Executive, there was a sense of humiliation. England will not regret that two of her sons declined to suffer it, while History will award them the honour due to their pride and their fortitude.

They remained in prison, as all the world knows, for fifteen months, and were then released by the Transvaal Government on the occasion of Her Majesty's Jubilee.

With regard to the four leaders, Mr. Lionel Phillips, Colonel Rhodes, Mr. George Farrer, and Mr. Hammond, it is due to them to say that they bore the death sentence, as well as the tremendous strain caused by the uncertainty as to their fate, from the time of their arrest to the time of their release, a period of five months, with undaunted courage.

Some incidents occurred during our imprisonment in Pretoria of which I made no note in my diary, but which I think are worth recording. The day after our arrival I visited the small collection of cells opening off an inner yard, which passes for the hospital in Pretoria prison. I found a hospital orderly in charge, and as I entered he greeted me by name. I looked at the man, but failed to recognise him. I then asked him how he came to know me, and he replied that he remembered me well on the Diamond Fields, seven years before, when Dr. Jameson and I were practising in partnership. During his incarceration—such are "the slings

and arrows of outrageous fortune"—both members of that once reputable firm had been prisoners in Pretoria prison.

I asked him what his offence had been, and he told me that finding himself destitute, he and some others had robbed a safe, belonging, if I remember rightly, to some Dutch church. I then asked him what his sentence was; and he replied, with a grim smile on his face which I shall never forget, "Only a quarter of a century." "What!" I rejoined, "twenty-five years?" "Yes, sir; you see"—the man was an Irishman—"the Judge had no taste for gambling; he sentenced me for twenty years. 'Twenty years!' said I; 'you don't mean that. I'll toss you double or quits.' And he gave me another five for contempt of court; so I'm in for a quarter of a century."

Among other relics of a bygone and more barbarous age which still linger about Pretoria prison is that ancient instrument of mild torture, the stocks. And the sight of some unfortunate native sitting sullen and morose with his feet securely locked therein became a common and familiar one to us. But one morning the scene was slightly changed. The stocks had been moved to a position immediately facing our cells, and as we came out about sunrise we were astonished to see seated in it the figure of a white man, and an Englishman. He

was an old man with grey hair and beard, wearing an old tweed suit, and on his head a battered white top hat. He sat up—as well as might be—with his hands outstretched behind him, supporting himself in his uncomfortable and cramped position.

The sight of this quaint woebegone figure would have made a subject for a picture in the last century. The effect at first was almost ludicrous, but the pathos of it was too great for this sensation to be more than momentary. As far as I can recall his history, he had been a tutor with a Boer family. During the Crisis a political discussion had arisen between the Dominie and the Laird—which became so warm that it ended in general riot, and a breaking of windows. The poor Dominie being hauled before a stern Boer magistrate was fined, bound over to keep the peace, and called upon to find a surety for £50. Not having 50*s*. the delinquent was marched off to Pretoria prison. Here he had been guilty of some breach of prison discipline, which resulted in the stocks. That day one of our number instructed his agent to pay the fine and lodge the necessary security, and we had the satisfaction a day or two afterwards of seeing our friend, after carefully adjusting his hat, pulling on a well-worn pair of gloves, and bidding us a hurried adieu, depart from Pretoria prison with the dignity of the Dominie somewhat restored.

On another occasion a particularly recalcitrant Kaffir of herculean proportions had been placed in these same stocks—which, like the Dominie's hat, were themselves rather old and worse for wear. As he sat there dogged and silent resting on his hands stretched out behind him, a constable came up and ordered him to raise his hands from the ground.

Now as the stocks had no lateral posts to hold on by, and a man placed in them had his feet raised in front of him, to sit up without the support of his hands stretched to the ground behind for more than a few minutes at a time, was a physical impossibility.

The Kaffir either did not understand or would not comply with the constable's request, and the constable kicked one of his hands from beneath him. This act so incensed one of our number, Mr. "Bill Goddard," who happened to be by at the moment, that he roundly abused the constable. In the meantime the Kaffir, who was nothing less than a giant in strength, made one prodigious effort and broke the stocks. Springing to his feet he seized a splinter of wood with which he would assuredly have brained the constable, if he had not fled for his life to the nearest shelter.

Next morning the Kaffir appeared in heavy chains.

Among the visitors who came to see us most

frequently while in Pretoria Prison was the late Mr. B. I. Barnato, or Barney, as he was more familiarly known. He took the keenest interest in our welfare, and undoubtedly used every influence he possessed to expedite our release. But when once inside the gates of the prison the life-long habit of banter almost invariably came over him, and many were the little jokes he scored at our expense, and many the stories he told.

On one occasion, when making somewhat caustic reference to the whole movement which had placed us there, and including Rhodes, Jameson, Reform Committee, and every one else connected with the movement in his strictures, he remarked that we had all tried to play a game of poker with the Transvaal Government on a "Colley Thumper" hand. The term was a new one, and we asked him what he meant by a "Colley Thumper."

In explanation he told the following story: An English traveller with a not very extensive knowledge of poker, found himself on one occasion engaged in a game with an astute old Yankee on board an American steamer. Playing cautiously the Englishman did pretty well, until he suddenly found himself, to his great satisfaction, in possession of a full hand.

The players alternately doubled the stakes until they were raised to £100. The Englishman then

called the American's hand, and the American deliberately put down a pair of deuces, a four, a seven, and a nine. The Englishman with a triumphant smile put down his full hand, and proceeded to gather up the stakes. "Stop," said the Yankee; "the stakes are mine; yours is only a full hand, mine is a 'Colley Thumper'; it beats everything." The Englishman had never heard of such a hand before, but he determined not to show his ignorance, and reluctantly relinquished the stakes. The game then proceeded until at length the Englishman found himself in possession of a pair of deuces, a four, a seven, and a nine. Betting went on freely until the stakes were raised to £500. The Englishman again called, and the Yankee put down a straight. "Ah," said the joyful Englishman, "Mine is a 'Colley Thumper.'" "True," said the American; "but you forget the rules. It only counts once in an evening."

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APPENDIX

LETTER *to the* SECRETARY BRITISH SOUTH AFRICA SELECT COMMITTEE *appointed by the* HOUSE OF COMMONS.

40 WEYMOUTH STREET,
PORTLAND PLACE, W.,
March 30th, 1897.

DEAR SIR,—In reply to your request that I should give some account of my connection with the Reform Movement in Johannesburg, I may state that I became a member of the Reform Committee at the end of last year, and was subsequently imprisoned and fined with the rest of that body in Pretoria.

I was actuated in joining the movement—not so much from a sense of the burdens placed upon the gold mining industry by the Government as by a desire to obtain some liberal instalment of reform, and if possible a remodelling of the constitution of the country—especially dealing with the Franchise, Education, and the Courts of Justice.

I was for some years in medical practice in Johannesburg with no special desire nor leisure for public work; but I was placed upon the Council of Education and other public committees, and thus came gradually to realise the

hopelessness, by simply constitutional means, of obtaining redress from the Government.

Resolutions at public meetings embodying civil requests to the Government were not even vouchsafed an answer, *e.g.* the combined meeting of the Chambers of Commerce and of Mines in September, 1895.

Petitions were jeered at and deputations insulted.

Under these circumstances I with many others felt some action to be a public duty, and on this ground we joined the Reform Movement.

Should the British South Africa Committee desire to hear my evidence, I will submit a *précis* of such evidence at the earliest opportunity.

I am, Sir,

Yours very truly,

ALFRED P. HILLIER, B.A., M.D.

TWO ESSAYS ON THE ANTIQUITY OF MAN IN SOUTH AFRICA

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THE ANTIQUITY OF MAN IN SOUTH AFRICA, AND EVOLUTION.

"WHILE we have been straining our eyes to the East, and eagerly watching excavations in Egypt and Assyria, suddenly a new light has arisen in the midst of us; and the oldest relics of man yet discovered have occurred, not among the ruins of Nineveh or Heliopolis, not on the sandy plains of the Nile, or the Euphrates; but in the pleasant valleys of England and France, along the banks of the Seine and the Somme, the Thames and the Waveney." Thus wrote Sir John Lubbock in his *Prehistoric Times* twenty years ago. The "new light," a very dim and flickering flame at first, was kept burning for several years almost entirely by the zeal and determination of one man, M. Boucher de Perthes. In 1841, this discoverer, at Menchecourt near Abbeville, first found a rudely-fashioned flint buried in some sand. The flint, so he surmised, had been intended for a cutting instrument. For some years in the same neigh-

bourhood he continued searching, and found at intervals several other similar weapons and several so called stone hatchets. At length, in 1846, he published his first work on the subject. In this he announced that he had found human implements in beds unmistakably belonging to the age of the Drift. On the strength of the discovery he contended that man had existed on the earth contemporaneously with many now extinct mammals whose remains are found in the drift, and that the period of man's existence upon the earth must be pushed back far beyond the limits hitherto assigned to it by antiquaries. His astonished readers, with that hostile incredulity which in all times has assailed new truths, regarded him as a rash enthusiast, if not indeed a madman. For many years he made few converts. At length some of the less sceptical men in the scientific world began to investigate the matter for themselves. In their wake followed many others; until at length the verdict, an almost unanimous one, was given. The implements, rude though they seemed, were recognised as of human origin: no process in nature could account for them. Rough and ill shapen they were, but nevertheless unmistakable were the indications of the skill of man.

The co-existence of the makers of these implements with extinct mammals, and the antiquity of

the beds in which the implements were found, still remained, however, to some extent open questions. To these questions—questions of the very deepest interest to the theological, scientific and thinking world generally—geological experts, notably Sir Charles Lyell, now turned their attention. In his work on the "Antiquity of Man" Sir Charles Lyell, in a clear, comprehensive and impartial style, lays before his readers the mass of evidence he has to adduce on this subject. His conclusions, supported as they are by the researches of experts of all nationalities, are to any unbiassed mind convincing. Man's co-existence in Europe with species of large pachydermatous mammals long since extinct, and at a time when the climate in what are now temperate latitudes was as severe as in Northern Russia to-day, has gradually come to be regarded as a scientific fact. Man's appearance upon the earth would seem to have occurred, not as was generally supposed a few odd thousand years ago, but at a far more remote period amongst those æons of time, the vastness of which the science of geology has revealed. Prior to the discoveries of M. Boucher de Perthes it is only fair to say that one or two other discoverers had called attention to similar stone implements, but without avail. M. de Perthes was the first to secure public attention and scientific conviction. After him followed others; and stone

implements were discovered in several parts of the world.

The age in which stone implements were used by man is that known as the Stone Age, and is divided roughly into two periods, though in some parts of the world the distinction between the two is very uncertain, the one merging imperceptibly into the other. The two periods are: (1) Palæolithic or age of the Drift, "when man shared the possession of Europe with the mammoth, the cave-bear and other extinct mammals." (2.) The later or polished Stone Age; a period characterised by beautiful weapons and instruments made of flint and other kinds of stone; in which, however, we find no trace of the knowledge of any metal, excepting gold, which seems to have been sometimes used for ornaments. This is called the Neolithic Period. It is with the former of these two periods, and with what we believe corresponds with this period in South Africa, that I purpose chiefly to deal in this paper. To this period it is that M. de Perthes' implements from the valley of the Somme belong. As the river drift or alluvium of the Somme valley is peculiarly rich in implements of an antique type, and as in its general appearance and structure it closely resembles numbers of other river valleys in England and France, a brief description of it and its implements culled from the pages

of Lyell and Lubbock will perhaps enable us the better to appreciate the sort of evidence adduced on this subject. The prevailing forms of these implements are: firstly, those of spear-headed form, from 6 to 8 inches in length; secondly, those of oval form, not unlike some stone implements used to this day as hatchets and tomahawks by the Australian natives, but with this difference, that the edge in the Australian weapons, as in the case of those so called "celts" in Europe, has been produced by friction; whereas the cutting edge in the old tools of the valley of the Somme was always gained by the simple fracture of the flint, and by the repetition of many dexterous blows. Some of these tools were probably used as weapons both of war and of the chase, others to grub up roots, cut down trees, and scoop out canoes. Between the spear-head and oval shapes there are various intermediate gradations, and there are also a vast variety of very rude implements, many of which may have been rejected as failures, and others struck off as chips in the course of manufacturing the more perfect ones. To describe without the aid of diagrams the structure of the alluvial deposits in the valley of the Somme, in which these implements are found, is not so simple a task as to describe the implements themselves. I will, however, briefly endeavour to make clear the main features. The chalk hills which

bound the valley are 200 or 300 feet in height. The masses of drift or alluvium lie in the bottom of the valley, and on the sides of the hills. For the sake of proceeding from the known to the less known, Lyell makes his survey of these deposits retrospective, and beginning with the most recent, proceeds backwards to the more ancient. Of all these geological monuments, the most recent is the peat. This substance occupies the bottom of the valley from some miles inward to the sea. It is in places 30 feet thick. All the embedded mammalia and shells are recent and belong to species now inhabiting Europe. Gallo-Roman works of art are found in the peat near the surface, and, at a greater depth, Celtic weapons. But the depth at which Roman works of art occur varies in different places, and is no sure test of age; because in some parts the peat being fluid, heavy substances sink in it from their own gravity. In one case M. de Perthes found several large flat dishes of Roman pottery, which, lying in a horizontal position, were prevented from sinking through the underlying peat. Allowing about fourteen centuries for growth of the superincumbent matter, he calculated that the thickness gained in a hundred years would be no more than three French centimetres. This rate of increase, if one could fairly adopt such a chronometric scale, would demand many thousands

of years for the formation of 30 feet. "Small as is the progress hitherto made in interpreting the pages of the peaty record, their importance in the valley of the Somme is enhanced by the reflection that whatever be the number of centuries to which they relate, they belong to times posterior to the ancient implement-bearing beds which we are next to consider, and are even separated from them, as we shall see, by an interval far greater than that which divides the earliest strata of the peat from the latest." Immediately underlying the peat in the bottom of the valley and recumbent on the chalk is a gravel bed, believed to be the most recent of the gravel deposits, formed from the wreck of older gravels to be described presently, and formed during the last hollowing-out and deepening of the valley immediately before the commencement of the growth of peat.

We come now to the implement-bearing deposits, the older gravels formed on the sides of the hills bounding the valley at different heights. The first series of these is found at levels slightly elevated above the present river. The lowest bed of this series in which the implements are found consists of gravel mixed with marl and sand, and contains fresh water, land, and in some of the lower sands marine shells, showing that the river at this part was sometimes gained upon by the sea. This bed is about 12 feet in thickness. Overlying this is

about 15 feet of loam, containing fresh-water and land shells, and the bones of elephants. Of the shells found in this series a small proportion are of extinct species. The species of gravels next described, and the oldest in which flint implements are found, is a series similar in structure to the above, and found at a height *one hundred* feet above the present level of the river. In the fluviatile deposits overlying both these gravel beds remains of the mammoth, rhinoceros, and reindeer are found. The age of these implements found in the second or oldest series of gravel is represented by the time which it has taken the river to cut out its channel to the depth of 100 feet, added to the time necessary for the formation of the peat, the age of which has already been alluded to. One striking feature in comparing the relative ages of the peat and the older gravels is, that whereas in the very deepest layers of the former not one single specimen of any extinct species has been found, in the latter a number of extinct species both of shells and of mammals have been discovered. The above is a condensed and brief sketch of this branch of archæology as given by Sir Charles Lyell and Sir John Lubbock.

In South Africa, as we press northwards among the primitive Bushmen tribes, we find the Stone Age in some measure still existing, though even amongst the wildest tribes it is dying a sure but a lingering

death. Throughout the whole of the Cape Colony, wherever the observant traveller has set foot, stone implements have been found. Some of them, notably those from the Cape flats, the more perfect in form and finish, lie in recent deposits round existing vleys, or lightly buried in sand, probably the products of an age in the immediate past. Others again of more antique and ruder mould are found in deposits, at least in one instance with which we shall shortly deal, as ancient as those which they so much resemble, found on the banks of European rivers. Compared with the carefully accumulated mass of evidence collected in Europe, our stock of evidence is necessarily slight—nevertheless, such as it is, so nearly does it coincide with that more carefully collected evidence in Europe, that we may fairly offer at least a probable interpretation. That interpretation, which we have already somewhat anticipated, may be thus broadly stated. What evidence we have on the subject distinctly goes to show that a Stone Age has existed in South Africa from a period in all human probability as remote, or approximately so, as that from which it existed in Europe; that for ages men in Europe and in South Africa co-existed, using almost identically the same weapons, following closely the same mode of life; finally, that centuries after the genius of the hardy northern tribes, developing

slowly at first, but afterwards more rapidly, had swept away the stony relics of a barbarous age, and placed those tribes on the paths of civilisation and progress, the Stone Age in this southern land continued to exist, and to this day still lingers, dying a hard death in the deserts of the interior.

Having thus ventured, in the hope of more surely enlisting your interest, to offer at the outset the interpretation of what phenomena, what evidence we have to hand, let us turn to the evidence itself. On the Cape flats, at Kimberley, on Modder River, in the Peddie and East London districts, and doubtless in many other parts of the country, stone implements have been found, resembling generally the two leading types from the valley of the Somme, viz., that of the spear-head and oval shape. For directing attention to and collecting these stone implements so abundant in South Africa, we have, as far as I have been able to gather, been principally indebted to Colonel Bowker, Mr. E. J. Dunn, Mr. Mackay of East London, and Sir Langham Dale of Capetown. These implements have been found not merely by twos and threes and as rarities, but in many sites they have been found in abundance. Here, as in Europe, it is usual to find, in addition to more or less well-formed implements of the shapes above described, numerous fragments and abortions —failures we might call them. Stone was plentiful

and ready to hand; a bad instrument could always be thrown aside without much loss. The mode of forming these implements is pretty obvious. The surface of some hard stone or rock, specially selected for the purpose, had flakes chipped off it by blows probably given by a rounded pebble. In many cases "cores" of hard stone from which flakes have been chipped off are found lying near a collection of implements and fragments. The best formed and probably one of the most modern implements which I have seen, and which is at present in my possession, is one of the spear-headed type found on the Cape flats by Sir Langham Dale. It bears the marks on its surface of numerous successive chippings, and has been shaped with considerably more skill than the ruder weapons of greater antiquity found in old deposits. A very good collection of implements of different shapes and sizes, and from different parts of the colony, may be seen in the Albany Museum at Grahamstown. The interest of stone implements from an archæological point of view, depends, however, more upon the geological evidence in reference to the deposits in which they are found, than upon anything else, as it is by this we are principally enabled to form a probable estimate of their antiquity. With this object, I will now deal with those implements, which, thanks principally to the guidance of one of our silent workers, Mr.

Mackay of East London, I have been enabled to collect myself. Never was there a site better adapted to the wants of primitive man than the mouth of the Buffalo River and its neighbourhood. It is therefore not strange that in this locality abundant evidence of its having been the abode of man from a remote period of time is to be found. A very interesting and carefully constructed map of the locality round the mouth of the river has been prepared by Mr. Mackay, showing the sites of numerous "kitchen-middens," or shell mounds, exactly resembling those "Kjokkenmodding" or ancient kitchen refuse heaps, described by Sir Charles Lyell as relics of the prehistoric age on the shores of Denmark; and further, showing the probable sites of still more ancient habitations in the Stone Age, those spots in fact where stone implements have been found in such abundance as to justify the presumption of the existence of habitations. With reference to the shell mounds so freely scattered round the mouth of the river, I will here merely say that they bear evidence of considerable age; they are buried in many instances under sand and vegetable mould, and are in some cases overgrown with thick bush, only having been discovered by cuttings for railway and other purposes. Nevertheless, whatever the antiquity of these shell mounds, and in some cases it is considerable, we shall

presently see that they came into existence ages after stone implements were first used in this locality.

Turning now to the stone implements themselves, we find that those the antiquity of which, from their position, we are best able to estimate, are found in a well-marked gravel deposit on the western bank of the Buffalo. It lies about half way between Fort Glamorgan and the Post Office, and runs in a well-marked line about 70 feet above the present level of the river and parallel to the present course. It has been exposed in several places by cuttings for roads and by quarryings for building-stone, road-mending, and other purposes. It lies buried under a well-defined layer of black river mud, this being again covered with sand of wind-drifted origin, which in its turn is in places covered by a layer of vegetable mould on which grass and bush were at one time growing. The implements found in this gravel are the types found in the valley of the Somme. They are not, however, made of flint, which substance is nowhere to be found in this district, but of a hard sub-crystalline rock, found in the immediate vicinity of the greenstone dykes so numerous in South Africa. One of these dykes, half a mile in width, which crosses the river obliquely, is traversed by the Buffalo from the "ebb and flow" to the second creek, a distance of about 2 miles. From the second creek the edge of this dyke passes Fort

Glamorgan to Point Hood, so that abundance of this stone is obtainable in the immediate neighbourhood. Several of the implements taken from this gravel have been sent to the Jermyn Street and British Museums; and their genuineness has been recognised by Sir Roderick Murchison and Sir J. Lubbock. The rock from which these implements have been flaked off is not only extremely hard, a property which gives to the implements their sharp cutting edges, but is tough and durable; and for these qualities it was selected by the troops as material for building Fort Glamorgan and the Commissariat Stores. These buildings have now been in existence forty years. The weather-exposed surface on the stones in these buildings is as fresh in colour, the merest scratch with the chisel as clear, and every edge as sharp, as if the buildings had been completed yesterday. The implements made of this same stone have lost all semblance of their original colour, their edges are blunted, they have an outer decomposed crust one-sixth of an inch in thickness. The implements are found scattered throughout the whole line of gravel whenever it is exposed. At the time when this line was the river's edge, as we shall presently see we have good reason to believe it once was, these implements were probably dropped on or near the bank, and were subsequently washed and rolled into their present position along

with the surrounding gravel. In some instances they have evidently been manufactured and left on the very spot where they are now found. "Cores" of blocks from which weapons have been flaked off have in several cases both by Mr. Mackay and myself been found surrounded, not indeed by well-formed implements which would naturally be carried off by the maker, but by numerous fragments and ill-formed weapons which were probably thrown aside as useless. It is not irrational to suppose that the water's edge with its open stony margin would afford a convenient site to which the savage hunter might bring his block, and hammer off with the aid of stones and pebbles his uncouth weapons. But, however that may be, whether dropped by accident or left by design, there in their gravel bed they lay, until in due course a black muddy deposit, of from 1 to 3 feet in thickness, covered them in.

That this gravel line, now so far above the river, was once the river's edge, is, from its nature, position, and appearance, as well as from the history of similar old gravel deposits on the banks of carefully explored European rivers, almost a matter of certainty. But for further evidence bearing on this subject let us turn to the configuration of the sea coast near the river's mouth. Assuming that then as now the river was tidal at this point, and that this gravel line, now so far above the tidal level,

was then the river's edge, we are left to the conclusion, either that the coast has been raised or that the sea has receded. The evidence afforded by a study of the coast itself affirms this conclusion. To the south-western side of the mouth of the river the land runs out into a rocky low-lying promontory, the termination of the large ironstone dyke already alluded to, and known as Point Hood. High-water level all round this point is at present marked by a line of huge rounded boulders, and rising above this line are no less than three other well-marked lines of similar boulders, each line undoubtedly showing the level at which the sea once stood. The highest of these tiers of boulders lies about 30 feet above the present sea level. Following round the coast in this direction, immediately beyond Point Hood, stretches a wide open vale some 20 feet above sea level. All over the surface of this vale marine shells are found, and there can be little doubt that it is the site of an ancient bay. Assuming that the sea once stood at the level of the highest tier of boulders on the Point, this vale, now divided from the beach by a series of low wind-drifted sandhills, would have been submerged. The marine shells found on its surface, taken together with the fact that the low sand-hills which now divide it from the beach are of more recent date than those larger masses which line the coast beyond, justify the conclusion that it was so.

Clear and distinct evidence that the sea has at one time stood some 30 feet above its present level is thus to be found by the most superficial observer. But as the gravel line representing the river's ancient edge near its present mouth is 70 feet above that level, a somewhat interesting geological question arises: Was this portion of the river at the time when it stood at this high level tidal, or was it not possibly a land-locked reach of the river, with the river's mouth lying some distance further out than it now does? Either of these conditions would account for the gravel bed, and its superincumbent layer of mud; but, as I have above stated, such indications as we have been enabled to find incline me to take the former view, viz., that then as now the river was tidal at this point. It is true that above the 30 feet level of boulders at Point Hood there is no such clear evidence of the sea's former presence, but some is nevertheless to be found. The topmost tier of boulders is already partially buried in sand and soil, and from this point the land rises more gradually. In an artificial cutting made some few hundred yards from the beach, and standing some 70 feet above the present sea level, distinct traces of a buried layer of rounded boulders are to be found, boulders in all respects resembling those on the beach.

Still, whichever view be the correct one, a point

which further investigation may yet decide, the broad fact remains, that from the time when the river stood at the height of this gravel line it has gradually worn away the present channel. To accomplish this has been no slight, nor short-lived task, for we have already seen that for two miles the tidal portion of the river runs through a large greenstone dyke. This igneous greenstone rock is one of the hardest in existence; nevertheless, since the time when the river stood at the old gravel line it has worn away its channel through this rock to the depth of 70 feet. To sum up a tolerably clear case. The age of the stone implements found in this gravel bed may fairly be computed to be that period of time which has elapsed since this bed was the river's edge, a period which has consisted of the time necessary to allow the river through 70 feet of solid greenstone rock slowly to wear away for itself its present channel. To estimate the period of time necessary for such a change as this is as difficult as to estimate the time which has elapsed since man shared a half-frozen Europe with the woolly-haired rhinoceros and the mammoth. Taken in connection with the geological evidence, however, there is one other point which is of great interest in assisting us to form some rough idea of the great antiquity of these implements.

The shell mounds found round the mouth of the

Buffalo are in many instances situated close to the river banks. Sections of some of these mounds have been made in cuttings for roads and for the railway, thus exposing their structure, and affording every facility for their investigation. They consist of sand, shells, and bones of animals, while scattered through them are found rude pieces of pottery. Large hearth-stones surrounded by ashes have been found in one or two instances. The largest of these mounds, situated on the eastern bank of the river, is of considerable magnitude. It has been cut completely through, and amidst the *débris* a human skull was found, and subsequently given to me by Mr. Mackay. It is a small round skull, with a low contracted brow, and is of great thickness. It is like the skull of a Bushman or Hottentot, and in all probability is the skull of an individual of one of these races, or of some race very nearly allied to them. These shell mounds very closely resemble the shell mounds, "Kjokken-moddings," or kitchen refuse heaps, found on the shores of Denmark, but they differ in one important particular. The shell mounds in Denmark contain a considerable number of polished stone-cutting implements; the mounds round the mouth of the Buffalo have, although carefully explored, yielded nothing but bone implements, no cutting-stone weapons of any sort having been discovered. The

mounds differ considerably in size, and although similar in structure some are evidently more recent than others. The largest, and in all probability the oldest, is the large mound on the eastern bank, from which the skull was taken. As this mound shows a vertical section throughout its entire depth, and as it possesses several features of interest, we will briefly consider it. It originally formed a mound some 300 feet long and 25 feet high, standing on the slope which runs down from the signal hill to the river. Quarrying in connection with the harbour works was the original cause of its being cut through. The portion nearest the river was entirely removed. The inner portion is still remaining, and shows the vertical section above alluded to. The topmost layer consists of shells, bones, ashes, etc. A layer some two or three feet in thickness is covered by three feet of sand and vegetable earth, on which thick bush is now growing. In fact the whole of the mound was completely covered with thick bush, there being no sign of its existence until the cutting was made. Besides shells, hearth-stones, ashes and bits of pottery, bones of the elephant and hippopotamus, as well as those of smaller animals and fish, have been found. Most of the larger bones have been split open, probably for the sake of their marrow. Below the topmost layer of shells another layer of

sand some two feet in thickness exists, separating the top layer from the shells immediately below. After the second layer, although in places there seems to be an interstratification of sand, the separation of the layer of shells is not so distinctly marked, and towards the centre they all seem to form one block. In this mound a very well-formed bone implement, some four inches in length, was found. It is spindle-shaped, with a point at one end and a blunt square termination at the other. It might have been used as the head of a small spear. Besides the hearth-stones and some large shapeless stones with fire marks in their immediate neighbourhood, there is one other kind of stone found, and one which has evidently been artificially shaped. It is like the half of a rounded pebble. The flat or rather slightly concave surface is perfectly smooth, and has obviously been brought into this condition by friction. Mr. Mackay is of opinion that these stones were used for dressing skins of animals with. In accordance with this interpretation we may call the one stone implement hitherto found in these mounds the "rubbing stone." The evidence as to the age of this mound all points to its being considerable. No one can stand opposite the vertical section, and note the accumulation of sand and vegetable earth, with thick bush ten feet high growing on its surface, without this idea forcing

itself upon him. Yet before the bush could have begun to grow, sand and earth drifted by the wind had covered in the abandoned mound to the depth of several feet. Grass and bush have crept over its surface and the whole mound has thus been completely buried and hidden for how many years no one can say. Moreover, the accumulation of this mass of *débris* 300 feet long and 25 feet high was in itself the work of no brief space of time. The outer margin of the mound at its base was within a few feet of the river's edge before this portion of it was removed; so that when the original founders first made their homes upon this spot the river cannot have stood at any appreciably higher level than it does now; hence, whatever the age of this mound, and no unprejudiced observer will deny that it is considerable, it is but a thing of yesterday compared to the antiquity of those implements left on the water's edge when the river stood 70 feet higher than it now does, or than it did when the foundation shell of this huge mound was laid.

It is not on an isolated case of this sort, but on a collection of such cases more or less similar from different parts of the world, that the claim to the high antiquity of man upon the earth is made by scientific men. To state the actual age of the old implement-bearing bed on the bank of the Buffalo is beyond our power. But while on this point I

cannot refrain from quoting Sir Charles Lyell on the probable age of the oldest implement-bearing gravel of the Somme. In doing so I do not wish to claim for the opinion, any more than the author would himself, anything but a certain speculative value. Yet from the most brilliant geologist the world has yet known, even a speculative opinion of this sort must have some weight. Sir Charles Lyell, on data which we have not here space to discuss, estimated the age of the Mississippi Delta as being about 100,000 years; and he considered that "the alluvium of the Somme containing flint implements and the remains of the mammoth and hyæna" was no less ancient. Whatever the antiquity of the oldest Somme implements may be, there can be little doubt that those forming the oldest implement-bearing beds of the Buffalo are fully as old, if indeed, as there are good reasons for believing, they are not considerably older. For while the Somme, a large constantly flowing river, has had a chalk formation through which to cut its bed, the Buffalo, with a stream not one-twentieth part its volume, has had to wear its way through two miles of solid greenstone rock. To cut a channel to the depth of 70 feet under the latter set of circumstances is on the face of it a far greater task than to cut one to the depth of 100 feet under the former.

Such then is the history of these implements as

far as I have been able to interpret it. For such opinions as I have offered I have endeavoured as clearly as possible to furnish full data, while my motive throughout has been a desire to arrive at a true understanding of the question, rather than to support any particular theory. But, looking to the laborious researches of scientific men in Europe on this question, to the lucid exposition of the subject by Sir Charles Lyell and Sir John Lubbock, and lastly to the startling parallel between the position of the South African implements and those found in the ancient gravels of the Somme, two broad conclusions with reference to them are forced upon us: firstly, that they are undoubtedly the handiwork of man; secondly, that they belong to an age of high and remote antiquity. Admitting then the high antiquity of man upon the earth, in what way does it affect that vast problem of evolution as applied to the origin of man? To this question Darwin himself makes answer. He says in his introduction to *The Descent of Man*:—"The high antiquity of man has recently been demonstrated by the labours of a lot of eminent men, beginning with M. Boucher de Perthes, and this is the indispensable basis for understanding his origin." The crudeness of design and rudeness of execution of the older stone implements often excites the ridicule of the curiosity critic. But what degree of

skill would he be inclined to attribute to the forefathers of the Bushmen or Australian aborigines 20,000 years ago? Prof. Huxley, one of the greatest authorities on Biology, has expressed it as his opinion that the remains of the immediate progenitors of man will eventually be found in the pliocene or even in the miocene strata. In several parts of the world by different geologists the post-pliocene formations have been estimated to be considerably over 200,000 years old. Taking these opinions, then, with, as far as it goes, the confirmatory evidence of the Stone Age, we may fairly assume that in all probability man's immediate progenitors existed upon the earth considerably over 200,000 years ago. Amongst Englishmen, the third generation of descendants from any son of the soil is considered capable of producing under favourable circumstances the most polished courtier. I therefore trust that 200,000 years will be sufficient to remove the prejudices of the most fastidious as to their ancestors at that period.

Some time ago an interesting paper on the "Races of South Africa and the Question of Evolution" was read to the Eastern Province Literary and Scientific Society by the Bishop of Grahamstown, and was subsequently published in the *Grahamstown Journal*. The question of how far the facts, adduced in reference to these races,

bear upon the question of evolution, is treated by the Bishop in a spirit of fairness and moderation. In fact, on this great problem he expresses himself as in accord with the Duke of Argyll when he says "that the difficulties involved by evolution are more scientific than theological." With this liberal avowal the Bishop proceeds to deal with the question in a critical manner. In reference to these races he says: "Two answers may clearly be given when we are asked how we account for the South African races as they meet us here. First, we may say that they have been developed from beneath, having been during all their period of humanity from the beginning utter savages, with a suspicion that in some types we may alight upon specimens not far removed from the "missing link"; or, secondly, we may reply that we have good ground for the conclusion that they have been evolved by degradation and degeneration from a higher estate in the scale of humanity." The Bishop then states that his observation has led him to favour the latter hypothesis. To my mind neither of these answers fully meets the case; while the rejection of the one surely does not, as the Bishop would apparently imply, involve the acceptance of the other. There is probably a measure of truth in both. The answer I should make would be that the evidence hitherto collected on the subject seems to point to

the conclusion that the Bushmen are the true aboriginal inhabitants of Central and Southern Africa, while the numerous Kaffir races have migrated from more northern latitudes, destroying and driving before them the feebler aboriginal tribes. A considerable portion of the paper is devoted to showing that numerous Kaffir races have probably come in successive tides of migration from some more northern part of the continent, probably from the north-east. That tides of migration have swept southwards across the continent, at any rate, during the last 100 years is almost a matter of history; and there is doubtless evidence of this movement having gone on for some time previous to that. The Arab strain in some of the Kaffirs seems strongly marked. That these races may also to some extent have degenerated, looking to numerous similar instances in history, is possible; though the evidence in favour of this view adduced by the Bishop, even if it had all the significance which he attaches to it, would only point to a position but slightly inferior to their present one. The evidence on this point which he considers of the greatest value is that afforded by their language. He says: "Instead of the languages of these uncivilised races being in a state of development towards fulness and complexity, we find the tendency of the language is to *degenerate*, to get

worn down, simplifying conjugations and losing inflexions." Surely the inflexional decay of a language, a stage through which all languages pass to a greater or less extent, is no sign of the *degeneration* of that language. It is, as I understand, the science of language, a stage in development rather than in degeneration. On Darwin's speculations as to the probable origin of language the Bishop is somewhat severe. After quoting a few extracts from Darwin's speculation on this subject, he says: "It is curious to quote the very hypothetical tone of this enunciation of his theory, 'probably,' 'might have,' 'does not appear altogether incredible.' *We search in vain for data in support of it. Dr. Darwin gives us none.*" As the most distinguishing quality of Darwin's vast luminous mind is his careful impartiality and studious avoidance of overstating anything, his hypothetical tone on this question is not to be wondered at. The data in support of Darwin's views as to the probable origin of language are given in his third chapter of the *Descent of Man.*

But returning to the wider question of evolution, let us admit for the sake of argument, not only that the great mass of Kaffir races have come from some centre in the northern portion of Africa, but that they have in some measure degenerated. How does this fact bear upon evolution? As far as I

can see it has little or nothing to do with it. The whole history of the human race has been one of migrations; and instances of retrogression have not been wanting. Still, looking to the great mass of mankind, as far as we know its history from the earliest times, the broad tendency has been to travel forward like a rising tide, on the wide paths of development and progress. The case of the Bushmen still remains to be considered. That they are the descendants of any really higher race is a hypothesis with absolutely nothing to support it. According to Theal their condition when the Dutch first came to the country 200 years ago was very much what it is to-day, certainly no better. Without stock of any kind, without agriculture, dependent on their knowledge of roots and herbs, which like that of monkeys is considerable, and on what carrion they can find or what animals they can kill, they eke out a miserable existence. The words of Æschylus in writing of primitive man seem most applicable:—

> But first, though seeing, they did not perceive,
> And hearing heard not rightly. But like forms
> Of phantom dreams throughout their life's whole length,
> They muddled all at random; did not know
> Houses of brick that catch the sunlight's warmth,
> Nor yet the worth of carpentry. They dwelt
> In hollowed holes like swarms of tiny ants,
> In sunless depths of caverns.

Their knowledge of painting is certainly a curious

and in some respects a redeeming trait in their character; but that it is evidence of any previous higher condition I cannot see. Without cattle, crops, or even houses, it would be curious indeed if, possessed of any human intelligence at all, it should not find expression in something. Regarding the Bushmen, and probably also the Hottentots, as the aborigines of the country, it is not unreasonable, taken with the discovery of the skull in the East London shell mound, to regard them as the lineal descendants of the men of the Shell Mound Age in this country; very probably also of the older Stone Age. The pigmy races of Africa, of which the Bushmen are a branch, are at the present moment attracting a good deal of attention. Stanley's description of the numbers which inhabit the great forest show them to be very widespread in the interior. There can be little doubt, moreover, that these same pigmy races were known both to the ancient Greeks and Romans. Still, whatever the origin and history of the pigmy races may be, no rational student of evolution would contend that the difference between the highest ape and lowest Bushman is, scientifically speaking, a slight one.

The evidences of the existence of the progenitors of man on the earth, as I have endeavoured to point out, are not to be looked for a few hundred years back, but hundreds of thousands of years ago,

Evidence of the remote antiquity of man in this country we have fully discussed. We have seen that it points to his existence here many thousand years ago, when his implements were ruder than the lowest Bushman uses now; for the only stone implement of the Bushman of to-day of which I can find any authoritative record, is the rounded digging stone with a hole in the centre, used for weighting sticks with in digging up roots. Livingstone in his *Last Journals*, after making special enquiry as to the use of the implements, only mentions the "digging-stone" among the Bushmen, and stones used as sledge hammers and anvils in the forging of iron amongst other tribes. I have also consulted such works on African travel as I have been able to obtain by Stanley, Cameron, Pinto, Grant, Schweinfurth, and Du Chaillu on this point, but can find no record of stone hatchets being in use now. The lowest Bushman is thus in all probability in a stage of development considerably beyond that of the men of the old Stone Age. For how long even before the old Stone Age period man in some type may have existed no one can say. But to put the most moderate construction on this evidence as to man's high antiquity upon the earth, it is just what we should expect to find were the evolution theory as to his origin the true one, and as far as it goes it is confirmatory of that theory.

PRE-HISTORIC MAN

AND THE

PARALLELISM IN DEVELOPMENT BETWEEN THE PRIMITIVE RACES OF EUROPE AND THE NATIVE RACES OF AFRICA

THE knowledge of pre-historic man has been greatly increased and almost revolutionised during the last fifty years by the aid of the comparatively young science, Geology. What is known is indeed little enough, but it at least establishes man's contemporaneous existence with many now extinct animals, and at a time when the geography and climate of Europe were very different from what they are to-day; when the silver streak had not crept in between England and France, which in historic times has played such an important part in the history of the British race. Geology has also shown that through the long pre-historic ages of man's existence on the earth his condition was always gradually changing, in Europe through stone, bronze and iron ages, and in nearly all other explored

parts of the world, at least through stone and iron ages. These changes are slow indeed compared to the march of intellect through historic times, but very appreciable from a geological and archæological standpoint. Let us then for a short time consider the history of this new science Geology, imperfect and crude though it still be, which has wrought so momentous a change in the general ideas of human origin on the earth, and of the whole history of human thought.

> Who shall tell what did befall,
> Far away in time when once
> Over the lifeless ball
> Hung idle stars and suns?
> What god the element obeyed?
> Wings of what wind the lichen bore,
> Wafting the puny seeds of power,
> Which, lodged in rocks, the rocks abrade.
>
> —EMERSON.

In the middle of the last century, curiously enough, we find Voltaire, in his hostility to revealed religions, scornfully ridiculing all that was then known of fossils, because they were regarded as evidence of the deluge. "Are we sure," he enquired, "that the soil of the earth can produce fossils?" "One never," he says elsewhere, "sees among them true marine substances." And more in this strain. But not so long afterwards the great German poet and thinker, Goethe, with a deeper insight than Voltaire, felt that these fossils *were* records of the history of the past

not to be lightly cast aside. Writing in his autobiography of Voltaire, he says: "When I now learned that to weaken the tradition of a deluge he had denied all petrified shells, and only admitted them as 'lusus naturæ,' he entirely lost my confidence, for my own eyes had on the Baschberg plainly enough shown me that I stood on the bottom of an old dried up sea, among the exuviæ of its ancient inhabitants. These mountains had certainly once been covered with waves, whether before or during the deluge did not concern me; it was enough that the Valley of the Rhine had been a monstrous lake, a bay extending beyond the reach of eyesight; out of this I was *not* to be talked. I thought much more of advancing in the knowledge of lands and mountains, let what would be the result."

Coming from a man in the eighteenth century, these words are of great interest. They seem to breathe the very spirit of modern science. Since, these words were written, the knowledge of lands and mountains, and the buried history they contain, have advanced with rapid strides.

To attempt in ever so brief a manner to give a sketch of the revelations of geology would be beyond our scope. We will merely take some of the leading truths which have been brought to light, and note the wide effect they have had on the thought and culture of their day. Geology, if such knowledge of

the subject as existed a little over a hundred yea s ago is worthy of the name, from having in tho e days been adduced as evidence of a universal deluge has come in later days to be taken as overwhelming testimony to the fact that no such *universal* deluge ever occurred. Forty years ago that doughty Scotch Free Churchman, Hugh Miller, while being a staunch supporter of his religion and of his church, maintained that the idea of a universal deluge, and of a creation which lasted six days of twenty-four hours each, could, in the face of the revelations of geology, no longer be maintained. The six days he maintained were periods extending over ages, the deluge and the consequent destruction of animal life were both of a local character. In fact, he goes so far as to attempt to show how, in a portion of Asia, by what he terms an "economy of miracle," this deluge might have been brought about.

The evolution theory deals with the origin and course of existence of vegetable and animal life upon the globe ; but, before we give any attention to this or any other theory, let us endeavour, as far as we can, briefly to enumerate what leading facts with regard to the existence of living forms upon the earth the science of geology has brought to light.

From the most remote ages, in fact in the very earliest stratified or sedimentary rocks, remains of low organic life, both vegetable and animal are

found thus establishing the antiquity of organic life upon the globe. Ascending in the series of stratified deposits, higher forms of life, both vegetable and animal, are discovered, until fish, reptiles, birds and mammals, are all found co-existing. The most striking feature in fossil remains, perhaps, is the change in the species which is found in successive formations. While some few species, especially among the shells, remain unchanged from remote down to present times, the great majority of species exist through a few formations and then die out, being replaced by other closely allied species. So widely indeed is this fact recognised that in the popular mind the one epithet which can safely be applied to a fossil is the word "extinct."

Of all the records of her past which the earth has to reveal to the patient student of nature, none are more enduring, none more vast, none more profoundly interesting than this imperishable history of the myriads of living forms which have had their brief day in the ages that are gone. On the weather-beaten cliff, on the rocks worn by the endless turmoil of the sea, or where "the wild water" of an inland lake "laps upon the crag," there to him who seeks will some fragment of this history appear.

> And well the primal pioneer
> Knew the strong task to it assigned,
> Patient through Heaven's enormous year
> To build in matter home for mind.

Towards the close of the series of these vast silent records, graven in stone for all time, we come on the first traces of man. To better comprehend what these series of records are, we may consider them as being roughly divided into those of three phases of life upon the earth.

The first, or Primary, in which are found fishes, amphibians, and towards the top of the series some few reptiles.

The Secondary Age, in which reptiles had the mastery, walking on the land as great flesh and vegetable feeders, flying in the air as huge reptilian bats, and swimming in the sea and rivers in various forms. Also reptilian birds with teeth in their beaks. This age is of special interest to us, inasmuch as the greater portion of the sedimentary rocks of South Africa belong to it, and have furnished many hitherto unknown species of huge, as well as of smaller, reptilian forms.

The third, or Tertiary Age.—In this age the mammalia first appear gradually taking their place as masters on land and sea, displacing the reptiles The birds lose their reptilian characters.

Of these phases of life Boyd-Dawkins, in his work on *Early Man in Britain,* very truly says: "The succession of living forms has been uninterrupted, although from errors of observation, as well as from the fragmentary nature of the evidence it appears

to be broken. Each break may be likened to places from which pages, or chapters, or whole volumes, as the case may be, have been torn out from the record by the hand of time, or not yet discovered by man."

The Tertiary Period is the one which most nearly interests us, and it has been divided into the following six stages :—

I. *Eocene*, or that in which the mammalia now on the earth were represented by allied forms of species extinct but belonging to existing orders and families.

II. *Meiocene*, in which the alliance between the living and fossil mammals is more close than before.

III. *Pleiocene*, in which the living species of mammals begin to appear.

IV. *Pleistocene*, in which the living species are more abundant than the extinct. Man appears.

V. *Pre-historic*, in which domestic animals and cultivated fruits appear, and man has multiplied exceedingly upon the earth.

VI. *Historic*, in which events are recorded in history.

The point of peculiar interest in this table, in regard to the origin of man upon the earth, is, that

in the stage preceding the one in which man appears, namely, the Pleiocene, existing species of other mammals are rare in comparison with the number of extinct forms, and only, as it were, begin to show themselves.

In the Pleistocene, where man appears, while the number of extinct species is still large, living species become more numerous, and even exceed the extinct species. In the two succeeding ages, with a few exceptions, all the species found are still living.

It will thus be seen that traces of man are found, in the first instance, in precisely the position, from a palæontological point of view, which on the doctrine of evolution he would be expected to occupy. He appears, that is for the first time, contemporaneously with several of the higher species of existing mammals. Of the nature of the evidence in the shape of stone implements, which is found in the Pleistocene age in Europe, I dealt at some length in the foregoing paper entitled *The Antiquity of Man in South Africa and Evolution.* In this paper, before going on to consider the social condition of man in pre-historic times, and the overlap of history, I should like briefly to refer to some human bones found in relation with some of the stone weapons.

"In 1869 a portion of a skull was found at Eginsheim, near Colmar, by M. Faudel, along with