ADDRESS DELIVERED TO THE SECTION OF "PRIMÆVAL ANTIQUITIES" AT THE LONDON MEETING OF THE ARCHAEOLOGICAL INSTITUTE, JULY, 1866.

By SIR JOHN LUBBOCK, BART., F.R.S.,
Pres. Ent. Soc., V.-P. Linn. Soc.. V.-P. Ethn. Soc., &c.

THE Council of the Archaeological Institute, recognising the great progress which, during the last few years, has been made in the study of Prehistoric times, have determined, I think very wisely, to found a separate section for the consideration of primæval antiquities. And as they have done me the honor of nominating me to the presidency, it becomes my duty, in opening the proceedings, to say a few words on the present condition of this very interesting branch of science.

Until lately there were many who denied, and even now, perhaps, there are some who would not admit, the claims of Prehistoric Archæology to rank as a branch of science. We can never, it is thought by such persons, become wise beyond what is written; the ancient poems and histories contain all that we can ever know about old times and ancient races of men; by the study of antiquities we may often corroborate, and occasionally perhaps even correct the statements of old writers, but beyond this we can never hope to go. The ancient monuments and remains themselves may excite our interest, but they can teach us nothing. This view is as old as the time of Horace: in one of his best known odes he tells us that,—

> "Vixere fortes ante Agamemnona
> Multi; sed omnes illacrymabiles
> Urgentur, ignotique longa
> Nocte, carent quia vate sacro."

If this apply to nations as well as to individuals,—if our knowledge of the past be confined to that which has been handed down to us in books,—then archæology is indeed restrained within fixed and narrow limits; it is reduced to

a mere matter of criticism, and is almost unworthy to be called a science.

My object on the present occasion is to vindicate the claims of archæology, to point out briefly the light which has, more particularly in the last few years, been thrown on ancient times; and, above all, it will be my endeavour to satisfy you that the antiquaries of the present day are no visionary enthusiasts, but that the methods of archæological investigation are as trustworthy as those of any natural science. I purposely say the methods rather than the results, because while fully persuaded that the progress recently made has been mainly due to the use of those methods which have been pursued with so much success in geology, zoology, and other kindred branches of science, and while ready to maintain that these methods must eventually guide us to the truth, I readily admit that there are many points on which further evidence is required. Nor need the antiquary be ashamed to own that it is so. Biologists differ about the Darwinian theory; until very lately the emission theory of light was maintained by some of the best authorities; Tyndall and Magnus are at issue as to whether aqueous vapour does or does not absorb heat; astronomers have recently been obliged to admit an error of more than 4,000,000 miles in their estimate of the distance between the earth and the sun; nor is there any single proposition in theology to which an universal assent would be given. Although, therefore, there are no doubt great diversities of opinion among antiquaries, archæology is in this respect only in the same condition as all other branches of knowledge.

Conceding then, frankly, that from much of what I am about to say some good archæologists would entirely dissent, I will now endeavour to bring before you some of the principal results of modern research, and especially to give you, as far as can be done in a single address, some idea of the kind of evidence on which these conclusions are based.

I must also add that I confine my observations, excepting when it is otherwise specified, to that point of Europe which lies to the north of the Alps; and that by the Primæval period I understand that which extended from the first appearance of man, down to the commencement of the Christian era.

This period may be divided into four epochs :—Firstly, the Palæolithic, or First Stone age ; secondly, the Neolithic, or Second, Stone age ; thirdly, the Bronze age ; and lastly, the Iron age. Attempts have been made with more or less success to establish subdivisions of these periods, but into these I do not now propose to enter ; even if we can do no more as yet than establish this succession, that will itself be sufficient to show that we are not entirely dependent on history.

We will commence then with the Palæolithic age. This is the most ancient period in which we have as yet any proofs of the existence of man. There is, however, a very general opinion that he did exist in much earlier times. Indeed, M. Desnoyers has already called attention to some bones from the Pliocene beds of St. Prest, which appear to show the marks of knives ; and Mr. Whincopp has in his possession one from the Crag, which certainly looks as if it had been purposely cut. These cases, however, are by no means conclusive, and as yet the implements found in the river-drift gravels are the oldest undoubted traces of man's existence ; older far than any of those in Egypt or Assyria, though belonging to a period which, from a geological point of view, is very recent.

The Palæolithic Age.

1. The antiquities referable to this period are found in beds of gravel and loam, or, as it is technically called, "loess," extending along our valleys, and reaching sometimes to a height of 200 ft. above the present water level.

2. These beds were deposited by the existing rivers, which then ran in the same directions as at present, and drained the same areas.

3. The geography of Western Europe cannot therefore have been very different at the time those gravels were deposited from what it is now.

4. The fauna of Europe at that time comprised the mammoth, the woolly-haired rhinoceros, the hippopotamus, the urus, the musk ox, etc., as well as the existing animals.

5. The climate was much colder than it is now.

6. Though we have no exact measure of time, we can at

least satisfy ourselves that this period was one of very great antiquity.

7. Yet man already inhabited Western Europe.

8. He used rude implements of stone.

9. Which were never polished, and of which some types differ remarkably from any of those that were subsequently in use.

10. He was ignorant of pottery, and—11, of metals.

1. These beds of gravel and loam, or, as it is technically called, "loess," extend along the slopes of the valleys, and reach sometimes to a height of 200 ft. above the present water level.

2. That these beds of gravel and loess were not deposited by the sea is proved by the fact that the remains which occur in them are all those of land or fresh water, and none of marine species. That they were deposited by the existing rivers is evident, because they never contain fragments of any other rocks than those which occur in the area drained by the river itself. As then, the rivers drained the same areas as now, the geography of Western Europe cannot have been at that period very different from what it is at present.

3. The fauna, however, was very unlike what it is now, the existence of the animals above mentioned being proved by the presence and condition of their bones.

4. The greater severity of the climate is indicated by the nature of the fauna. The musk ox, the woolly-haired rhinoceros, the mammoth, the lemming, etc., are Arctic species, and the reindeer then extended to the South of France. Another argument is derived from the presence of great sandstone blocks in the gravels of some rivers, as for instance of the Somme; these, it appears, must have been transported by ice.

5. The great antiquity of the period now under discussion is evident from several considerations. The extinction of the large mammalia must have been a work of time, and neither in the earliest writings, nor in the vaguest traditions, do we find any indication of their presence in Western Europe. Still more conclusive evidence is afforded by the conditions of our valleys. The beds of gravel and loess cannot have been deposited by any sudden cataclysm, both

on account of their regularity, and also of the fact already mentioned that the materials of one river system are never mixed with those of another. To take an instance,—the gravel beds in the Somme valley are entirely formed of debris from the chalk and tertiary strata occupying that area; but within a very few miles of the head waters of the Somme comes the valley of the Oise. This valley contains remains of other older strata, none of which have found their way into the Somme valley, though they could not have failed to do so had the gravels in question been the result of any great cataclysm, or had the Somme then drained a larger area than at present. The beds in question are found in some cases 200 ft. above the present water level, and the bottom of the valley is occupied by a bed of peat which in some places is as much as 30 ft. in thickness. We have no means of making an accurate calculation, but even if we allow, as we must, a good deal for the floods which would be produced by the melting of the snow, still it is evident that for the river to excavate the lower part of its valley to a depth of more than 200 ft.,[1] and then for the formation of so thick a bed of peat, much time must have been required. If, moreover, we consider the alteration which has taken place in the climate and in the fauna; and finally, remember also that the last eighteen hundred years has produced scarcely any perceptible change,—we cannot but come to the conclusion that many, very many, centuries have elapsed since the river ran at a level so much higher than the present, and the country was occupied by a fauna so unlike that now in existence there.

6. Man's presence is proved by the discovery of stone implements. Strictly speaking, these only prove the presence of a reasoning being; but this being granted, few, if any, would doubt that the being in question was man. Human bones indeed have been found in cave deposits, which, in the opinion of the best judges, belonged to this period; and M. Boucher de Perthes considers that various bones found at Moulin Quignon are also genuine. On this point long discussions have taken place, into which I will not now enter. The question before us is, whether men

[1] Many persons find a difficulty in understanding how the river could have deposited gravel at so great a height, forgetting that the valley was not then excavated to anything like its present depth.

existed at all, not whether they had bones. On the latter point no dispute is likely to arise, and as regards the former the works of man are as good evidence as his bones could be. Moreover, there seems to me nothing wonderful in the great scarcity of human bones. A country, where the inhabitants subsist on the produce of the chase, can never be otherwise than scantily peopled. If we admit that for each man there must be a thousand head of game existing at any one time—and this seems a moderate allowance ; remembering also that most mammalia are less long-lived than men, we should naturally expect to find human remains very rare as compared with those of other animals. Among a people who burnt their dead of course this disproportion would be immensely increased. That the flint implements found in these gravels *are* implements it is unnecessary to argue. Their regularity, and the care with which they have been worked to an edge, prove that they have been *intentionally* chipped into their present forms, and are not the result of accident. That they are not forgeries we may be certain ; firstly, because they have been found *in situ* by many excellent observers,—by all in fact who have looked long enough for them ; and secondly, because, as the discoloration of their surface is quite superficial, and follows the existing outline, it is evidently of later origin. The forgeries, for there are forgeries, are of a dull lead color, like other freshly broken surfaces of flint. The same evidence justifies us in concluding that the implements are coeval with the beds of gravel in which they are found.

8. Without counting flakes, we shall certainly be within the mark if we estimate that three thousand flint implements of the Palæolithic age have been discovered in Northern France and Southern England. These are all of types which differ considerably from those which came subsequently into use, and they are none of them polished. We may therefore, I think, conclude that the art of polishing stone implements was as yet unknown.

9 and 10. In the same manner, I think, we may conclude that the use of metal and of pottery was then unknown, as is the case even now with many races of savages.

Although flint implements were observed in the drift gravels more than half a century ago by Mr. Frere, still his observations were forgotten until the same discovery was

again made by M. Boucher de Perthes. For our knowledge of the gravel beds in which they occur, however, we are principally indebted to Mr. Prestwich. Sir Charles Lyell has the great merit of having carefully examined the facts, and given to the antiquity of man the authority of his great name; nor must the labors of Mr. Evans be passed unnoticed. To him we owe the first comparison between the flint implements of this and those of the Neolithic period.

In what precedes, I have relied principally on the researches in the river-drift gravel-beds. Much additional information has, however, been obtained by the examination of caves. With this part of the subject the names of two of our fellow-countrymen, Dr. Falconer and Mr. Christy—who have recently, alas! been lost to us and to science—must ever remain indissolubly associated. Mr. Busk, who had been for some time engaged with Dr. Falconer in the study of the Gibraltar caves, will publish the result of the investigations which he had left in an unfinished state, and every one will admit that the materials could not be in better hands.

The researches carried on by Mr. Christy, in conjunction with M. Lartet, in the caves of the Dordogne, are of great interest. The general facts may be stated to be, that while thousands of implements made out of stone, bone, and horn, have been collected, no trace of pottery, nor any proof of the use of metals, nor even a polished stone implement, has yet been met with. The people who lived in the South of France at that period seem, in a great many respects, to have resembled the Esquimaux. Their principal food was the reindeer, though traces of the musk ox, mammoth, cave-lion, and other animals of the quaternary fauna have been met with. They were very ingenious, excellent workers in flint, but though their bone pins, &c., are beautifully polished, this is never the case with their flint weapons. The habit of allowing offal and bones to accumulate in their dwellings is indicative, probably, of a cold climate.

Perhaps, however, the most remarkable fact of all is, that although in other respects so slightly advanced in civilisation, these ancient French cavemen, like the Esquimaux, made some progress in art. M. Lartet even found in the rock-shelter at La Madelaine a fragment of mammoth tusk, on which was engraved a representation of the animal itself.

The Neolithic Age.

We now pass to the later Stone, or Neolithic, age, with reference to which the following propositions may, I think, be regarded as satisfactorily established :—

1. There was a period when polished stone axes were extensively used in Europe.

2. The objects belonging to this period do not occur in the river-drift gravel-beds.

3. Nor in association with the great extinct mammalia.

4. They were in use long before the discovery or introduction of metals.

5. The Danish shell-mounds, or kjökkenmoddings, belong to this period ;

6. As do many of the Swiss lake-dwellings ;

7. And of the tumuli or burial mounds.

8. Rude stone implements appear to have been in use longer than those more carefully worked.

9. Hand-made pottery was in use during this period.

10. In central Europe, the ox, sheep, goat, pig, and dog were already domesticated.

11, Agriculture had also commenced.

12. At least two distinct races already occupied Western Europe.

1. That there was a period when polished axes and other implements of stone were extensively used in Western Europe, is sufficiently proved by the great numbers in which these objects occur—for instance, the Dublin Museum contains more than 2000, that of Copenhagen more than 10,000, and that of Stockholm not fewer than 15,000.

2. The objects characteristic of this period do not occur in the river-drift gravels. Some of the simpler ones indeed—as, for instance, flint flakes—were used both in the Neolithic and Palæolithic periods. The polished axes, chisels, gouges, &c., however, are very distinct from the ruder implements of the Palæolithic age, and are never found in the river-drift gravels. Conversely, the Palæolithic types have never yet been met with in association with those characteristic of the later epoch.

3. Nor do the types of the Neolithic age ever occur in company with the Quaternary fauna, under circumstances which would justify us in regarding them as coeval.

4. The implements in question were in use before the introduction or discovery of metal. It is a great mistake to suppose that implements of stone were abandoned directly metal was discovered. For certain purposes, as for arrowheads, stone would be quite as suitable as the more precious metal. Flint flakes, moreover, were so useful, and so easily obtained, that they were occasionally used even down to a very late period. Even for axes and chisels, the incontestable superiority of metal was for a while counterbalanced by its greater costliness. Captain Cook, indeed, tells us that in Tahiti the implements of stone and bone were in a very few years replaced by those of metal; a stone hatchet is at present, he says, "as rare a thing as an iron one was eight years ago, and a chisel of bone or stone is not to be seen." The rapidity with which the change from stone to metal is effected, depends on the supply of the latter. In the above case, Cook had with him abundance of metal, in exchange for which the islanders supplied his vessels with great quantities of fresh meat, vegetables, and other more questionable articles of merchandise. The introduction of metal into Europe was certainly far more gradual; stone and metal were long used side by side, and archæologists are often too hasty in referring stone implements to the Stone age. It would be easy to quote numerous instances in which implements have been, without any sufficient reason, referred to the Stone age, merely because they were formed of stone. The two Stone ages are characterised not merely by the use of stone, but by the use of stone to the exclusion of metal. I cannot therefore too strongly impress on archæologists *that many stone implements belong to the metallic period.* Why, then, it will be asked, may they not all have done so? and this question I will now endeavour to answer.

5. The Danish shell-mounds are the refuse heaps of the ancient inhabitants, round whose dwellings the bones and shells of the animals on which they fed gradually accumulated. Like a modern dustheap, these shell-mounds contain all kinds of household objects—some purposely thrown away as useless, but some also accidentally mislaid. These mounds have been examined with great care by the Danish archæologists, and especially by Professor Steenstrup. Many thousand implements of stone and bone have been obtained from them; and as on the one hand from the absence of extinct

animals, and of implements belonging to the Palæolithic age, we conclude that these shell-mounds do not belong to that period, so on the other hand, from the absence of all trace of metal, we are justified in referring them to a period when metal was unknown.

6. The same arguments apply to some of the Swiss lake-dwellings, the discovery of which we owe to Dr. Keller, and which have been so admirably studied by Desor, Morlot, Troyon, and other Swiss archæologists. A glance at the table (A) will show that, while in some of them objects of metal are very abundant, in others, which have been not less carefully or thoughtfully explored, stone implements are met with to the exclusion of metallic ones. It may occur, perhaps, to some, that the absence of metal in some of the lake-villages and its presence in others, is to be accounted for by its scarcity—that, in fact, metal will be found when the localities shall have been sufficiently searched. But a glance at the table will show that the settlements in which metal occurs are deficient in stone implements. Take the same number of objects from Wangen and Nidau, and in the one case 90 per cent. will be of metal, while in the other the whole number are of stone or bone. This cannot be accidental—the numbers are too great to admit of such a hypothesis; nor can the fact be accounted for by contemporaneous differences of civilisation, because the localities are too close together; neither is it an affair of wealth, because we find such articles as fishhooks, &c., made of metal.

7. We may also, I think, safely refer some of the tumuli or burial mounds to this period. When we find a large tumulus, the erection of which must have been extremely laborious, it is evident that it must have been erected in honour of some distinguished individual; and when his flint daggers, axes, &c., which must have been of great value, were deposited in the tomb, it is reasonable to conclude, that if he had possessed any arms of metal, they also would have been buried with him. This we know was done in subsequent periods. In burials of the Stone age the corpse was either deposited in a sitting posture, or burnt.

8. It is an error to suppose that the rudest flint implements are necessarily the oldest. The Palæolithic implements show admirable workmanship. Moreover, every flint implement is rude at first. A bronze celt is cast perfect; but a flint

is rudely blocked out in the first instance, and then if any concealed flaw comes to light, or if any ill-directed blow causes an inconvenient fracture, the unfinished implement is perhaps thrown away. Moreover, the simplest flint-flake forms a capital knife, and accordingly we find that some simple stone implements were in use long after metal had replaced the beautifully-worked axes, knives, and daggers, which must always have been of great value. The period immediately before the introduction of metal may reasonably be supposed to be that of the best stone implements, but the use of the simpler ones long lingered. Moreover, there are some reasons to believe that pierced stone axes are characteristic of the early metallic period.

9. Hand-made pottery is abundant in the shell-mounds and the lake-villages, as well as in the tumuli which appear to belong to the Stone age. No evidence that the potter's wheel was in use has yet been discovered.

10. The dog is the only domestic animal found in the shell-mounds; but remains of the ox, sheep, goat, and pig appear in the lake-villages. There is some doubt about the horse; and the barn-door fowl, as well as the cat, was unknown.

11. The presence of corn-crushers, as well as of carbonised wheat, barley, and flax, in the Swiss lake-dwellings, proves that agriculture was already pursued with success in Central Europe. Oats, rye, and hemp were unknown.

12. At least two forms of skull, one long and one round, are found in the tumuli which appear to belong to this period. Until now, however, we have not a single human skull from the Danish shell-mounds, nor from any Swiss lake-dwelling, which can be referred with confidence to this period.

The Bronze Age.

1. It is admitted by all that there was a period when bronze was extensively used for arms and implements. The great number of such objects which are preserved in our museums places this beyond a doubt.

2. It would, however, be a mistake to suppose that stone implements were entirely abandoned. Arrow heads and flakes of flint are found abundantly in some of the Swiss lake-villages which contain bronze. In these cases, indeed,

it may be argued, that the same site had been occupied both before and after the introduction of bronze. The evidence derived from the examination of tumuli is, however, not open to the same objection, and in them objects of bronze and of stone are very frequently found together. Thus it appears from the investigations recorded by Mr. Bateman, that in three-fourths of the tumuli containing bronze (29 out of 37), stone objects also occurred.

3. Some of the bronze axes appear to be mere copies of the stone ones. No such simple axes of iron, however, are known.

4. Many of the Swiss lake-villages belong to this period. The table (B) furnished to me by Dr. Keller, places this beyond a doubt, and gives a good idea of the objects in use during the bronze age, and the state of civilisation during this period.

5. The presence of metal, though the principal, is by no means the only point which distinguishes the Bronze age villages from those of the Stone period. If we compare Moosseedorf, as a type of the last, with Nidau, as the best representative of the former, we shall find that, while bones of wild animals preponderate in the one, those of tame ones are most numerous in the latter. The vegetable remains point also to the same conclusion. Even if we knew nothing about the want of metal in the older lake-villages, we should still, says Professor Heer, be compelled from botanical considerations to admit their greater antiquity.

Moreover, so far as they have been examined, the piles themselves tell the same tale. Those of the Bronze age settlements were evidently cut with metal, those of the earlier villages with stone, or at any rate with some blunt instruments.

6. The pottery was much better than that of the earlier period. A great deal of it was still hand-made, but some is said to show marks of the potter's wheel.

7. Gold, amber, and glass were used for ornamental purposes.

8. Silver, zinc, and lead, on the contrary, were apparently unknown.

9. The same appears to have been the case with iron.

10. Coins have never been found with bronze arms. To this rule I only know of three apparent exceptions. Not a

single coin has been met with in any of the Swiss lake-villages of this period.

11. The dress of this period no doubt consisted in great part of skins. Tissues of flax have been found, however, in some of the lake-villages, and a suit of woollen material, consisting of a cloak, a shirt, two shawls, a pair of leggings, and two caps were found in a Danish tumulus evidently belonging to the Bronze age, as it contained a sword, a brooch, a knife, an awl, a pair of tweezers, and a large stud, all of bronze, besides a small button of tin, a javelin-head of flint, a bone comb, and a bark box.

We have independent evidence of the same fact in the presence of spindlewhorls.

12. The ornamentation on the arms, implements, and pottery, is peculiar. It consists of geometrical patterns; straight lines, circles, triangles, zigzags, &c. Animals and vegetables are very rarely attempted, and never with much success.

13. Another peculiarity of the bronze arms lies in the small size of the handles. The same observation applies to the bracelets, &c. They could not be used by the present inhabitants of Northern Europe.

14. No traces of writing have been met with in any finds of the Bronze age. There is not an inscription on any of the arms or pottery found in the Swiss lake-villages, and I only know one instance of a bronze cutting instrument with letters on it.

15. The very existence of bronze proves that of a considerable and extensive commerce, inasmuch as we only know two countries, namely Cornwall, and the Island of Banca, whence tin could have been obtained in large quantities. There are, indeed, but few places where it occurs at all. The same fact is proved by the great, not to say complete, similarity of the arms from very different parts of Europe.

16. Finally, as copper must have been in use before bronze, and as arms and implements of that metal are almost unknown in Western Europe, it is reasonable to conclude that the knowledge of bronze was introduced into, not discovered in, Europe.

Two distinguished archæologists have recently advocated very different views as to the race by whom these bronze

weapons were made, or at least used. Mr. Wright attributes them to the Romans; Professor Nilsson to the Phœnicians. The first of these theories I believe to be utterly untenable. In addition to the facts already brought forward, there are two which by themselves are I think almost sufficient to disprove the hypothesis. Firstly, the word *ferrum* was used as a synonym for a sword, which would scarcely have been the case if another metal had been used for the purpose. Secondly, the Romans never entered Denmark: it is doubtful whether they ever landed in Ireland. Yet while three hundred and fifty bronze swords have been found in Denmark, and a very large number in Ireland also,[2] I have only been able to hear of a single bronze sword in Italy. The national museums at Florence, Rome, and Naples do not appear to contain a single specimen of the typical, leaf-shaped bronze swords, which are, comparatively speaking, so common in the North. That the bronze swords should have been supposed to be introduced into Denmark by a people who never came there, and from a country in which they are almost unknown, is, I think, a most untenable hypothesis. It is no doubt true that a few cases are on record in which bronze weapons are said to have been, and very likely were, found in association with Roman remains. Mr. Wright has pointed out three, one of which at least I cannot admit. Under any circumstances, however, we must expect to meet with some such cases. The only wonder to my mind is that there are so few of them.

As regards Professor Nilsson's theory, according to which the Bronze age objects are of Phœnician origin, I will only say, that the Phœnicians in historical times were well acquainted with iron, and that their favourite ornaments were of a different character from those of the Bronze age. If, then, Professor Nilsson is correct, they must belong to an earlier period in Phœnician history than that with which we are partially familiar.

It would now be natural that I should pass on to the Iron age, but the transition period between the two is illustrated by a discovery so remarkable that I cannot pass it over altogether in silence. M. Ramsauer, for many years head

[2] The Museum at Dublin contains 282 swords and daggers: unluckily the number of swords is not stated separately.

of the salt mines at Hallstadt, near Salzburg in Austria, has opened not less than 980 graves apparently belonging to an ancient colony of miners. The results are described and the objects figured in an album, of which Mr. Evans and I have recently procured a copy from M. Ramsauer himself. We hope soon to make this remarkable find known in a more satisfactory manner. For the moment, I will only extract the main facts which are necessary to my present arguments.

That the period to which these graves belonged was that of the transition between the Bronze and Iron ages, is evident, both because we find cutting instruments of iron as well as of bronze, and also because both are of somewhat unusual, and we may almost say of intermediate, types. The same is the case with the ornamentation. Animals are frequently represented, but are very poorly executed, while the geometrical patterns are well done. Coins are entirely absent. That the passage was from bronze to iron, and not from iron to bronze, is clear; because here, as elsewhere, while iron instruments with bronze handles are common, there is not a single case of a bronze blade with an iron handle. This shows that when both metals were used for weapons, the iron was preferred. Another interesting point in connection with this, I find, is the almost entire absence of silver, lead, and zinc. It has indeed been stated that these metals are altogether absent, but Mr. Evans finds that silver is mentioned by M. Ramsauer once, or perhaps twice, and zinc also once. This is the more remarkable inasmuch as the presence, not only of the tin itself, but also of battu amber and ivory, indicate the existence of an extensive commerce.

The conclusions, then, as regards the Bronze age, to which I have endeavoured to bring you are these :—

1. There was a period when bronze was extensively used for arms and implements.

2. Stone, however, was also in use, especially for certain purposes, as, for instance, for arrow-heads, and in the form of flakes for cutting.

3. Some of the bronze axes appear to be mere copies of the earlier stone ones.

4. Many of the Swiss lake-villages and of the tumuli belong to this period.

5. This is shown, not merely by the presence of metal, but also by other arguments.

6. The pottery of the Bronze age is better than that of the earlier period.

7. Gold, amber, and glass were used for ornamental purposes.

8. Silver, lead, and zinc appear to have been unknown.

9. This was also the case with iron.

10. Coins were not in use.

11. Skins were probably worn, but tissues of flax and wool have also been discovered.

12. The ornamentation of the period is characteristic, and consists of geometrical markings.

13. The handles of the arms, the bracelets, &c., indicate a small race.

14. Writing appears to have been unknown ;

15. Yet there was a very considerable commerce.

16. It is more than probable that the knowledge of bronze was introduced into, not discovered in, Europe.

The Iron Age.

The Iron age is the period when this metal was first used for weapons and cutting instruments. During this epoch we emerge into the broad, and in many respects delusive, glare of history.

No one of course will deny that arms of iron were in use by our ancestors at the time of the Roman invasion. Mr. Crawfurd indeed considers that they were more ancient than those of bronze, while Mr. Wright maintains that the bronze weapons belong to the Roman period.

I have already attempted to show, from the frequent occurrence of iron blades with bronze handles, and the entire absence of the reverse, that iron must have succeeded and replaced bronze. Other arguments might be adduced ; but it will be sufficient to state broadly that which I think no experienced archæologist will deny, namely, that the other objects which accompany bronze weapons are much more archaic than those which are found with weapons of iron.

That the bronze swords and daggers were not used by the Romans in Cæsar's times, I have already attempted to prove. That they were not used at that period by the northern races

is distinctly stated in history. I will, however, endeavour to make this also evident on purely archæological grounds. We have several important finds of this period, among which I will specially call your attention to the lake-village of La Tene, in the Lake of Neufchâtel. At this place no flint implements (excepting flakes) are met with. Only fifteen objects of bronze have been found, and only one of them was an axe. Moreover, this was pierced for a handle, and belonged therefore to a form rarely if ever occurring in finds of the Bronze age. On the other hand, the objects of iron are numerous, and comprise fifty swords, twenty-three lances, and five axes. Coins have also been met with at this station, while they are entirely absent in those of the Bronze age.

The other find of the Iron age to which I will now refer, is that of Nydam, recently described at length by M. Engelhardt, in his excellent work on "Denmark in the Early Iron Age." At this place have been found an immense number of the most diverse objects—clothes, brooches, tweezers, beads, helmets, shields, coats of mail, buckles, harness, boats, rakes, brooms, mallets, bows, vessels of wood and pottery, 80 knives, 30 axes, 40 awls, 160 arrow-heads, 180 swords, and nearly 600 lances. All these weapons were of iron, though bronze was freely used for ornaments. That these two finds belonged to the Roman period, is clearly proved by the existence of numerous coins, belonging to the first two centuries after Christ, although not one has occurred in any of the Bronze age lake-villages, or in the great find at Hallstadt.

It is quite clear, therefore, that neither bronze nor stone weapons were in use in Northern Europe at the commencement of our era.

A closer examination would much strengthen this conclusion. For instance, at Thorsbjerg alone there are seven inscriptions, either in Runes or Roman characters, while, as I have already stated, letters are quite unknown, with one exception, on any object of the Bronze age, or in the great transition find at Hallstadt. Again, the significance of the absence of silver in the Hallstadt find is greatly increased when we see that in the true Iron age, as in the Nydam and other similar finds, silver was used to ornament shield-bosses, shield-rims, sandals, brooches, breast-plates, sword-hilts, sword-sheaths, girdles, harness, &c.; and was used for clasps,

pendants, boxes, and tweezers, while in one case a helmet was made of this comparatively rare material.

The pottery also shows much improvement, the forms of the weapons are quite different, and the character of the ornamentation is very unlike, and much more advanced than, that of the Bronze age. Moreover, the bronze used in the Iron age differs from that of the Bronze age, in that it frequently contains lead and zinc in considerable quantities. These metals have never been found in the bronzes of the true Bronze age, nor even in those of Hallstadt.

These finds clearly show that the inhabitants of Northern and Western Europe were by no means such mere savages as we have been apt to suppose. As far as our own ancestors are concerned, this is rendered even more evident by the discoveries of those ancient British coins which have been so well described and figured by Mr. John Evans.[3]

In conclusion, I would venture to suggest that the Government should be urged to appoint a Royal Conservator of National Antiquities. We cannot put Stonehenge or the Wansdyke into a museum—all the more reason why we should watch over them where they are; and even if the destruction of our ancient monuments should, under any circumstances, become necessary, careful drawings ought first to be made, and their removal ought to take place under proper superintendence. We are apt to blame the Eastern peasants who use the ancient buildings as stone quarries, but we forget that even in our own country, Avebury, the most magnificent of Druidical remains, was almost destroyed for the sake of a few pounds; while recently the Jockey Club has mutilated the remaining portion of the Devil's Dyke on Newmarket Heath, in order to make a bank for the exclusion of scouts at trial races. In this case, also, the saving, if any, must have been very small; and I am sure that no society of English gentlemen would have committed such an act of wanton barbarism, if they had given the subject a moment's consideration.

But I have already occupied your attention longer perhaps than I ought—much longer, at any rate, than I at first intended. I have endeavoured, as well as I was able, to bring before you some of the principal conclusions to which

[3] "The Coins of the Ancient Britons."

we have been led by the study of Primæval antiquities, purposely avoiding all reference to history, because I have been particularly anxious to satisfy you that in archæology we can arrive at definite and satisfactory conclusions, on independent grounds, without any assistance from history, and consequently as regards times before writing was invented, and therefore before written history had commenced.

I have endeavoured to select only those arguments which rest on well-authenticated facts. For my own part, however, I care less about the facts than the method. For an infant science, as for a child, it is of small importance to make rapid strides at first: and I care comparatively little how far you accept our facts or adopt our results, if only you are convinced that our method is one which will eventually lead us to sure conclusions, and therefore that the science of Pre-historic Archæology rests undoubtedly on a sound and solid foundation.

TABLE A.

	STONE.					BRONZE.								IRON.							COINS
SWITZERLAND.	Axes.	Arrows.	Flakes &c.	Other Objects	Total.	Axes.	Knives.	Lances.	Sickles.	Fish-hooks.	Ornaments.	Sundries.	Total.	Swords.	Axes.	Knives.	Lances	Ornaments.	Sundries.	Total.	
Wangen	1100	...	260	250	1610	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
Moosseedorf .	101	...	639	68	808	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	0
Nussdorf.....	1000	100	100	30	1230	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
Wauwyl	22	...	237	15	274	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
Nidau	33	...	...	335	368	23	102	27	18	109	1420	305	2004	...	...	...	...	...	...	...	0
Cortaillod ...	...	...	...	...	...	13	22	4	2	71	515	208	835	...	...	...	...	...	...	...	0
Estavayer ...	...	...	...	...	...	6	14	...	1	43	403	150	617	...	...	...	...	...	...	...	0
Corcelettes ...	...	...	...	...	...	1	19	2	7	..	465	16	510	...	...	...	...	...	...	...	0
Morges	...	...	...	...	...	50	20	11	11	10	108	?	210	...	...	..	...	...	1	1	0
Marin	...	...	Flakes	12 Balls.	...	1 Pierced.	...	...	...	...	1	13	15	50	5	4	23	more than 100	61	250	9
DENMARK.																					
Nydam	..	...	...	A few Whetstones.	...	...	...	...	...	...	...	Ornaments very numerous.	...	100	30	86	500 at least.	?	300 at least.	1000 at least.	34

TABLE B.

	Nilau.	Mœrigen.	Estavayer.	Cortaillod.	Corcelettes.	Auvernier.	Other places.	Total.
Celts & fragments...	23	7	6	13	1	6	11	67
Swords	...	...	...	...	...	...	4	4
Hammers	4	...	1	...	...	...	...	5
Knives and fragments	102	19	14	22	19	8	9	193
Hair Pins	611	53	239	183	237	22	22	1367
Small Rings	496	28	115	195	202	14	3	1053
Ear-rings.....	238	42	86	116	...	3	5	440
Bracelets and fragments	55	14	16	21	26	11	2	145
Fish-hooks	109	12	43	71	9	2	1	247
Awls	95	3	49	98	17	...	...	262
Spiral Wires	...	...	46	50	5	...	...	101
Lance Heads	27	7	..	4	2	5	2	47
Arrow Heads.....	...	...	5	1	...	...	...	6
Buttons	...	1	28	10	10	...	...	49
Needles	20	2	3	4	1	...	...	30
Various ornaments..	15	5	7	18	3	1	...	49
Saws	...	...	3	...	...	...	...	3
Daggers	...	...	...	...	...	...	2	2
Sickles.....	18	12	1	2	7	1	4	45
Double-pointed Pins	75	...	...	...	...	...	...	75
Small Bracelets	20	...	...	11	...	...	...	31
Sundries.....	96	3	5	16	...	...	4	124
Total	2,004	208	617	835	539	73	69	4345

TABLE C.

		GRAVES WITH BODIES BURIED IN THE ORDINARY MANNER.											
		ANTIQUITIES.											
	No. of the Graves.	Gold Orna-ments.	Bronze.				Iron.		Amber.	Glass.	Pottery.	Stone.	
			Orna-ments.	Vessels.	Doubtful.	Weapons.	Weapons.	Other Objects.	Ornaments.				
HALLSTADT.	527	6	1471	3	35	18	161	33	165	38	334	57	
		GRAVES WITH BURNT CORPSES.											
		ANTIQUITIES.											
	No. of the Graves.	Gold Orna-ments.	Bronze.				Iron.		Amber.	Glass.	Pottery.	Different Objects.	
			Orna-ments.	Vessels.	Doubtful.	Weapons.	Weapons.	Other Objects.	Ornaments.				
	453	58	1744	179	54	91	349	41	105	35	908	100	
Totals	980	64	3215	182	89	109	510	74	270	73	1242		5985