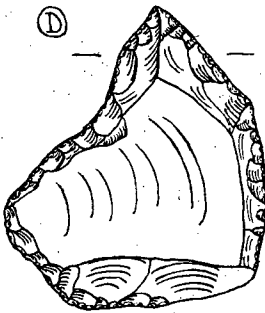
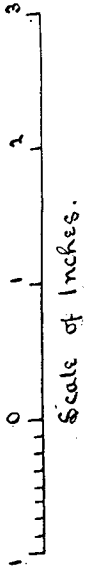
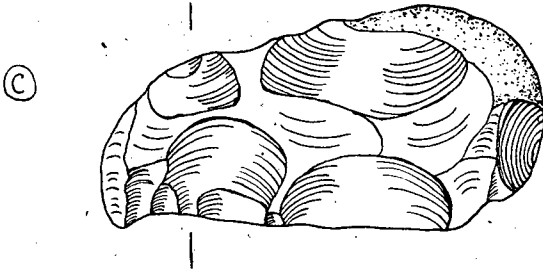
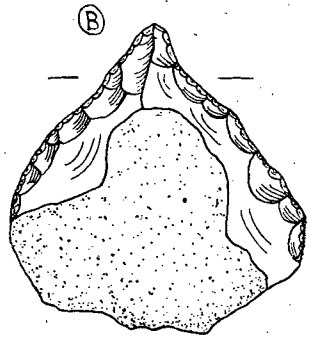
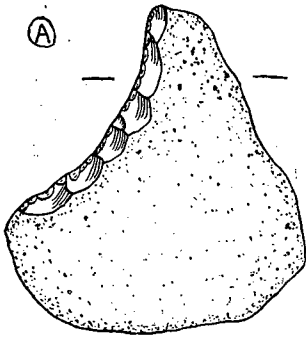
feline animals, together with the *Hipparion*, or three-toed horse, are also represented.

The flint implements are generally of massive size and are coloured a dark mahogany brown, though sometimes examples are found exhibiting a dense yellowish white patination.

These appear to be less massive than the dark brown examples, and were probably made at a later period in pre-Crag times. Many of the flints bear marks of striation upon their surfaces, and these may have been imposed by the action of masses of moving ice which we have evidence to show were appearing at the close of the Pliocene epoch, the forerunners in fact of the great glaciers which covered the country in the succeeding glacial period. Unfortunately the diggings which have been conducted in the sub-Red Crag detritus-bed have, up to the present, failed to reveal any actual skeletal remains of the people who fashioned the flint implements recovered; but it may be that future excavations will be successful in bringing to light some such interesting and valuable specimens.

The sub-Crag implements have been found at Thorington Hall, Wherstead; Bolton and Co.'s, and the Back Hamlet pits, Ipswich; Greenwich Farm, Ipswich; and at Martlesham, and Sutton, near Woodbridge.

We may suppose that at the close of Pliocene times the climate was gradually deteriorating, and that ever increasing cold was making itself evident. This climatic change was probably accompanied by a slow sinking of the London Clay land surface, which allowed the waters of the sea to flow over the old hunting grounds of the pre-Crag people, and to cover



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their implements, etc., with the marine sands and shells which we now describe as "Crag."

The gradual refrigeration of the climate is shown in the change which is noticeable in the character of the shells found in the Crag. The oldest layers of this deposit contain a considerable number of examples of molluscs which could only live in a sea of a comparatively high temperature. But as the later zones of the Crag are examined it is seen that these warm water forms get gradually less and less in number, while those suitable to exist in water of a low temperature get more and more abundant. This slow lowering of the temperature culminated finally in the onset of the Glacial Period, the earliest beds of which are represented in the Cromer cliffs by the Lower Till and allied deposits.

Guided by the evidence of archæology, we would conclude that in all probability this first onset of glacial conditions was followed by a more or less prolonged recession and melting of the glaciers, during which the Middle Glacial Gravel was laid down. It seems almost impossible to visualize the conditions under which this water-bedded gravel, which covers vast areas in the eastern counties, was deposited. The amount of the flood-water resulting from the melting ice must have been immense, and judging from the implements of apparently different ages, contained in the Middle Glacial Gravel⁶, of sufficient power to slowly erode and re-deposit an extensive land surface on and in which the flint implements occurred which are now found in the gravel. As was mentioned above, we find implements of different ages in this deposit, and the oldest represent the most primitive humanly flaked flints known to science. Two of these are represented in Pl. 3 A and B, and the series of which they form a part affords a very close parallel

to the primitive implements first found by Mr. Benjamin Harrison on the high-level plateau of Kent⁷, and which have been known to archæologists under the name of "eoliths." These specimens have a very archaic appearance, being generally considerably rolled and abraded and deeply stained a dark red colour. The forms of these implements are simple, one or other of the edges being steeply flaked, so as to be used for scraping or cutting. There is very good reason to believe that these specimens though now found in a deposit less ancient than the sub-Red Crag detritus-bed, are nevertheless more ancient than the implements found in this latter stratum. Occasionally eolithic forms of flaked flints have been found in the detritus-bed, and moreover there seems very good reason to believe that the sub-Crag rostro-carinates were evolved from these primitive eolithic implements⁸.

It is thus possible that we see in these specimens the earliest efforts of man in flint flaking, and that the remains of the ape-like person found at Piltdown in Sussex, in association with eolithic implements, may represent one of the very ancient eolithic inhabitants of our country⁹. It is quite possible that these eolithic flints were lying embedded in some gravel or other deposit during the whole of the period when pre-Crag man roamed over East Anglia, and that it was only when the great erosion of glacial times occurred, that they were washed out of their original resting place, and re-deposited with the Middle Glacial Gravel on the surface of the underlying Red Crag. The other implements recovered from the Middle Glacial Gravel were more probably fashioned during the inter-Glacial phase, and many of the specimens show quite a high order of proficiency in flint flaking.

The rostro-carinates (Pl. 3 C) are smaller and

more symmetrical in their outline than the sub-Crag examples of this type. The form of the narrow flaked end of these specimens bears in many cases a very marked likeness to the beak of an accipitrine bird, and it seems that the sharp downward curving edge of the "beak" was utilised for cutting and chopping purposes. There seems also reason to believe that the rostro-carinate implements evolved gradually into the earliest palæoliths, and we thus seem able to see a linking up of the pre-palæolithic and palæolithic cultures¹⁰. The implement shown in Pl. 3 D represents a well marked type in the Middle Glacial Gravel. It is made from a rather thick flake struck from a previously prepared block of flint, and trimmed by skilful edge-flaking into a definite point. The other specimen figured (Pl. 3 E) is of similar form and also made from a flake struck from a prepared block of flint. These specimens represent without doubt a flake industry, and are strangely prophetic of the later Mousterian palæolithic culture. Many beautiful flakes have been recovered from the Middle Glacial Gravel, and these show perfectly developed striking platforms, and all the well-known characteristics of human flaking of later periods. Quartzite hammer-stones have been found in this gravel, and also cores of flints from which flakes have been struck. A large number of flints reddened and crackled by heat occur with the implements, and seem to point to the Middle Glacial people having been in possession of a knowledge of the means to produce fire. The greater number of the implements recovered from this deposit, though often exhibiting a high glaze, do not show any signs of extensive rolling by water, nor are they battered or bruised in the manner of some stones found in gravel. We may conclude from this that some of the specimens have not been brought far from their original resting place, and that the Middle Glacial Gravel was not laid down by water

of a torrential and turbulent nature.

The Middle Glacial Gravel is generally a very friable, sandy deposit containing little iron, and this probably accounts for the almost entire absence of bones or other organic remains in it. A few highly mineralised and derived specimens of bone, referable in the main to the Red Deer, have been found at the base of the gravel, but these almost certainly belong to a period much more ancient than that of the Middle Glacial Gravel.

The various series of implements of different forms which have been collected do not show any examples of actual weapons, and we may conclude either that these Middle Glacial people had not much need for such means of offence or defence, or, as seems more likely, their weapons were wooden clubs and spears, which being of perishable material have long since disintegrated and disappeared. But an examination of these particular implements by anyone familiar with flint fracture cannot fail to cause a feeling of wonder and admiration at the skill and care shewn by these ancient people in their workmanship. Of their bodily form we at present know nothing, but we can imagine that their lives during the temperate inter-glacial period, such perhaps as we enjoy at the present day, were not altogether unpleasant. And from the symmetry and beauty of the flint implements they made we may perhaps conclude that they had progressed some way beyond the ape-like status of the Piltdown individual.

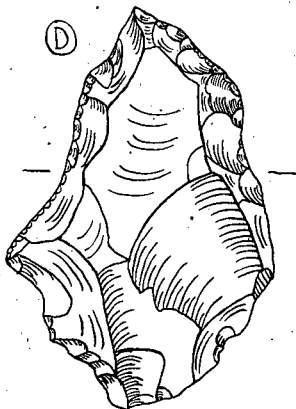
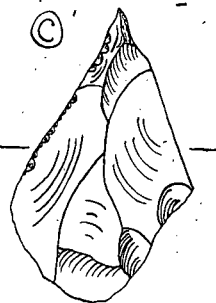
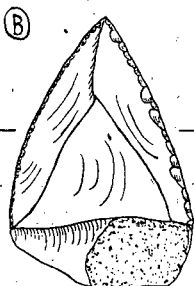
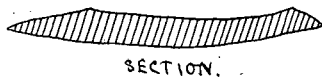
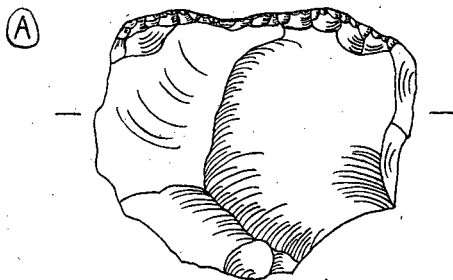
Middle Glacial implements have been found in Messrs. Bolton & Co.'s pit, Ipswich, and at Bramford, Foxhall, Leiston and Wherstead.

We have no idea how long the interglacial episode

lasted, but it is reasonable to assume that it was very considerable, and it would appear that after the deposition of the Middle Glacial Gravel there followed a period, more or less prolonged, during which a race of people lived upon the surface of this gravel. It is necessary to assume this as a series of implements of a different order to those found in the gravel occur in the overlying Chalky Boulder Clay¹¹, and it seems probable that these implements were caught up by, and incorporated with, the glacial sludge as the ice moved forward over the land surface. This view is supported, moreover, by the appearance of the Boulder Clay implements which are almost all unpatinated and unrolled and present the same appearance of surface and condition as many of the so-called neolithic specimens which are to be found upon the present land surface.

The great extension of the glaciers which gave rise to the formation of the post-Middle Glacial Boulder Clay, was of a stupendous order, and there can be little doubt that most, if not all, of Suffolk was buried deeply beneath masses of ice and experienced conditions of climate now only found within the polar regions. The exact cause of these extraordinary conditions which gave rise to what is known as the Ice Age remains shrouded in mystery, though various writers have from time to time put forward astronomical and other theories to account for it¹². But whatever the cause may be, modern geological research is showing that glaciations occurred in very early periods of the earth's history, and the distant future may witness another epoch of intense cold, and glacial conditions. The Chalky Boulder Clay of Suffolk is a very interesting and remarkable deposit. It derives its name from the large numbers of boulders of chalk which it contains, and appears generally, as a very tenacious bluish clay containing examples of various

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strata over which the ice advanced. In places the clay assumes a yellowish colouration, and where it forms the present land surface (giving rise to the well-known heavy land of Suffolk) the upper portion appears as a reddish loam, the result of decalcification. The Boulder Clay contains in places very large erratics which exhibit well-marked striæ, and the cortex of many of the flint nodules exhibit similar markings. But the hard interior of the flints, which has become exposed by fracture in pre-Boulder Clay times, seldom shows many striæ, and though the comparatively soft cortex would naturally be marked more easily than the inner portion of the flint, yet this fact seems hardly sufficient to explain the disparity in the number of striæ on the two different surfaces. Two kinds of flint occur in the Boulder Clay, the grey Lincolnshire variety, and a jet black flint. Both of these are of excellent quality and the implements recovered from this deposit are made in both grey and black flint. The majority, however, are fashioned from the latter.

It has already been mentioned that some of the least ancient implements from the Middle Glacial Gravel bear some resemblance to the palæolithic Mousterian specimens, and this peculiarity is still more marked when a series of Boulder Clay implements is put out for examination.

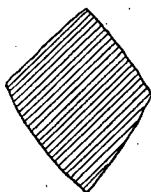
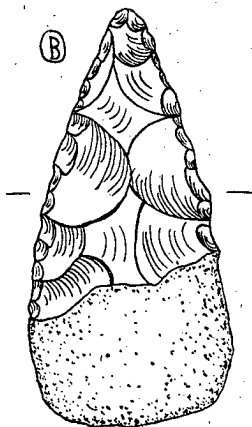
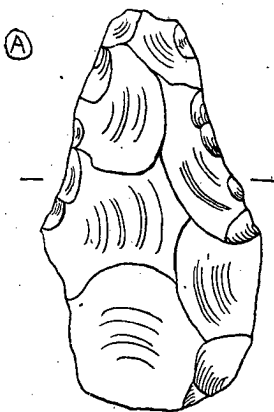
It is well known that in Mousterian times the two typical implements are the racloir, or scraper, and the point. In the Boulder Clay industry these two types, though not perhaps so finely flaked, are also dominant. A reference to the illustrations of Boulder Clay implements will show this to be the case. Pl. 4 A is a typical racloir, while Pl. 4 B, C and D represent variations of the point. Each one of these specimens is made from a flake in the usual Mousterian

style, and the points if hafted would have made somewhat efficient spear-heads. The marked resemblance of these implements to the apparently much later Mousterian artefacts is a very remarkable fact, and it may be that in these Boulder Clay specimens we see as it were the genesis of the Mousterian culture. The Boulder Clay is almost destitute of bones of any sort, and at present we do not know the fauna associated with the makers of the flint implements. Neither are we acquainted with any human bones which give us a knowledge of the kind of people who made the implements found in the Boulder Clay. The two chief sites where these specimens have been found, are Messrs. Bolton and Co.'s pit situated on the plateau near Henley Road, Ipswich, and that of Messrs. Mason and Co., Ltd., at Claydon.

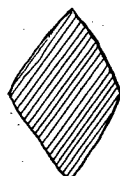
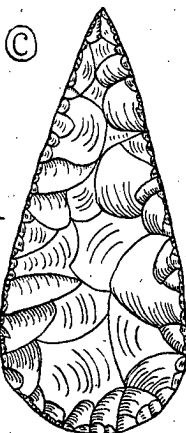
It will be noticed that in this paper, the orthodox view is expressed which regards the Boulder Clay as a deposit more ancient than the earliest valley deposits containing the rougher palæolithic implements. But this long-established geological axiom has lately been challenged¹³, and certainly the Mousterian-like character of the Boulder Clay implements lends colour to the opinion that the deposit containing these specimens is not so ancient as we imagine. If it should ever be shewn that the Boulder Clay is of Mousterian date, then the earlier pointed and ovate palæolithic implements will have to be referred to some pre-Boulder Clay deposits. Such a new orientation of our views has, however, not yet become necessary, but in addition to the curious Mousterian-like appearance of the Boulder Clay implements, there is the equally curious fact that some of the pre-Crag artefacts exhibit flaking very similar to that exhibited by the earliest Chellean palæoliths. If the reader will refer to Pl. 2 B, and compare it with Pl. 5 A, he will see that both implements have been

made by the removal of large and coarse flakes, and while such a similarity in flaking may not mean much, yet it seems easier to imagine a relationship between the pre-Crag implements and the early Chellean specimens, than between the former and the Middle Glacial and Boulder Clay implements. If orthodox geology is right, then the Middle Glacial Gravel and Boulder Clay periods occurred between the making of the pre-Crag implements and the earliest palæoliths. If on the other hand the Boulder Clay specimens are of Mousterian date then from the standpoint of archaeology the path would be made much straighter and easier for progress. We may feel sure that at the recession of the ice which laid down the Boulder Clay, immense floods took place, and that the river-valleys choked up with glacial débris were rapidly re-excavated, and that new valleys were formed by the flood waters. It was apparently soon after these episodes that the makers of the earliest Chellean palæoliths entered East Anglia. They were accompanied by an abundant fauna and the mammoth, hippopotamus, straight-tusked elephant, broad nosed rhinoceros, bison and various forms of deer are known to have lived in the Thames valley and on the continent at this period¹⁴, and there appears to be no reason why the same assemblage of mammals should not have existed in Suffolk. The particular kind of implements made by these people derives its name from the place where they were first found, viz., Chelles, in France, and many of the names of the later cultures were derived in the same manner.

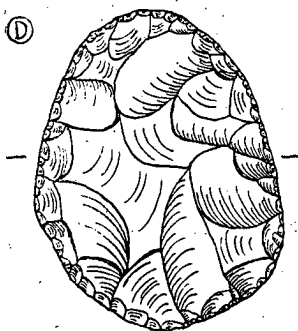
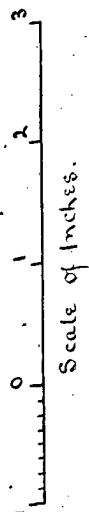
The Chellean implements are either more or less pointed (Pl. 5 A and B) or roughly ovate in form, and their edges show a wavy outline due to the large size and thickness of the flakes removed. The butt-end of the implements was generally left rough, the cortex of the flint being sometimes retained, leading



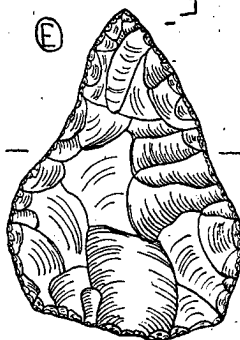
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to the conclusion that these specimens were grasped in the hand when being used and were not hafted. But though these pointed and ovate implements are the most typical specimens of the Chellean culture, other implements for scraping, planing and boring purposes have been found associated with them. The pointed and ovate specimens may perhaps be regarded as the weapons of the period, and as these were held in the hand conflicts at close quarters must have been the order of the day. The mammalian remains of Chellean times point to a warm climate with extensive forests, and if Keith and others are right in referring the human skeleton found in an ancient gravel at Galley Hill in the Thames Valley to this period, then the Chellean people were by no means of a degraded type, but must be classed with the modern type of man¹⁵. Chellean implements have been found in Suffolk at Warren Hill near Icklingham; Stowmarket; Derby Road brickfield, Ipswich; and other places.

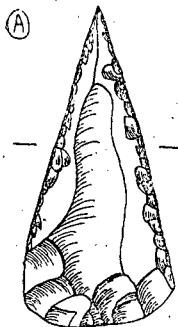
The climate was still congenial when the gradual improvement in the manufacture of flint implements and the possible invasion of our area by a new race of people, ushered in the Acheulean industry. The implements of this period are remarkable examples of man's handiwork. The coarse, large fracture surfaces of Chellean times have now disappeared, and in place of them we see fine, regular flaking in the manufacture of the numerous pointed and ovate implements. The waviness of the edges of the earlier specimens has also been replaced by a marked straightness and symmetry, conducing, no doubt, to their effectiveness as weapons for cutting and thrusting. Instead, too, of the heavy untrimmed butts we notice that the cutting-edge is continued all round the circumference of the implement, and we conclude that these Acheulean specimens were no longer held in

the hand when being used, but were hafted in some manner (Pl. 5 C). There do not seem to have been any marked geological changes between Chellean and Acheulean times, and we may regard them as being more or less continuous. Towards the close of the Acheulean period the flint implements, though still beautifully made, are getting smaller (Pl. 5 D and E), and many of them were so flaked as to have a distinctly twisted appearance when viewed edge on. But the reason for this peculiarity has up to the present not been satisfactorily explained. The Acheulean people possessed the usual scrapers, borers, and planing implements, and we may imagine them living their lives in a country well stocked with game, and at a time when the East Anglian rivers had not excavated their valleys to within 90 feet of their present level.

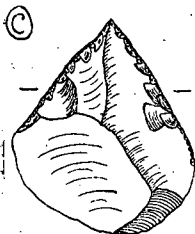
Acheulean implements have been found in Suffolk at Warren Hill; Bury St. Edmunds; Derby Road brickfield, Ipswich; and other places. At Derby Road an actual Acheulean "station" has been found, and described by Miss Nina F. Layard¹⁶.

The fragment of a human skull found in a brick-earth at Westley, near Bury St. Edmunds, and now preserved in the Museum at the latter place, is the only example found in England of one of these ancient Acheulean people, and Keith, who has examined the bone, regards it as representing a by no means degraded human type¹⁷. The fauna of Acheulean time is to all intents and purposes the same as that of the preceding Chellean stage. From the evidence on the continent of Europe we know that at the close of Acheulean times, a very marked lowering of the temperature occurred, and that once more a relapse into glacial conditions took place. We know also that in the Thames Valley the early Mousterian implements

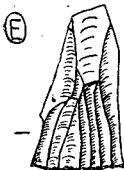
are covered by a deposit laid down during a period of cold, and which deposit is known to geologists as Coombe Rock¹⁸. In our own district, too, an early Mousterian culture has been found associated with abundant remains of the cold loving animal, the reindeer, and the author hopes before long to be able to publish some account of this discovery. Again, at High Lodge, near Mildenhall, Mousterian implements occur in a brick-earth, which is associated with a very definite glacial deposit¹⁹. We may conclude, therefore, that with the advent of Mousterian Man the genial climate of the preceding Acheulean period had passed away, and that he found himself confronted with climatic conditions such as we would regard as very drastic at the present day. But not only was there a distinct change in climate at this period, the implements of the Mousterian culture are entirely different from those of the Acheulean people. It is, in fact, generally recognised that with the close of Acheulean times a definite break occurs in the technique of flint flaking. If reference is made to the sectional drawings of the Chellean and Acheulean implements (Pl. 5, A, B, C, D, and E) it will be seen that these are roughly rhomboidal in outline, but with the advent of Mousterian times a return is made to the more simple sections (Pl. 6, A, B, C, D), such as are present in the implements found in the sub-Red Crag detritus-bed, Middle Glacial Gravel and Chalky Boulder Clay (Plates 2, 3, 4). Thus it appears that a retrogression in implement making took place at this period. We have seen that the skeletal remains of people of the Chellean and Acheulean phases pertain to the modern type of man, and this seems in accord with the high type of implements made at these epochs. The discoveries in Mousterian strata in the caverns of France and Belgium have clearly demonstrated that the makers of the Mousterian implements were, on the other hand, in many



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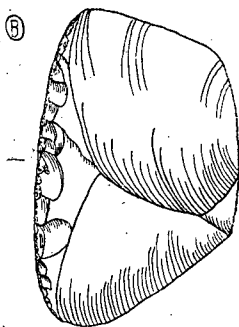
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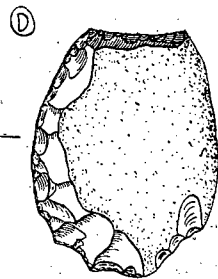
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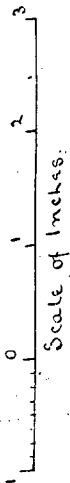
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particulars a very low type²⁰:

The remains of these peculiar people have not yet been found in England (unless a portion of femur discovered at Ipswich associated with Upper Mousterian implements, should eventually be found to be referable to this race), but the Mousterian implements found here are almost identical with those found on the continent, and there is therefore every reason to believe that the Neanderthal race, as it is called, lived in East Anglia.

We do not know how or why the highly evolved Acheulean people disappeared. They may have been exterminated by the Neanderthalers or by the glacial conditions which, as we have seen, were present in early Mousterian times.

The sudden appearance, and as we shall see, the equally sudden disappearance, of Neanderthal man is one of the unsolved puzzles of pre-historic archæology. From the classical researches of numerous French archæologists we know every detail of these strange Mousterian people, with their heavy, ape-like jaws, low foreheads and enormous supra-orbital ridges. But even though of such a primitive type, they nevertheless buried and honoured their dead as was shown by the discovery at La Chapelle aux Saints in the Dordogne, France²¹.

The implements of the Mousterian culture, though exhibiting the fine retouching of the edges due to the removal of very thin flakes, are fundamentally primitive in their conception.

The point (Pl. 6 A) and racloir (Pl. 6 B) are simply the improved descendants of the eolithic implements of the same form. It is true that the

Mousterian people knew how to "dress" a block of flint, and to remove a suitable flake from it to form into the required implement (they occasionally made roughly pointed implements of a similar type to the earlier palæolithic specimens), but this knowledge, as we have seen, was acquired in quite early times, and represents a totally different technique to that employed in making the much more complex and "artistic" Acheulean specimens. The fauna of Mousterian times shows a marked change from that of the preceding period. The mammoth and woolly rhinoceros, reindeer, arctic fox, steppe horse, etc., testify to the change which had come over the climate. But, nevertheless, the fauna was a large and varied one, and must have afforded great hunting for the primitive people who lived in this epoch. There can be no doubt that the Mousterian phase was very lengthy, and it appears that some of the Suffolk river valleys were eroded to their present depth, or even a little below it, during this period.

In Upper Mousterian times the flint implements are of the same general forms as those of the earlier phase of this culture (Pl. 6 C and D), but the cutting edges of the specimens have been produced by the removal of thicker flakes, and the implements are on the whole a trifle more clumsy in appearance. A large number of round-ended scrapers appear in the closing stages of Mousterian times, and the ancient floor of this age found in Messrs. Bolton & Co.'s brickfield, Ipswich, provided many excellent examples of these implements²². From the mammalian remains found in this floor, mammoth, long-faced ox, red deer, roe deer, wild pig, and extinct varieties of horses, we may conclude that the climate was ameliorating, and that forests had once more spread over the country.

In this Upper Mousterian occupation level at

Ipswich, three portions of the human skeleton were found, mainly part of the shafts of a femur and humerus, and a fragment of a very massive skull. These remains were mingled with hundreds of animal bones and showed cuts and marks of scraping precisely similar to those on these latter specimens.

It seems, therefore, that these ancient people were addicted to cannibalism, and such a conclusion is supported by another discovery upon the continent of Europe²³. Fragments of very primitive pottery were found in the Ipswich floor, the first discovered in this country associated with the remains of extinct animals.

Rudimentary bone implements also occurred, and similar specimens have been found in Mousterian deposits in caves in France. It is possible that the Ipswich Skeleton found in the brickfield of Messrs. Bolton & Co., Ipswich, is referable to Upper Mousterian times²⁴. Miss Layard has found and described a "floor" discovered on the south side of the railway tunnel at Ipswich, which is very rich in animal bones. The fauna indicates a warm forest period, and the few worked flints found appear to be referable to the Upper Mousterian culture. The kind of animals represented at the site also appears to support such a view^{22a}. The Mousterian implements of Suffolk are generally unpatinated and unrolled, owing to the fact that they are usually found in brick-earth which appears to have been plentifully deposited during this epoch. This particular phase of human culture was evidently of great length and its duration was marked by climatic changes and valley erosion of no mean order.

With the close of Mousterian times a new and wonderful era in human progress dawned. From

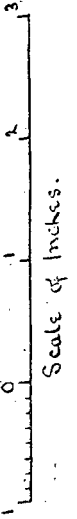
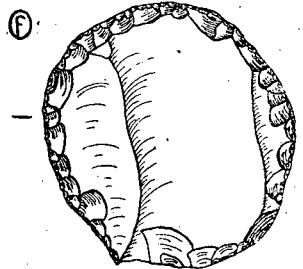
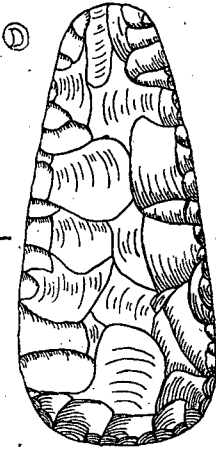
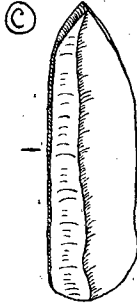
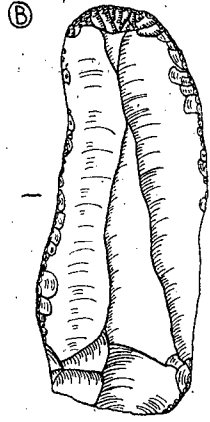
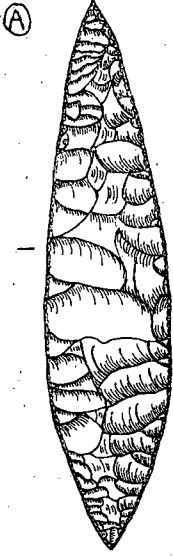
discoveries on the continent it is evident that a new race of people, entirely and fundamentally different to the preceding Neanderthals had now arrived upon the scene. And with their arrival Mousterian man disappeared never to return. We have no knowledge of how or why this complete blotting out of a virile race occurred, and must content ourselves with similar theoretical reasons put forward to account for the disappearance of the Acheulean people. These new arrivals, the Aurignacians as they are called, were perhaps one of the finest races of men the world has ever seen, being tall and well proportioned, with skulls of the modern type. Their skeletal remains have been found in various places in Western Europe, and the human bones discovered in the valley of the Medway at Halling²⁵, are supposed to represent one of the Aurignacian hunters. It seems also certain that the famous Red Lady (in reality a man) found in Paviland Cave in South Wales, is also referable to this race²⁶.

The Aurignacians entered Europe and East Anglia at a time of increasing cold, when widespread deposits of loess of æolian origin, were being laid down. No definite evidence of the presence of loess in England has yet been brought forward, but the Upper Mousterian floor at Ipswich was covered with a layer of fine, stoneless, loamy sand, which may be the English equivalent of the continental deposit. On the surface of this loamy sand another occupation-level was found and the implements of this layer appear to be of definite Aurignacian types. They offer a very marked contrast to the preceding Mousterian artefacts, being of different forms, and flaked in an entirely different manner. The peculiarity of this flaking is the "channelled" appearance it gave to the finished implements. This particular style of flaking can be imitated by pressing with the fingers the side of the flint to be

flaked, against the palm of the left hand, and delivering careful blows with a hammer-stone held in the right hand, upon the exposed edge of the striking platform of the stone which is nearest to the palm of the hand.

If this plan is adopted it will be found that the fractures induced will run for a longer distance in the mass of the flint, than with ordinary blows, and the channelled appearance produced. It is probable that the Aurignacians adopted such a method as has been described, but why they should flake their flints in this way remains a mystery. The flint implements of this period are of varied forms, but many of them seem adapted for the scraping and dressing of hides and other industrial purposes. Numerous scrapers and planes appear (Pl. 6 E, F, and G), and the conical specimens with flat base (Pl. 6 E) are a well-known type of planing implements of Aurignacian times. Pl. 6 F, shows a nosed-scraper, probably used for manipulating bone and ivory, which at this period was beginning to be extensively used. Pl. 6 G, illustrates a typical Aurignacian scraper with a steeply flaked scraping edge.

A totally new implement makes its appearance at this epoch, viz., the burin or graver which was made from a thickish blade having a flake so removed at one end as to produce a horizontal cutting-edge. Examples of this type of implement were found in the Ipswich deposit, and also in the Paviland Cave. The Aurignacian people were evidently great hunters, and at their large "station" at Solutré in France, an immense quantity of the bones of the wild horse were found, representing animals slaughtered for food. Their weapons were apparently made from bone and horn, and definite javelin heads have been found made of these materials. But the most wonderful characteristic of these people was their artistic temperament.



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PLATE 7.

On the walls of some of the caves in France have been found drawings and outline paintings of animals executed in a rough but realistic manner, and small statuettes of human beings carved in ivory and other materials have been discovered in the cavern deposits. Unfortunately we have no caves in East Anglia, and as the Aurignacian stations were in the open air and are not at any great depth from the surface of the ground, it is not perhaps to be expected that we should be so fortunate as to discover works of art such as have been described, owing to the unlikelihood of their preservation in such exposed positions.

No bones of any description were found in the Ipswich floor, but we know that on the continent and in the Paviland Cave the Aurignacians were associated with a cold-loving fauna such as the mammoth, reindeer, woolly rhinoceros, steppe horse, and arctic fox.

It is probable that a new wave of invasion of a similar race of people to the Aurignacians, was responsible for the introduction of the succeeding Solutrian culture into western Europe. The few skeletons which have been found associated with the implements of this phase show the same fine characteristics as do the Aurignacians. The Solutrain people were remarkably expert flakers of flint, and the most experienced modern knapper regards the artefacts of this period with wonder and admiration.

The spear heads or blades made by the Solutrians have perhaps never been surpassed for beauty and accuracy in flaking in any pre-historic period. A typical specimen of these implements is shewn in Pl. 7 A, and anyone can realise the amount of skill required to so modify a flake of flint as to make it assume such a symmetrical and artistic form.

It seems feasible to suppose that these specimens were produced by having resort to flaking by pressure with a bone point, but however it was accomplished we must realise that we are in the presence of a new technique differing entirely from that adopted by the Aurignacian people. Examples of these blades have been found in Suffolk, and Dr. W. A. Sturge has figured and described some found upon the surface of the ground in the district of Icklingham, where he resides²⁷.

A very fine example was also recovered buried some feet in gravel when digging the foundations for the chimney shaft at the Electric Power Station, Ipswich²⁸. This specimen which was slightly rolled and evidently of Solutrian workmanship, has, however, been erroneously ascribed to the neolithic period. In the hill-wash covering the Aurignacian floor in Messrs. Bolton & Co.'s valley, Ipswich, two typical early Solutrian implements have been found. This hill-wash was in all probability deposited during a period of low temperature, and may be the equivalent of the gravel containing the Solutrian blade above described. The Solutrians made a variety of flint implements such as the shouldered point, beautifully flaked awls, double borers, and trimmed flakes.

Their artistic work is not so rich as that of the Aurignacians, but in this period we can trace indications of the linear and plastic phases of art, and especially the beginnings of animal sculpture. At Predmost, Moravia, a mammoth sculptured on a fragment of ivory tusk, has been found at a Solutrian station. The climate of Solutrian times was cold and dry, and the fauna of a very similar character to that of the Aurignacian period. We have not yet found any Solutrian stations in East Anglia, but the implements of this culture are present in our area, and

future research may bring to light one of the actual workshop sites where they were made.

The succeeding Magdalenian epoch was ushered in with a condition of increased cold, and after a period when a more congenial climate obtained, a further and last extension of the Alpine glaciers marked the close of this cultural stage.

In the Magdalenian period flint-flaking did not reach a very high standard, but the work in bone and ivory is remarkable for its excellence and variety. Javelin points, needles, harpoons, dart-throwers, daggers, etc., all beautifully carved appear at this epoch. Tribal life was also well established, as numerous *batons de commandement* (staves of office of the chiefs), carved with scenes of the chase, and with spirited heads of the horse and other animals, have been found in the Magdalenian occupation levels. The walls of many caverns in France and Spain have been found adorned with the drawings and paintings of these people. The high standard in artistic expression reached by the Magdalenians must be studied to be fully appreciated. But even a glance at the reproductions of the cavern paintings now available for reference will show that these people of closing palæolithic times were artists in very truth. The flint implements are all made from long, narrow flakes, and we realise that the detachment of such flakes was a peculiarity of this culture. Scrapers made out of blades of flint (Pl. 7 B) are very frequently found in Magdalenian deposits, while the burin (Pl. 7 C), or graving-tool, is also a common form. A new form of implement for use in engraving appears at this epoch, is of a curved shape, and is known as the "parrot-beak" graver. Combination implements flaked to a scraper at one end and a graver at the other, were also a favourite form of the Magdalenians.

Implements of this age have been found by Dr. Sturge near Icklingham,²⁹ and a workshop floor found in Ivory Street, Ipswich,³⁰ and containing long narrow flakes, has been described. This floor occurred about 4 feet from the surface of the ground, and was covered with a friable, sandy material which may have had an origin similar to that of the later loess of the continent.

A number of human bones have been recovered in Magdalenian strata on the continent, and a skeleton of this age was found beneath a stalagmitic floor in Gough's Cave; Cheddar³¹.

These Cro-magnon people as they were called, were splendid representatives of the human race, and Keith has remarked that the Sikhs of India are the most like them of any living people. The fauna of Magdalenian times comprised the mammoth, reindeer, steppe horse, cave bear, red deer, roe deer, and many alpine and other animals.

With the disappearance of the Magdalenian culture, palæolithic times came to an end, and in place of the hunting races and ancient animal forms we see the advent of a race of pastoral people with flocks and herds and domesticated animals. At several places on the continent a transitional culture, bridging the Magdalenian and the Neolithic stages, has been recognised. In this Azilian phase, as it has been called, small pygmy flint implements were fashioned and harpoons made from the antlers of the red deer abounded. But no trace of the Azilian people has yet been found in Suffolk, unless the pygmy flints found at Lakenheath and elsewhere are referable to this period. The neolithic races are, however, abundantly represented in our county. These people apparently entered East Anglia under climatic conditions not

greatly differing from the present. It is said that some of the earliest neolithic implements at Campigny and other places exhibit various affinities to the earlier palæolithic specimens, but whether that is true or not we know that the tanged and barbed arrow-heads, and chipped and polished axes of this period have no real counterparts in the palæolithic cultures. Pl. 7 D illustrates a typical neolithic chipped axe, while a tanged and barbed arrow-head is shewn in Pl. 7 E. We also figure a round scraper of this period (Pl. 7 F) which was one of the commonest implements throughout nearly the whole of the stone ages. The neolithic specimens are found generally upon the surface of the ground, but it must be remembered that floors of palæolithic age often crop out upon the surface, and the implements so exposed may be regarded as of neolithic age, when in reality they are much older.

The Neolithic people are generally supposed to have dug the wonderful shafts in the chalk in search of flint at Grime's Graves, Cissbury, and Spiennes, in Belgium. But this view has been seriously challenged by Reginald Smith, who has brought forward very strong evidence to show that these excavations are of a much earlier date³². The neolithic fauna comprises the bison, long-horned urus, forest horse, brown bear, wolf, otter, long-faced ox, the stag, roe deer, and other animals of a distinctly modern character.

The neolithic people, as we know, often buried their dead in barrows, and the human skeletons found indicate a long-headed race of an advanced type. The art of this period, as shewn in certain rock shelters in Spain, is very poor when compared with that of the paintings of the earlier palæolithic races, and the beautiful carvings in bone and ivory have now dis-

appeared completely. Neolithic man, if he were again to revisit his old haunts in Suffolk, would find the contours of the district almost the same as when he left it, as since his departure, except for a sinking of the land, which perhaps finally separated us from the continent, no geological changes have taken place.

This completes the long and varied history of the different races of people who inhabited Suffolk during the Stone Ages, and it will be seen that we have here almost a complete story of man's activities from the very dawn of human life upon the earth. No one reading and trying to understand what such a story means, can fail to appreciate the endurance and hardihood of these ancient peoples, who in the long fight with nature came out triumphant, and who by their triumph helped in no small measure to establish the human race in the dominating position which it occupies in the world to-day.

NOTE.—A large and representative series of pre-palæolithic, palæolithic, and neolithic flint implements can be seen and examined at the Museum, High Street, Ipswich.

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