WEAPONS AND IMPLEMENTS

OF

PRE-HISTORIC MAN.

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THOUGH Pre-historic Archæology, as a distinct branch of science, is of comparatively recent development, it has already assumed sufficiently important dimensions to render a brief examination of the question as to what weapons and implements have been consecutively employed by mankind, somewhat difficult. Its literature is extensive, and the number of facts already collated, large. So that in the limits of one paper it is only possible to indicate the general character of the relics of human handiwork, and very briefly to trace from them the early steps, feeble though they were, which Man has successively taken towards the civilization, the comfort, and the enlightenment that characterize modern life.

But to judge of what Pre-historic man was, it is necessary from the very beginning to endeavour to look at things from his probable standpoint; from the standpoint of very complete ignorance, for Archaic man must have been a very ignorant savage.

As General Fox-Pitt-Rivers points out:—* "The mind has never been endowed with any creative faculty. The only powers we possess are those of digesting, adapting, and applying by the intellectual faculties the experience acquired through the medium of the senses. We come into the world helpless and speechless, possessing only, in common with the brutes, such instincts as are necessary for the bare sustenance of life under the most facile conditions; all that follows afterwards is dependent purely on experience."

Let our artificial life be but destroyed, and let us be but thrown back once more upon our own efforts, and what would happen? Merely that we should have once more to follow out the path that all races have in their turn trodden.

Think what would occur, for example, if any number of persons could be cast away suddenly upon a deserted shore. Suppose that unlucky accident had placed them there without a fragment of metal. After a short time a strong inclination to procure food would arise. There are fish in the sea, but there are neither hooks nor lines to catch

* Primitive Warfare, Sec. II. p. 400.

them with; there are oysters and other shell-fish on the beach, and these, at any rate, can be gathered and broken open by a pointed stone; there are birds, or perhaps even some small land animals too swift to be caught, to be seen not far inland, and round handy stones will kill or disable them as soon as hunger has improved our aim and cunning. But all these articles of food are raw and, to say the least unpalatable, unless they be cooked. Well! then, with two stones, properly chosen, a piece of decayed wood from a tree, or the fine filaments from some seed-vessel or moss, to act as tinder, and with a little patience a fire can be made. Possibly persistent rubbing of two dry sticks together may succeed. Later on hostile savages may make their appearance. Should they do so the stone that split the oyster can split the unwelcome visitor's skull equally well; and the effect can be produced with less inconvenience and greater certainty if the stone be fastened to a stick with some grass or a withe.

And so with neither metal nor weapons of civilization the ship-wrecked people have lived.

Stone has provided them with implements and tools, with fire and light. This most general of all materials is always at hand, save perhaps in some Alluviums, or in the lower Pampas of America, and is frequently already roughly fashioned. Nature, the good instructress, will give thus a handful of useful though inferior tools from any gravel heap or pile of débris. She can make tools and make them very badly too. No pair of them are exactly alike; none are quite what is wanted. It is human art and human thought alone that can produce similarity of workmanship. Nature may clumsily make what could be used as an axe; but she does not make many, and even they are very clumsy. Nature can wear or weather a rough rock pinnacle into the feeble semblance of a human face or form. Human art and thought alone can see in, and reproduce from, the "living rock" the noble statue or the speaking bust. Nature never makes even two flowers exactly alike. Art can make facsimiles of any given type of human handiwork.

Bear these two facts in mind therefore:—

1st.—That stone is the most general of all materials.

2nd.—That in all human handiwork where thought enters, there is a certain similarity.

So that to begin at the beginning, whenever that was, we must go back to an age when stone was the only material that man could use for really serviceable tools. Naturally, before that period, sticks had come first to hand, but they broke and were not hard enough, perhaps, for many a pre-historic skull. The first man who fastened a stone at the *end of the stick* and slew his enemy therewith was the forerunner of the leading warriors of all time. For, remember, the first thing a man did was to hit with his fist. Then somebody had a longer arm and got the better of him. So someone else equalized that difference with a stick; and then another somebody restored the balance again with a stone at the end of another stick. Some such transition,

rapid possibly, brought the earliest races of mankind up to an Age of Stone.

Back, then, into old time: to that period when the greater geological changes were completed. Back to the later days, at any rate, of the glacial epoch, when the great ice cap that more or less covered the extreme North of Europe had retired towards the Pole, but when, still, vast glaciers extended from the mountains of central France, the Pyrenees, and from our British Highlands; when the English Channel, if it existed at all, was but a petty creek; and when the English Thames was but a tributary of the German Rhine.

Back into these old times, when, in the marshes and the slopes of broad valleys, Hyæna and Cave-Bear sought their prey, and huge Rhinoceroses and even Hippopotami, besides still more unwieldy Mammoths, crushed their way through the primæval forests in the valley of the Thames, or along the Guildford hills. As they died or were swept away by winter floods, they were washed down to lower levels, there to rot and leave their bones on gravel banks raised by ice and storm.

An icy cold climate existed, much like that of Norway or Canada for example; but still capable of affording food and sustenance to the vast herds of Reindeer which roamed far into Southern Europe, and which could not exist under our modern conditions of temperature. A rigorous climate must have characterized much of the Northern part of Europe in those days. Possibly the proportion of land to water was greater. An upheaval as far as the 100-fathom line would render our Islands but the hill-land of the Northern Continent. If such an oscillation of land had been accompanied by such other changes as would have caused the Gulf Stream to hug the American coast instead of reaching Europe, the counter Arctic current from the North would have tended still more to increase the local cold.

Back into these times then, at the very least, we must go to find the first faint traces of Primæval Man.

They are not very extraordinary after all. They are merely chipped flints, found in old beds of gravel. It took some time to make people believe they were other than perfectly natural. When M. BOUCHER DE PERTHES, watching the men excavating the gravel beds of Saint Acheul, near Amiens, in France, first noticed the great similarity that existed in the shape of certain numerous flints there, and then propounded the idea that these were of human origin, he was laughed at. But further researches gave such a mass of accumulative evidence that even the sceptic ceased to smile. Other river valleys, other beds of estuarine gravel, yielded forms identically similar, except in such slight differences as the nature of each individual stone afforded. In old gravel beds laid down perhaps quietly, perhaps by flood and tempest, perhaps by ice-floes, rough and ready tools were found by the skilled seeker. And yet not found everywhere, as in a bed of fossils of the same age, but only here and there; though always, or nearly so, in numbers when they were discovered at all. And at length it began

to be clearly recognised that these flints, laid down with relics of Elephant, Rhinoceros, and Bear, with bones of animals long since extinct and passed away, were human tools.

So to this, the, as yet, earliest known period of human existence, was given the name of the Palæolithic Age; the age of "old stone."

This first great classification depends on two conditions.

I. That the chipped flints, however rough and rude, should show by their form and their wavy edge, (by which alone the full value of the conchoidal fracture of the material can be taken advantage of to produce a cutting edge), that the flaking was the result of intention.

II. That the implements should be associated with the bones of extinct animals.

There are two groups of these so called Palæolithic implements.

(a) Those from the Quaternary Gravels or Drift.

(b) Those from Caves and Rock-shelter.

Now in these earliest days the *Weapon* and the *Implement* were probably interchangable. Doubtless the weapon was most important, for man had to live and get food, and therefore had to deal with animals wild, numerous, fierce, and hostile. In that dire struggle for existence the weapon for offence and defence, aye, and the male animal too, because he was the stronger, held the first place. As time went on the implement of use in peaceful life asserted its value until, in our own times, the implements of peace are more valuable than the weapons of war. But it was not so once: not so in these days of Early Man. What was his experience? Mainly the value of a *crushing blow.* Hence his weapons and implements are for rude crushing, rather than cutting, purposes, at first.

The drift types, therefore, are very simple. They are either chipped to a long point with the other end left blunt, so as to be held in the hand without injury *(3; see plate)*; or are fashioned into a long oval or almond shape more or less chipped all round (1). Some few have the chipped or cutting edge on one side only, the other side being left thick or blunt, as if to be used in the hand side-ways (4). Common rough flakes betraying marks of use along their edges are also found (2 and 3). Many have been discovered in close association with teeth of Elephas and vertebræ of Bos. At St. Acheul they are fairly numerous in patches, at a depth of about 18 feet, in undisturbed gravel with Gallo-Roman graves in the superficial earth. In the old Thames gravels, and at Thetford and Brandon, in Essex and Suffolk, the same varieties are also found; not in every bed, but in patches and favoured localities. As to their use it is difficult to speak with certainty; types (4) and (5) may be hand-implements for domestic use, and (1) a rude weapon; if fastened in a cleft stick it would be a formidable club. In caves where similar relics are found, the bones of the animals with them are invariably found split for marrow.

Modern savages are known to use similar stones for like purposes.

PALÆOLITHIC.
(Chipped Stone, & Extinct Animals.)

Drift. — Associated Bones &c. — Rhinoceros. Mammoth. Elephant. Hippopotamus. Cave Bear. Lion. Hyæna.

Cave — Ditto Ditto. Musk Ox. Reindeer. Horse. Wolf. Urus. Aurochs. Elk.

TRANSITION.
(Chipped Stone & Domestic Animals.)

Kitchen Middens. — Oyster. Cockle. Mussel. Periwinkle. &c. — Herring. Dab. Dorse. Eel. &c. — Stag. Deer. Boar. Urus. Fox. Wolf. Domestic Dog.

Cissbury Camp. — Cervus Elephus. Bos Longifrons. Capra Hircus. Sus. Canis.

NEOLITHIC.
(Polished Stone, Fishing Nets, Pottery, & Cereals.)

Domestic:- Dog. Pig. Horse. Goat. Sheep. Ox. —— Wild:- Stag. Boar. Fox. Aurochs. Bear. Wild Ox. Wolf. Eagle. Urus. Falcon. Bison. Goose. Elk. &c.

BRONZE.
(Bronze & Gold Tools &c. & Spinning.)

Domestic:- Dog. Sheep. Goat. Ox. Boar. Horse. —— Wild:- Br. Bear. Fox. Beaver. Stag. Roe Deer. Marten. Badger. Pole Cat. Wild Cat. Elk.

IRON.
(Cremation. Springs, Horse Trappings, & Coins.)

SURFACE-FINDS.

NB. Sketches are not to Scale nor proportional.

WEAPONS. IMPLEMENTS. ORNAMENTS.

1. St. Acheul. 2. St. Acheul. (Stone.)
3. Thenay. 5. Hoxne. 4. Brandon. (Back.)
6. Le Moustier. 7 Laugerie. 8. (Bone) 9. La Madelaine 10. Moustier. (Stone) 11. Laugerie 12. d'Enfer (Bone) 13 14. 15. 16. (Shell.) 17.
18. 19. 20.
21. (After Dr. J. Stevens.) 22. 23. 24. 25. 26. (Stone.)
27. 27. 28. 29. 30. 31. 32. (Stone.) 33. 34. 35. 36. 37. (Bone.) 38. 39. (Pottery.) 40. 41. (Amber.) 42. (Teeth.) 43
44. 45. (Copper.) 46. 47. (Bronze.) 48. 49. 50. (Stone.) (Bronze.) 51. 52. 53. 54. 55. (Bone.) (Pottery.) 56. 57. 58. (Bronze.) 59. 60. (Gold.) 61.
62. 63. (Iron.) 64. 65. (Iron) 66. 67. (Bronze.) 68. (Iron.) 69. (Iron.) 70.
I. II. III. IV. V. VI. VII. VIII. IX. X. XI. XII. XIII.

Hooper Delig.

Certain it is that man lived before these old gravels were formed. How, it would be hard to say. Probably as a shivering, ill-clad savage, who either came to the river-bank for water and lost his stone implements there; or in breaking ice in winter, to catch fish, let them fall through from his numbed fingers; or went to feast, as many modern savages do, on the stranded bodies of dead beasts and fish, heedless whether they were "high" or not.

His relics are poor enough, they are—

Weapons.	(1) For crushing blows—oval tools.	Club, or spear-use.
	(2) For stabbing blows—possibly flakes.	
Implements	(3) For scraping skins—Rough rude flakes.	Hand-use.
	(4) For splitting bones—Side-edged tools.	
	(5) For crushing purposes—Pointed tools.	

That these are of human manufacture and ancient origin is undoubted for several reasons.

(i). They have had many flakes struck off with intention.

(ii). There is a general similarity of form in all localities,

(iii). They possess a "patinated" surface, the result of oxidation.

(iv). Many display dendritic marks which are often of slow formation.

That human remains are either absent, or exceedingly rare and doubtful, is to be regretted; and that even the animal bones are not numerous is singular. But these objections have been answered.

First of all, the missing parts of the bones are, as a rule, just those that are eaten by beasts of prey or smaller animals. Only the stronger parts are left, and Man's bones are, from their size, more liable to destruction than those of other animals. The parts hard enough to correspond with the teeth or tusks or vertebræ of the extinct animals are in themselves small; and even if they remained unbroken, they would be liable by attrition to lose their form and be thus overlooked. Man's bones are on the whole smaller and softer, and therefore more destructible than those of the larger animals. There can be doubt of the age of the bones that are actually found. They are so far dessicated as to adhere to the tongue.

All we really know of *Drift-Man*, then, is that he was a mere nomad, hard put for a meal sometimes, and that he lived, or frequented, the margins of the rivers and estuaries of old time, for water's sake. How long he submitted to this style of life there are no means of judging; but the men who have left their relics in *Caves*, though still of much the same character as those of the *Drift*, had made a perceptible advance in civilization. The mere fact that they had habitations led them to improve the nature of their weapons and implements; for with Comfort, Art increased.

The land had been sinking gradually during these early days. The vast rivers were busy scooping out valleys; water-action was making caves and widening crevices; and, though the climate had not materially changed, the superficial conditions of the earth were somewhat different.

The world was older, the race older, and age had, as it always should do, brought wisdom. So in Caves of different kinds we find the next traces of early Man, and these are richer than the first.

Limestone, from its nature and stratification, lends itself so readily to water-action that caves and wide crevices are always common in it. In the limestone areas of Northern Europe and elsewhere, therefore, the numerous caves give evidence of occupation. In many of these, implements of much the same class as those of the Drift are found associated with bones of extinct animals, and buried beneath surface accumulations, artificial debris, and stalagmite.

The best known and best worked-out examples are found in the valley of the Vézère (Dordogne). There the river, wearing through (possibly by a fissure at first) the horizontal beds of lime stone, has left actual caves, and under-cuttings known as rock-shelters. These, naturally, lie at different levels as the waters worked the strata down. In the higher, therefore, one would expect to find the oldest and rudest things; and this is actually the case. The Cave of *Le Moustier*, which lies at a high level, has weapons and tools of nearly the Drift type; only they are a little better (6 and 10). That of *Les Eyzies*, lower down, shows further improvement, in having, besides stone relics, tools of bone, and bone awls for boring holes. *Laugerie* and *La Madelaine*, lower down still, and but little above the present river-level, have implements of higher art, including needles with eyes, harpoons of bone, ornaments of shell, carved and decorated bones, and lastly, bones bearing actual pictures of the animals that lived then.

Among the relics of his old home, on the hearth stuff of his extinguished fire, surrounded by the tools and weapons that he had loved, with meat bones (un-gnawed like those outside the cave by Hyæna, or other beasts of prey) by his side, Cave-Man has been found buried. He had acquired, in his poor way, some idea of the great future beyond the grave; he put away his dead with care, and left implements and food to help his departed brother on that dread journey after death, awful to him as to us. He shows us the first dawn of a religious feeling.

He had increased the number and sub-division, and beauty of his weapons and tools, though the types are still much the same as heretofore.

He still had

Weapons
- (6) The crushing Axe.
- (7) The stabbing Spear.
- (8) Possibly missiles, Dart and Arrow.
- (9) Certainly the Poignard of Reindeer horn.

Implements
- (11) scrapers, or borers, and (12) knives of flint,
- (14) Needles, (16) harpoons, (9) fish-hooks, (13) awls and ornaments of bone (15 and 16).
- (17) necklaces, and red paint.

And what manner of man was he? His remains have been found buried at La Madelaine, Laugerie, and Cro Magnon. The latter is not, much below the level of the more ancient cave of Les Eyzies. With his skeleton was that of a woman of full growth, and also that of a little child. The woman had in her skull an oval hole made by a flint axe, such as was found buried with them. "As to his exterior," says Dr. Pruner Bey, "he must have had a heavy frame, managed by a powerful muscular apparatus, which has left its traces in the hollows and ridges of the bones. A robust, but flattish, foot bore the body, and was fitted for running by its elongated heel. Of a sombre aspect, with an imposing stature, and conscious of his strength, ignorant of moderating his passions by a cultivated morale, he could be violent, and turn against the weaker sex the weapon intended to kill his prey." * Whether the woman was slain in a family quarrel, by an enemy, or in an undue exercise of marital authority, it is hard to say. But this old reindeer hunter was evidently a stern man, with a spirit that did not brook contradiction. The man whose skull was found at Neanderthal must have had similar proclivities.

But those who, after a longer or shorter period, succeeded him at La Madelaine and Laugerie were, it is to be hoped, a little more civilized. Their weapons are better, and their art undoubted. They sketched the Mammoth, they carved bones. They were mere hunters, of the Reindeer chiefly, still; but they varied their diet with Horse-flesh, Bear, Musk-sheep, and Wolf. They buried their dead with food and ornaments; and were much like the modern savages in their funeral rites.

Here bring the last gifts! and with these
The last lament be said.
Let all that pleased, and yet may please,
Be buried with the dead.
Beneath his head the hatchet hide,
That he so stoutly swung;
And place the bear's fat haunch beside—
The journey hence is long.
The paints that warrior loved to use
Place here within his hand,
That he may shine in ruddy hues
Amidst the spirit land.†

He had gone beyond the mere hunting warrior stage. He had acquired habits of vanity, and with them, possibly, vanity's natural concomitant self-respect, for he had necklaces of shells, and rouge from hæmatite Iron.

Drift-Man we know but little of, but Cave-Man had become a *Hunter* and an *Artist*.

Now it is always difficult, in the study of pre-historic times, to make sure of one's chronology. The links of the chain of human

* *Reliquiæ Aquitainiæ*, p. 26.

† Poems and Ballads by Schiller; SIR E. L. BULWER.

existence are far from complete; so that every now and then we come to a gap difficult to bridge. Between Palæolithic time of the Drift and Cave and the Neolithic age, that of still higher art and polished stone, which succeeded it, there is no regular gradation yet known.

But there is possibly one faint link in the collections of shells, bones, and tools found along many a coast-line, and known as kitchen-middens; for these, in some respects, show an advance in civilization. Savages seem to have had great feasts by the sea-side, and to have left mounds of debris showing marks of human work. In Denmark these mounds are of vast extent, and are still not far from the sea-shore. There are flint cores, implements, and flakes (18—20), no better than those from the caves, and bones split for marrow. There are shells of oysters, cockle, mussel, periwinkle, &c.; fish bones of herring, dab, eel, &c.; mammalian remains of stag, red deer, wild boar, dog, &c. But there are, at last, fragments of inferior pottery, a few bone pins, and the bones of *the domestic dog*. These are recognized as such by their being finer, and less marked for muscular attachments; for as the wild animal became civilized, so the necessity for abnormal strength in the struggle for existence ceased to have value.

It is possible that even the remains found in the Drift Gravels may be the traces of similar ancient shell heaps, which the sea, or flood, or estuarine waters have worn away by encroachment on the land, and re-deposited with a later gravel.

"Along the coast of Peru * are shell heaps or Sambaquis now situated 18 to 20 miles inland. They are 60 metres high, and 100 metres long in some places; and contain, besides shells, bones and broken axes. Their relative age could, perhaps, be best stated by their topographical situation. All of them, natural or artificial, stood originally along the sea-shore; as people, who did not take the trouble to do away with the remains of their repast, cannot be supposed to have daily transported a heavy load many miles inland, and this under the rays of a tropical sun. Generally the period of chipped stone implements is considered more ancient than that of polished ones. The reverse must be admitted for this part of America. The materials of the second period are dioritic or basaltic, and thus far softer, and requiring less perfect tools in shaping than the harder ones of the first period. Basaltic rocks of schistose texture abound along the coast. A grindstone and a file were found to be sufficient to work an axe out of them. Fragments of the coarse-grained granite, in which these basalts are embedded, such as were washed out by the sea, served to give, by rubbing, the form of an axe to any basaltic fragments. It must be remarked that polished stone weapons are exclusively found along the coast, and, as exclusively, chipped ones in the interior; and that the inland nations are more advanced in civilization than those living along the coast."

* Journ. Imp. Geog. Soc., Vienna, 1876. Prof. C. WIENER.

In Scotland, by the side of lakes or lochs, shell heaps have been found, and they have not been confined to the Age of Stone.

In America the method of cooking shell-fish for these sea-side picnics in modern times may be worth recording.

"The 'soft clam,' a species of shell-fish very abundant on the American coasts, is, next to the oyster, the most important bivalve on the other side of the Atlantic, whether viewed as an article of diet or as a source of industry to the fishermen, who also value it highly as a bait for other fish. It is consumed in enormous quantities in various parts of America as a delicacy among the middle classes, and as a staple article of food by the poor. With oysters at famine prices, and even the plebeian mussel yearly becoming dearer, it is a question whether these molluscs might not advantageously be introduced into certain portions of our coasts. They are very prolific, and thrive best on a sandy shore, in localities where oysters will not exist; and, unlike its more aristocratic cousin, the 'clam,' will bear great extremes of heat and cold without being affected in the least degree. As regards its gastronomic qualities the opinion of the American judges is loud in its favour. The last report of the United States Fisheries Commission, in advocating their preservation, says that the people of that country use the clams in a variety of culinary preparations, the most popular of which is a kind of soup especially esteemed in Boston. In Rhode Island and Massachusetts they serve as a pretext for *fêtes* of a very peculiar kind, called 'clam-bakes,' which have their origin in an old Indian custom. The aborigines were accustomed to assemble in great numbers every year for a feast consisting of clams and green Indian corn cooked together with seaweed; and the modern method of preparing the feast is a modification of the ruder practices of the noble savage. A circular hearth or bed is first made in the sand on the seashore, with large flat stones, upon which a fire is kept up till they are red hot. A layer of seaweed is then placed upon them, and above that a layer of clams, in the shells, covered with more seaweed. Ears of green corn and potatoes follow; then a stratum of cooked poultry; seaweed again; and last of all fish and lobsters, covered finally with seaweed. According to the number of persons composing this picnic party, the layers are multiplied, and left to cook and heat throughout. The feast is served in Oriental fashion—that is, by each visitor helping himself without ceremony. These feasts were formerly attended by the most renowned braves and warriors, who came from afar to meet on the sea-coast and enjoy the entertainment. Nowadays they are attended by persons of the highest social standing, to the number of several hundreds at a time. The final paragraph of a native description of them says:—'The feasts are delicious beyond description, and it is said no one is ever made ill by them.'"* The custom of feasting on fish by the sea-side is evidently of ancient origin. Like other things, it has its survival, and finds it in the Ministerial Whitebait Dinner at Greenwich.

* "Globe" Newspaper.

It does not follow then that heaps of shell and other refuse by the shore are necessarily ancient. Their date can alone be fixed by the associated relics of man. Those in Denmark, which seem to indicate a period of transition between the Palæolithic and Neolithic ages, have implements of chipped stone resembling the Cave type.

Again, within, and even underneath the earthwork walls, of Cissbury Camp, are pits and galleries excavated in the chalk for the purpose of procuring flint for implements. These workings were made long before the hill-fortress itself, and among the debris that has since accumulated in the pits are bones intermingled with flakes, cores of flint, and rough tools (21—26). They are merely chipped, and approximate very nearly to the Cave forms.* This may have been the dawn of the age of polished stone here in England: though, on the other hand, the rough chipped blocks may have been so worked for transport only, and designed to be finished and improved elsewhere. They are certainly later than the coast finds, for they are associated with *Bos Longifrons Capra Hircus, and Sus.*

But, whatever was man's history after Palæolithic time and the extinction or migration of the Reindeer, whether the races that then occupied Western Europe followed the retreating herds North, or whether stronger and better armed people came in from the East and drove them out, the next clearly defined period was the Neolithic Age of polished and delicately chipped stone. Both weapon and implement show marks of improvement and development.

The old Cave-dweller had influenced posterity, and his cultivation of art for its own sake had borne useful fruit. It had improved the beauty and usefulness of useful things. Denmark is perhaps the best country from which to illustrate this age. In tumuli, in boats buried in the peat, in the peat itself associated with great *Pines* only, remains are numerous. Whether man got further than Pit-dwellings or huts, in these countries is doubtful, but on the Swiss Lakes he built dwellings on piles.

The range of implements is wider, better, and still more sub-divided.

Weapons
- (27, 32) The polished Axe is a formidable cutting as well as crushing weapon.
- (29) The finely chipped Spear is a good thrusting or stabbing one.
- (28, 30) The Dart and Arrow, missiles for short or long range, are readily distinguishable.
- (31) The Dagger, for close stabbing, is better than its bone ancestor.

Probably as these are often found buried in one tomb, each warrior carried all, or most of these.

There was no separation of the arms, as yet, into definite groups. Each carried what he liked or what suited him best.

* Cissbury. Dr. STEVENS.

The crushing weapons are most numerous and apparently had first place; but the missile weapons are better than heretofore, and the poignard of bone has given place to the strong dagger of flint.

In his domestic life there is evidence of more settled existence. With fewer external dangers, as the wild beasts were being gradually exterminated by alteration of climate or by man, the more peaceful arts, slowly but surely, asserted their equality with those of war.

He had

Implements:

(33, 34) Weights, fashioned from stone, for fishing nets.

(37) Carefully polished Gouges of Flint.

(35, 36) Flint Knives fixed in handles, and other well chipped flints whose serrated edges seem to indicate the saw; also bone harpoons. (38)

(40) Pottery of not ungraceful shape, but made by hand and with plain thumb or line markings, indicating more attention to the comfort and decency of home.

(39, 42, 43,) Combs of bone and ornaments of amber as well as of bears' teeth, showing a further advance in personal adornment; but the trinkets are still non-metallic.

(41) And lastly, rude slabs and crushers of stone, proving that the use of cereals had been discovered, and that man had learnt to eat his meat with bread.

Still, probably, clad in skins, Neolithic Man made vast strides in civilization. He shaped boats and he cultivated the land. His weapons are beautifully made, both the chipped and the polished. Neolithic man had become a skilled artisan and had enlisted woman's aid in more ways than one. For while the warrior still hunted or fished, and those especially skilled rough-fashioned the stone axe or chipped the chieftain's delicate dagger, to the women or to the children was in all probability given the laborious task of polishing and finishing the tools. Woman, always his helper, was in those days as in other savage times, undoubtedly his slave. He buried his dead in carefully constructed chambers or kists of stone over which the earth of the Tumulus was heaped. He constructed rude stone Avenues and Megalithic circles. He was a long-skulled, Serpent and Sun worshipper, as far as can be gathered. He was still a Savage, but he had become a *Fisher* and a *Sailor*.

What was the world's history, and what the gradual successive steps of human existence between the ages of polished stone and bronze, is not yet clear. There is an overlap of time, when stone things are associated with rare and valued ornaments of bronze; and later still when the prized weapons of the warrior were of metal, though it was

too precious yet for common use. Centuries at least must have elapsed.

The art of smelting a metal, even one so often found native as copper, must have been of slow growth. Possibly, inasmuch as weapons of native copper *beaten* into the shape of stone axes have been found in America, and rare specimens are known from other localities, an age of Copper preceded that of Bronze. When the harder alloy became known, the copper tools would soon be melted and converted into bronze. Tin to produce it is abundant in only certain localities, as in Saxony and Cornwall in Europe, and in Banca in Asia. The first admixture may have been accidental and the superior hardness of the alloy would soon attract attention. The proportion of tin is always very nearly the same, *i.e.*, about one part in ten: but this result was probably brought about by practice and experience. Possibly imported at first into the Northern Countries, it soon became general and common. Ireland and Denmark abound in relics of Bronze Man. In the latter country bronze is associated in the peat-mosses with oak trees; the pines having by that time either totally disappeared or become dwarfed and stunted by the alteration of climatal conditions.

Late Neolithic Man and Bronze Man also adopted one peculiar method of forming the settlements which were now becoming common. For civilization and society run hand in hand. Palæolithic Man has left no trace of regular communities: he had nothing to lose except the few arms and implements which he and his could carry. But some sections of both Neolithic and Bronze people had cause to fear attack: they were richer.

Thus it is that in the Irish lakes Pile-dwellings or Crannoges, artificial islands of wooden piles and stones, connected with the main land by a causeway, have been found; and these ancient habitations abound in relics of human life. The Swiss Lakes have also been most prolific in discoveries of this kind and the lake-dwellings there are the most complete examples of these structures, and contain by far the largest series of human relics. When, during draining operations, excavations were made, pottery and weapons, articles of stone, in some cases articles of bronze, cereals, and vegetable fibre woven into cloth, were met with in abundance. The very piles, pointed by rough tools, that supported the buildings were found in place, and fire had been the agent of destruction. The wooden platforms and buildings had been burnt, but whether by accident or intention cannot be determined. Keller, in his description of these dwellings, gives sketches of a possible restoration of one of them. They strongly resemble Malay villages in the Malacca Straits. The houses were built on platforms; and between the chinks of the beams many a domestic article dropped into the mud beneath to illustrate another page of history.

Stone was most plentiful in the Eastern part of Switzerland in the lakes of Geneva, Neufchâtel, and Mooseedorf. Bronze abounded rather in the western lakes of Constance, &c. The Villages belonged to the Neolithic as well as to the Bronze Age: in some cases, the two materials, Metal and Stone, are found together; in others, either Stone or Bronze

predominates. Thus at Wangen, on lake Constance, 5,000 articles of bone and stone have been found, but not a trace of metal; at Morgen on lake Geneva, on the other hand, 40 bronze hatchets were dug up in a single day. Their date it is difficult to fix. There are no traces of coinage, not the faintest relic of the Romans, in all these finds. All that is historically known about such tribes is a mention by Herodotus of a tribe up in Thrace, 520 years B.C., who dwelt in huts on pile-platforms. Still this particular Settlement must have borne traces of historic time, for the armies of Darius surged in vain round the pile-dwellings of the Pœonians.

The Swiss lakes possess nothing historic whatever. They go far back into old time.

But Bronze Man had much improved. His spindles-whorls of pottery show that his womankind spun thread and stuffs for garments; his utensils of baked clay (57) show better design and more varied ornament. He cultivated the land and acquired flocks and herds. The Sheep, Horse, Hog, and Bull are more common than heretofore; and his arms have improved but not varied in character.

Weapons
- (44–47, 50) Axe and spear, dart, arrow, and sling stone, still show the crushing, stabbing, and missile weapons; and to these has been added the
- (49) Bronze sword; still a stabbing weapon, though of greater value and greater reach than the dagger of stone, or that of Bronze which preceded it (48).

His implements are

Implements
- (51, 52) Cutting knives and barbed fish-hooks of Bronze, hooks, pins, and picks of bone (53—55), and display increasing intelligence.
- (58, 61) Bracelets, pins, rings, combs, and articles of bronze and gold, indicate the dawn of luxury.

He used, often enough, great trunks of trees hollowed out by fire and by axe and furnished with a wooden cover, in which to lay his dead. Sometimes these coffins were interred in Tumuli or in the peat. In other cases he burnt his dead and buried the ashes only in a sepulchral urn. He was a round-headed man, skilled already in the arts of peace. He probably worshipped the Sun and Moon and all the hosts of heaven. He wore, in Denmark, a woollen cap and a woollen shirt and cloak. He had there neither native copper nor tin; but his bronze weapons and implements are numerous and often richly ornamented. His swords and daggers have very small handles. They indicate a possible Eastern origin, but whether from original designs or because this Brachiocephalic Man came in as an invading race on

one of the great migratory waves from Asia, cannot be determined. Whatever he was and whence-so-ever he came, Bronze Man was a a member of relatively civilised communities and had become a *Trader.*

The progress of Iron Man, for he naturally came next, was rapid. Better tools and more deadly weapons necessitated larger communities, settled government, and walled towns. More treasure and more loot led to the instinct of self-preservation, directing union for offence and for defence.

Higher-class tools brought in higher art, better-paid work, and the natural sub-division of labour into the groups best suited for the varying powers of individuals.

Weapons
- With the iron sword (65) came the cutting and thrusting weapon in one, and so the axe (64) began to fall into disuse. The dagger (62) still remained.
- The missile weapons, dart, arrow (63), and sling stone still lived.
- The long thrusting spear increased in size and length. (63).
- And, lastly, for the crushing axe was substituted the crushing missiles from Catapult and Balista.

Early in his domestic life the value of the elasticity of iron became evident to him.

Implements
- Hooks (66), and shears (67), fibulæ (70), and horse trappings (69), were the beginning of all such subsequent metal work. His vessels are often of Bronze (68).

He was a heathen and an idolater, and in those days he, almost universally, cremated his dead. But Iron Man, the cavalier and horseman, soon ceased to be Pre-historic.

Since his time human progress has advanced with unceasingly rapid strides. But the sub-division of weapons by Iron Man has held its own, until even now. The spear or the long stabbing weapon of the Hastati finds its parallel in the modern lance. The swordsman, armed too with a missile weapon like the other Legionaries, may be coupled with the Hussar or the Officer of any branch of any Army. The missile weapons of sling and arrow have been replaced by the rifle. And, lastly, the crushing weapon that so long held its own in Pre-historic times, finds its survival in the cannon shot or shell.

As time has gone on, each weapon has in its turn assumed superiority. At one time the cutting power of the Roman sword; at another, the long stabbing power of the Knightly lance or spear; at a third, the range and deadliness of the Fire-Arm, has been prominently important. But the value of the crushing weapon still holds good. The effect of the crushing Artillery fire of modern guns has often been proved. Leaving numbers, strategy, and tactics out of

the question, it helped to give back, just ten years ago, to German hands, the ancient provinces of Elsass and Lothringen, and destroyed for ever the name and reputation of Metz la Pucelle.

But there are other groups of human relics, common everywhere, that may be termed Surface Finds. They may belong to any age, Neolithic, Bronze, or even Iron. They are the work of nomads skilled in the use of stone, and accustomed either to make their implements where they encamped, or to re-point and re-fashion their weapons by the camp fire. The old flint-knappers need not necessarily have been without metal or good stone implements; but, for daily use, they may have fashioned rough tools when they halted for the mid-day repast or the evening rest. In style the relics, of course, approximate to the ordinary stone types; for the character of the tool and the nature of the material of which they were made being the same, the results arrived at must be the same also. As a rule, definite high-class implements are rare, and those that are found had been generally broken or mutilated in "re-setting."

But in every Find the same set of things can be picked up.

(I.) The Implement, either weapon or tool. This varies in shape but is generally thick, ridged, narrow, oval, and pointed at one end. It is generally chipped and not polished; but in some instances polished implements have been re-chipped. All these seem to have been hafted.

(II.) The Arrow-head, which varies in shape, is often carefully finished, and seems to have been discarded as worn out.

(III.) The Splitting-tool, in which a block of flint has been chipped into a cutting edge on one side, leaving the other thick and plain, so as to be used without injury to the hand.

(IV.) The Throw-stone or Sling-stone, when the flint block has been chipped all over, very often to an apex on two opposite sides, producing an edge all round its circumference.

Many of these much chipped fragments are found, and seem to have no other meaning. But it is possible, in some instances, that they are merely the result of practice in the art of knapping.

(V.) The Briquet or "Strike-a-light," when a *thick* fragment of flint, with one flat side, has been chipped into a somewhat even shape on the other, making it convenient to hold. The edge viewed on the flat side is quite sharp, all the signs of wear being on the other. The tinder was placed on the flat side, and the striker was probably a fragment of iron-pyrites.

(VI., VII.) The Scraper, either "Round" or "Thumb." Here a thinner, but still stout and wide, flake has either been worn or fashioned until it is nearly circular; or one end of a long flake has been dressed into a roundish form. Both these kinds, again, bear no marks of wear on their flat sides; but on the edge of the other there are the minute chippings along the margin which indicate intentional wear by scraping. They were probably intended for scraping skins.

(VIII., IX., X.) The Scraper, either "Notched," "Side," or

"Pointed," depending on the character of the work it did. All these are made, as a rule, from long, *narrow*, and more delicate flakes. The notches are of different sizes, are quite clean cut on one side, with much minute chipping on the other, depending on the way they were used. They were evidently designed for scraping arrow or lance shafts. The pointed flakes bear marks of wear on one or both sides and were plainly borers: some are fine enough to make eye-holes in bone needles. The side-scrapers are, as their name denotes, worn by use on one or both sides for scraping bones or other purposes. The edge, though worn irregularly and often jagged, is quite clean on one side, the marks of wear by minute chipping being evident only on the other. Where the wear is shown on both sides it is generally the result of crushing and not of intentional use.

(XI., XII., XIII.) The Core, either Vertical, Pyramidal, or Hoofed. The first mentioned is more or less cylindrical, and flattish at either one or both ends; it was intended solely to produce flakes. The second has one flat side or base, and the flakes are thence struck off so as to meet more or less at a point on the opposite side: they may have been so fashioned, without definite intention, in making flakes, or they may have been designedly so formed to be used as rough heavy scrapers. The "Hoof-core" is evidently a tool. After a certain number of flakes have been struck off from a flat-ended core, it has been again broken across at an almost constant angle, and the edge of the thick chisel so formed bears marks of wear. Dr. Gillespie, in the Journal of the Anthropological Institute, points out that this angle ranges usually from 70° to 80°. It is possible some of these having a pyramidal form may have been intended to be fixed into a rough handle.

All these relics are found in groups and patches, and their position is often indicated by the darker soil of ancient occupation. They are situated on dry land, sheltered from view and weather often enough by hills, and near springs of water or rivulets. The sites are often marked by old road-tracks, or by the winding lanes that have replaced them, and by ancient names, which are often derivable from British or Celtic sources. These, as the Rev. Charles Kerry has pointed out, have, as a rule, some reference to water. Thus at Wanborough (the hill by the stream) near Puttenham; at Wanborough and Greywell, near Odiham; on Wishmoor, near Sandhurst, Berks; at Bob's Mount, Katesgrove, Reading; and in numerous other places worked flints have been picked up.

These "Surface Finds" are on the border land, certainly, of Historic time, and may well have passed into it.

Stone tools were used by Drift Man in the beginning, have been used through all time in different parts of the world, and in the history of every nation even until now. They were used by Peruvians and Mexicans against the men of Pizarro and Cortez, and by the native Irish against the followers of Sir Walter Raleigh. They are used in

the South Seas by modern natives, and many a polished axe there, is a more efficient implement than the metal sham that Birmingham thinks good enough for the savage.

So that the antiquity of a stone weapon is often difficult to assess. Certain it is that Drift Man used stone, and there is no sufficient evidence yet produced to prove that he was the earliest human inhabitant of the world. All historical and traditional knowledge even, must be laid aside in dealing with pre-historic time. Its early dawn, even as we know it, is anterior to all tradition. Nevertheless it is possible by calculating the period occupied by encroachments and retirements of the sea, by oscillations of the land, and by the growth of river-deltas containing remains of human work, to form a kind of chronology; but it is better, perhaps, to indicate some of the data from which the age of man has been hypothetically deduced rather than give the results themselves.

How long did it take to cut through the chalk of the English Channel and reduce the present level of the land to what it is? How long did it take to wear down the nearly horizontal strata in the valley of the Vézère? How long did it take to fill in those French and other caves with debris, hearth-stuff, and stalagmite?

Look at Denmark again. In that slow growing Sphagnum of the peat-bogs are found, lowest of all—Pines and Stone tools. Then, higher up, the pines having quite disappeared—Oak trees and Bronze relics. Then, later on still, with Beech trees—Iron things. In early Roman, that is in Iron, times, beech trees flourished as luxuriantly as they do now; and yet, in the days of Bronze, they were either absent or stunted. How long did it take twice to alter the entire Arboraceous Flora of the country? There is no evidence, no sign, of great cataclysmic changes. Nature seems to have worked away quietly enough; her stoutest implements the ice-plough or the storm-flood-spade.

All that can be definitely said is that these alterations in the physical Geography of the countries named indicate an enormous lapse of time, and that during these ages, and before these transformations were, Man was.

Very old time indeed it must have been when the Archaic men had developed so far as to use the rough weapons of St. Acheul. Whoever they were, they were probably over-run, conquered, and driven farther and farther West before the successive waves of emigration that swept out from the "Cradle of the World." Basques, Laps, and Fins, Celts of Wales, of Cornwall, and of Scotland, may be but the descendants of the Palæolithic men who hunted the Reindeer and the Mammoth in the valleys of modern France.

But they may have left their traces too in other ways, as the Rev. Charles Kingsley so delightfully puts it. As these stone-using men were pressed back by stronger peoples, and as merely the tradition that they once had been, remained, so from the story that they lived in caves, had strange habits, and used "elf bolts" of flint, may have come the legend of giant and dwarf, of ogre and fairy.

"Such old savages," he says, "may have lingered (I believe from the old ballads and romances that they did linger) for a long time in lonely forests and mountain caves, till they were killed out by warriors who wore mailed armour, and carried steel sword and battle-axe and lance." *

Thus the fairy tale we have all, in our time, felt an interest in, may be but relic of early pre-historic man. He left no written history, few traditions, and possibly only wild legends of his existence; but faint as are the traces of what he was, they have the abiding interest that must always belong to Man and to his work.

* Madame How and Lady Why. p. 142.