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HUMAN ORIGINS

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HUMAN ORIGINS

BY

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"A MODERN ZOROASTRIAN"

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HUMAN ORIGINS.

INTRODUCTION.

THE reception which has been given to my former works leads me to believe that they have had a certain educational value for those who, without being specialists, wish to keep themselves abreast of the culture of the day, and to understand the leading results and pending problems of Modern Science. Of these results the most interesting are those which bear upon the origin and evolution of the human race. In my former works I have treated of these mainly from the point of view of geology and palæontology, and have hardly touched on the province which lies nearest to us, that of history and of prehistoric traditions. In this province, however, a revolution has been effected by the discoveries of the present century, which is no less important than that made by geological research and by the doctrine of Evolution.

Down to the middle of the nineteenth century, and to a considerable extent down to the present day, the Hebrew Bible was held to be the sole and sufficient authority as to the early history of the human race.

It was believed, with a certainty which made doubt impious, that the first man Adam was created in or about the year 4004 B.C., or not quite 6000 years ago; and that all human and other life was destroyed by a universal Deluge, 1656 years later, with the exception of Noah and his wife, their sons and their wives, and pairs of all living creatures, by whom the earth was repeopled from the mountain-peak of Ararat as a centre.

The latest conclusions of modern science show that uninterrupted historical records, confirmed by contemporary monuments, carry history back at least 1000 years before the supposed Creation of Man, and 2500 years before the date of the Deluge, and show then no trace of a commencement; but populous cities, celebrated temples, great engineering works, and a high state of the arts and of civilization, already existing. This is of the highest interest, both as bearing on the dogma of the Divine inspiration of the historical and scientific, as distinguished from the moral and religious, portions of the Bible, and on the still more important question of the true theory of Man's origin and relations to the Universe. The so-called conflict between Religion and Science is at bottom one between two conflicting theories of the Universe—the first that it is the creation of a personal God who constantly interferes by miracles to correct His original work; the second, that whether the First Cause be a personal God or something inscrutable to human faculties, the work was originally so perfect that the whole succession of subsequent events has followed by Evolution acting by invariable laws. The former is the theory of orthodox believers, the latter that of men of science, and of liberal theologians who,

like Bishop Temple, find that the theory of "original impress" is more in accordance with the idea of an Omnipotent and Omniscient Creator, to whom "a thousand years are as a day," than the traditional theory of a Creator constantly interfering to supplement and amend His original Creation by supernatural interferences.

It is evidently important for all who desire to arrive at truth, and to keep abreast of the culture of the day, to have some clear conception of what historical and geological records really teach, and what sort of a standard or measuring-rod they supply in attempting to carry back our researches into the depths of pre-historic and of geological time.

I have therefore in this work begun with the historic period, as giving us a solid foundation and standard of time, by which to gauge the vastly longer periods which lie behind, and ascended from this by successive steps through the Neolithic and Palæolithic ages, and the Quaternary and Tertiary periods, so far as the most recent discoveries throw any light on the mysterious question of "Human Origins."

If I have succeeded in stimulating some minds, especially those of my younger readers, and of the working-classes who are striving after culture, to feel an interest in these subjects, and to pursue them further, my object will have been attained. They have been to me the solace of a long life, the delight of many quiet days, and the soother of many troubled ones, and I should be glad to think that I had been the means, however humble, of introducing to others what I have found such a source of enjoyment, and enlisting, if it

were only a few, in the service of that "divine Philosophy," in which I have ever found, as Wordsworth did in Nature,

> "The anchor of my purest thoughts, the nurse,
> The guide, the guardian of my heart, and soul
> Of all my moral being."

PART I.—HISTORY.

CHAPTER I.

EGYPT.

Historical Standard of Time—Short Date inconsistent with Evolution—Laws of Historical Evidence—History begins with Authentic Records—Records of Egypt oldest—Manetho's Lists—Confirmed by Hieroglyphics—Origin of Writing—The Alphabet—Phonetic Writing—Clue to Hieroglyphics—The Rosetta Stone—Champollion—Principles of Hieroglyphic Writing—Language Coptic—Can be read with certainty—Confirmed by Monuments—Manetho's Date for Menes 5004 B.C.—Old, Middle, and New Empires—Old Empire, Menes, to end of Sixth Dynasty—Break between Old and Middle Empires—Works of Twelfth Dynasty—Fayoum—Thirteenth and Fourteenth Dynasties—Hyksos Conquests—Duration of Hyksos Rule—Their Expulsion and Foundation of New Empire—Conquests in Asia of Seventeenth and Eighteenth Dynasties—Wars with Hittites and Assyrians—Persian and Greek Dynasties—Summary of Evidence for Date of Menes—Period prior to Menes—Horsheshu—Sphynx—Stone Age—Neolithic and Palæolithic Remains—Horner, Haynes, and Pitt-Rivers.

In measuring the dimensions of space we have to start from some fixed standard, such as the foot or yard, taken originally from the experience of our ordinary senses and capable of accurate verification. From this we arrive by successive inductions at the size of the earth, the distance of the sun, moon, and planets, and finally at the parallax of the fixed stars. So in speculations as to the origin and evolution of the human race, history affords the standard from which we start, through the successive

stages of pre-historic, neolithic, and palæolithic man, until we pass into the wider ranges of geological time.

Any error in the original standard becomes magnified indefinitely, whether in space or time, as we extend our researches backwards into remoter regions.

Thus whether the authentic records of history extend only for some 4500 years backwards from the present time to the scriptural date of Noah's flood, as was universally assumed to be the case until quite recently; or whether Egyptian and Chaldæan records carry us back for 7000 years, and show us then a dense population, powerful empires, large cities, and generally a highly advanced civilization already existing, makes a wonderful difference in the standpoint from which we view the course of human evolution.

To begin with, a short date necessitates supernatural interferences. It is quite impossible that if man and all animal life were created only about 4000 years B.C., and were then all destroyed save the few pairs saved in Noah's ark, and made a fresh start from a single centre some 1500 years later, there can be any truth in Darwin's theory of evolution. We know for a certainty from the concurrent testimony of all history, and from Egyptian monuments, that the different races of men and animals were in existence 5000 years ago as they are at the present day; and that no fresh creations or marked changes of type have taken place during that period. If then all these types, and all the different races and nations of men, sprung up in the interval of less than 1000 years, which is the longest that can by any possibility be allowed between the Biblical date of the Deluge and the clash of the mighty monarchies of Assyria and Egypt in Palestine, the date of which is

proved both by the Bible and by profane historians, it is obviously impossible that such a state of things could have been brought about by natural causes.

But if authentic historical records carry us back not for 3000 or 4000, but for 6000 or 7000 years, and then show no trace of a beginning, the case is altered, and we may assume an almost unlimited duration of time, through historical, prehistoric, neolithic, and palæolithic ages, during which evolution may have operated. It is of the first importance therefore to inquire what these records really teach in the light of modern research, and what is the evidence for the longer dates which are now generally accepted.

Furnished with such a measuring-rod it becomes easier to attempt to bring into some sort of co-ordination the vast mass of facts which have been accumulated in recent years as to prehistoric, neolithic, and palæolithic man; and the glimpses of light respecting the origin, antiquity, and early history of the human race, which have come in from other sciences such as astronomy, geology, zoology, and philology.

To do this exhaustively would be an encyclopædic task which I do not pretend to accomplish, but I am not without hope that the following chapters, connected as they are by the one leading idea of tracing human origins backward to their source, may assist inquiry, and create an interest in this most interesting of all questions, especially among the young who are striving after knowledge, and the millions who, not having the time and opportunity for reading technical works, feel a desire to keep themselves abreast of modern thought and of the advanced culture of the close of the nineteenth century.

Before examining these records in detail it is well to begin with the general laws upon which historical evidence is based. History begins with writings. All experience shows that what may be transmitted by memory and word of mouth, consists mainly of hymns and portions of ritual, such as the Vedas of the Hindoos; and to a certain extent of heroic poems and ballads in which the historical element is so overlaid by mythology and poetry, that it is impossible to discriminate between fact and fancy. Thus the legend of Hercules is evidently in the main a solar myth, and his twelve labours are related to the signs of the zodiac, but it is possible that there may have been a real Hercules, the actual or eponymic ancestor of the tribe of Heraclides. So, at a later period, the descent of the Romans from the pious Æneas, and of the Britons from another Trojan hero Brute, are obviously fabulous; and at a still more recent date, our own Arthurian legends are evidently a mediæval romance, though it is possible that there may have been a chief of that name of the Christianized Romano-Britons, who opposed a gallant resistance to the flood of Saxon invasion.

But to make real history we require something very different; concurrent and uninterrupted testimony of known historians; absence of impossible and obviously fabulous dates and events; and, above all, contemporary records, written or engraved on tombs, temples, and monuments, or preserved in papyri or clay cylinders.

Another remark is, that these authentic records of early history only begin to appear when civilization is so far advanced as to have established powerful dynasties and priestly organizations. The history of a nation is at first the history of its kings, and its records are

enumerations of their genealogies, successive reigns, foundation or repair of temples, great industrial works, and warlike exploits. These are made and preserved by special castes of priestly colleges and learned scribes, and they are to a great extent precise in date and accurate in fact. Before the establishment of such historical dynasties we have nothing but legends and traditions, which are vague and mythical, the mythological element rapidly predominating as we go backwards in time, until we soon arrive at reigns of gods, and lives of thousands of years. But as we approach the period of historical dynasties the mythological element diminishes, and we pass from gods reigning 10,000 years, and patriarchs living to 900, to later patriarchs living 150 or 200 years, and finally to mortal men, living, and kings reigning, to natural ages.

In fact, with the first appearance of authentic records the supernatural disappears, and the average duration of lives, reigns, and dynasties, and the general course of events, are much the same as at present, and fully confirm the statement of the Egyptian priests to Herodotus, that during the long succession of ages of the 345 high priests of Heliopolis, whose statues they showed him in the great temple of the sun, there had been no change in the length of human life or in the course of nature, and each one of the 345 had been a *piromis*, or mortal man, the son of a *piromis*. The first question is how far back these authentic historical records can be traced, and Egypt affords the first answer.

The first step in the inquiry as to Egyptian antiquity is afforded by the history of Manetho. Ptolemy Philadelphus, whose reign began 284 B.C., was an enlightened king. He founded the great Alexandrian library, and

was specially curious in collecting everything which bore on the early history of his own and other countries. With this view he had the Greek translation, known as the Septuagint, made of the sacred books of the Hebrews, and he commissioned Manetho to compile a history of Egypt from the earliest times, from the most authentic temple records and other sources of information. Manetho was eminently qualified for such a task, being a learned and judicious man, and a priest of Sebennytus, one of the oldest and most famous temples.

The history of Manetho is unfortunately lost, being probably the greatest loss the world has sustained by the burning of the Alexandrian library, but fragments of it have been preserved in the works of Josephus, Eusebius, Julius Africanus and Syncellus, of whom Eusebius and Africanus profess to give Manetho's lists and dates of dynasties and kings from the first King Menes down to the conquest of Alexander the Great in 332 B.C. With the curious want of critical faculty of almost all the Christian fathers, these extracts, though professing to be quotations from the same book, contain many inconsistencies, and in several instances they have obviously been tampered with, especially by Eusebius, in order to bring their chronology more in accordance with that of the Old Testament. But enough remains to show that Manetho's lists comprised thirty-one dynasties, and about 370 kings, whose successive reigns extended over a period of about 5500 years, from the accession of Menes to the conquest of Egypt by Alexander the Great in 332 B.C., making the date of the first historical king who united Upper and Lower Egypt, about 5800 B.C. There may be some doubt as to the precise dates, for the lists of Manetho have obviously been tampered

with to some extent by the Christian fathers who quoted them, but there can be no doubt that his original work assigned an antiquity to Menes of over 5500 B.C.

The only other historical information as to the history of Ancient Egypt was gleaned from references to it in the extant works of Josephus and of Greek authors, especially Homer, Herodotus, and Diodorus Siculus. Josephus, in his *Antiquity of the Jews*, quotes passages from Manetho, but they only extend to the period of the Hyksos invasion, the Captivity of the Jews, and the Exodus, which are all comparatively recent events in Manetho's annals. Homer's account of hundred-gated Thebes does not carry us back beyond the echo which had reached Ionian Greece of the splendours of the nineteenth dynasty. Herodotus visited Egypt about 450 B.C., and wrote a description of it from what he saw and heard on the spot. It contains a good deal of valuable information, for he was a shrewd observer. But he was credulous, and not very critical in distinguishing between fact and fable, and it is evident that his sources of information were often not much better than vague popular traditions, or the tales told by guides, and even the more authentic information is so disconnected and mixed with fable, that it can hardly be accepted as material for history. As far as it goes, however, it tends to confirm Manetho, as, for instance, in giving the names correctly of the kings who built the three great pyramids, and in saying that he saw the statues of 342 successive high priests of the great Temple of Heliopolis, which correspond very well with Manetho's lists of 370 kings.

Diodorus gives us very much the same narratives as those of Herodotus; and, on the whole, we had to fall

back on Manetho as the only authority for anything like precise dates and connected history.

Manetho's dates, however, were so inconsistent with preconceived ideas based on the chronology of the Bible, that they were universally thought to be fabulous. They were believed either to represent the exaggerations of Egyptian priests desirous of magnifying the antiquity of their country, or, if historical, to give in succession the names of a number of kings and dynasties who had really reigned simultaneously in different provinces. So stood the question until the discovery of reading hieroglyphics enabled us to test the accuracy of Manetho's lists by the light of contemporary monuments and manuscripts. This discovery is of such supreme importance that it may be well to begin at the beginning, and lay a solid foundation by showing how it was made, and the demonstration on which it rests.

Reading presupposes writing, as writing presupposes speech. Ideas are conveyed from one mind to another in speech through the ear, in writing through the eye. The origin of the latter method is doubtless to be found in picture-writing. The palæolithic savage who drew a mammoth with the point of a flint on a piece of ivory, was attempting to write, in his rude way, a record of some memorable chase. And the accounts of the old Empires of Mexico and Peru at the time of the Spanish Conquest, show that a considerable amount of civilization can be attained and information conveyed by this primitive method. But for the purpose of historical record more is required. It is essential to have a system of signs and symbols which shall be generally understood, and by which knowledge shall be handed

down unchanged to successive generations. All experience shows that before knowledge is thus fixed and recorded, anything that may be transmitted by memory and word of mouth, fades off almost immediately into myth, and leaves no certain record of time, place, and circumstance. A few religious hymns and prayers like those of the Vedas, a few heroic ballads like those of Homer, a few genealogies like those of Agamemnon or Abraham, may be thus preserved, but nothing definite or accurate in the way of fact and date. History, therefore, begins with writing, and writing begins with the invention of fixed signs to represent words. A system of writing is possible, like the Chinese, in which each separate word has its own separate sign, but this is extremely cumbrous, and quite unintelligible to those who have not got a living key to explain the meaning of each symbol. It is calculated that an educated Chinese has to learn by heart the meaning of some 15,000 separate signs before he can read and write correctly. We have a trace of this ideographic system in our own language, as where arbitrary signs such as 1, 2, 3, represent not the sounds of one, two, and three, but the ideas conveyed by them. But for all practical purposes, intelligible writing has to be phonetic, that is, representing spoken words, not by the ideas they convey, but by the sounds of which they are composed. In other words there must be an Alphabet.

The alphabet is the first lesson of childhood, and it seems such a simple thing that we are apt to forget that it is one of the most important and original inventions of the human intellect. Some prehistoric genius, musing on the meaning of spoken words, has seen that they might all be analyzed into a few simple sounds. To

make this more easily intelligible, I will suppose the illustrations to be taken from our own language. "Dog" and "dig" express very different ideas; but a little reflection will show that the primary sounds made by the tongue, teeth, and palate, viz. 'd' and 'g,' are the same in each, and that they differ only by a slight variation in the soft breathing or vowel, which connects them and renders them vocal. The next step would be to see that such words as "good" or "God," consisted of the same root-sounds, only transposed and connected with a slight vowel difference. Pursuing the analysis, it would finally be discovered that the many thousand words of spoken language could all be resolved into a very small number of radical sounds, each of which might be represented and suggested to the mind through the eye instead of the ear by some conventional sign or symbol. Here is the alphabet, and here the art of writing.

This great achievement of the human intellect appears to have been made in prehistoric times; and where not obviously imported from a foreign source, as in the Phœnician alphabet from the Egyptian and the Greek from the Phœnician, it is attributed to some god, that is, to an unknown antiquity.

Thus in Egypt, Thoth the Second, known to the Greeks as Hermes Trismegistus, a fabulous demi-god of the period succeeding the reign of the great gods, is said to have invented the alphabet and the art of writing. The analysis of primary sounds varies a little in different times and countries in order to suit peculiarities in the pronunciation of different races, and convenience in writing; but about sixteen primitive sounds, which is the number of the letters of the first

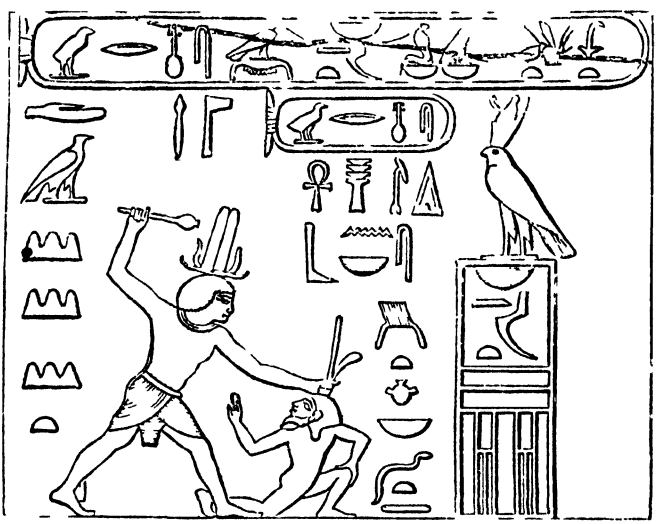
alphabet brought by Cadmus to Greece, are always its basis. In our own alphabet it is easy to see that it is not formed on strictly scientific principles, some of the letters being redundant. Thus the soft sound of 'c' is expressed by 's,' and the hard sound by 'k'; and 'x' is an abbreviation of three other letters, 'eks.' Some letters also express sounds which run so closely into one another that in some alphabets they are not distinguished, as 'f' and 'v,' 'd' and 't,' 'l' and 'r'; while some races have guttural and other sounds, such as 'kh' and 'sj,' which occur so frequently as to require separate signs, while they baffle the vocal organs of other races, and in some cases syllables which frequently occur, instead of being spelt out alphabetically, are represented by single signs. But these are mere details, the question substantially is this—if a collection of unknown signs is phonetic, and we can get any clue to its alphabet, it can be read; if not it must remain a sealed book.

To apply this to hieroglyphics; it had been long known that the monuments of ancient Egypt were carved with mysterious figures, representing commonly birds, animals, and other natural objects, but all clue to their meaning had been lost. It seemed more natural to suppose that they were ideographic; that a lion for instance represented a real lion, or some quality associated with him, such as fierceness, valour, and kingly aspect, rather than that his picture stood simply for our letter 'l.' The long-desired clue was afforded by the famous Rosetta stone. This is a mutilated block of black basalt, which was discovered in 1799 by an engineer officer of the French expedition, in digging the foundations of a fort near Rosetta. It was captured, with

other trophies, by the British army, when the French were driven out of Egypt, and is now lodged at the British Museum. It bears on it three inscriptions, one in hieroglyphics, the second in the demotic Egyptian character employed for popular use, and the third in Greek. The Greek can of course be read, and it is an inscription commemorating the coronation of Ptolemy Epiphanes and his Queen Arsinoe, in the year 196 B.C. It was an obvious conjecture that the two Egyptian inscriptions were to the same effect, and that the Greek was a literal translation of this. To turn this conjecture, however, into a demonstration, a great deal of ingenuity and patient research were required. The principle upon which all interpretation of unknown signs rests may be most easily understood by taking an illustration from our own language. The first step in the problem is to know whether these unknown signs are ideographic or phonetic. Thus if we have two groups of signs, one of which we have reason to know stands for "Ptolemy" and the other for "Cleopatra," if they are phonetic, the first sign in Ptolemy will correspond with the fifth in Cleopatra; the second with the seventh, the third with the fourth, the fourth with the second, and the fifth with the third; and we shall have established five letters of the unknown alphabet, 'p, t, o, l,' and 'e.' Other names will give other letters, as if we know "Arsinoe," its comparison with "Cleopatra" will give 'a' and 'r,' and confirm the former induction as to 'o' and 'e.'

And it will be extremely probable that the two last signs in Ptolemy represent 'm' and 'y'; the first in Cleopatra 'c'; and the third, fourth, and fifth in Arsinoe, 's, i,' and 'n.' Suppose now that we find in an inscription on an ancient temple at Thebes, a name which

begins with our known sign for 'r,' followed by our known 'a,' then by our conjectural 'm,' then by the sign which we find third in Arsinoe, or 's,' then by our known 'e,' and ending with a repetition of 's,' we have no difficulty in reading "Ramses," and identifying it with one of the kings of that name mentioned by Manetho as reigning at Thebes. The identification of letters was facilitated by the custom of inclosing



TABLET OF SNEFURA AT WADY MAGERAH
(The oldest inscription in the world, probably 6000 years old. The king conquering an Arabian or Asiatic enemy)

the names of kings in what is called a cartouche or oval.

This name reads "Snefura," which is the name of the king of the third dynasty who reigned about 4000 B.C., or before the building of the Great Pyramids, which inscription is the earliest contemporary one of an Egyptian king as yet discovered. It was found at the copper mines of Wady Magerah, in the peninsula of

Sinai, and represents the victory of the king over an Arabian or Asiatic enemy.

The first step towards the decipherment of the hieroglyphics on the Rosetta stone was made in 1819 by Dr. Young, who was one of the most ingenious and original thinkers of the nineteenth century, and is also famous as the first discoverer of the undulatory theory of light. But in both cases he merely indicated the right path and laid down the correct principles. The development of his theories was reserved for two Frenchmen; Fresnel in the case of Light, and Champollion in that of Hieroglyphics. The task was one which required immense patience and ingenuity, for the hieroglyphic alphabet turned out to be one of great complexity. Not only were many of the signs not phonetic, but ideographic or determinative; and some of them standing for syllables and not letters; but the letters themselves were not represented, as in modern languages, each by a single sign or at most by two signs, as A and a, but by several different signs. The Egyptian alphabet was in fact constructed very much as young children often learn theirs, by—

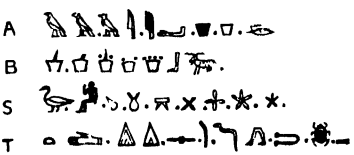
A was an apple-pie,
B bit it,
C cut it;

with this difference, that several objects, whose names begin with A and other letters, might be used to represent them. Thus some of the hieroglyphic letters had as many as twenty-five different signs or homophones. It is as if we could write for 'a,' the picture either of an apple, or of an ass, archer, arrow, anchor, or any word beginning with 'a.'

However, Champollion with infinite difficulty, and

aided by the constant discovery of fresh inscriptions, solved the problem, and succeeded in producing a complete alphabet of hieroglyphics comprising all the various signs, thus enabling us to translate every hieroglyphic sign into its corresponding sound or spoken word.

The next question was, what did these words mean, and could they be recognized in any known language? The answer to this was easy; the Egyptians spoke Egyptic, or as it is abbreviated Coptic, a modern form of which is almost a living language, and is preserved in translations of the Bible still in use and studied by the aid of Coptic dictionaries and grammars. This



SPECIMEN OF HIEROGLYPHIC ALPHABET. (From Champollion's *Egypt.*)

enabled Champollion to construct a hieroglyphic dictionary and grammar, which have been so completed by the labours of subsequent Egyptologists, that it is not too much to say that any inscription or manuscript in hieroglyphics can be read with nearly as much certainty as if it had been written in Greek or in Hebrew.

The above illustrations from English characters are only given as the simplest way of conveying to the minds of those who have had no previous acquaintance with the subject, an idea of the nature of the process and force of the evidence, upon which the decipherment of hieroglyphic inscriptions is based. In reality the

process was far from being so simple. Though many of the hieroglyphics are phonetics, like our letters of the alphabet, they are not all so, and many of them are purely ideographic, as when we write 1, 2, 3, for one, two, and three. All writing has begun with picture-writing, and each character was originally a likeness of the object which it was wished to represent. The next stage was to use the character not only for the material object, but as a symbol for some abstract idea associated with it. Thus the picture of a lion might stand either for an actual lion, or for fierceness, courage, majesty, or other attribute of the king of animals. In this way it became possible to convey meanings to the mind through the eye, but it involved both an enormous number of characters, and the use of homophones, *i. e.* of single characters standing for a number of separate ideas. To obviate this, what are called "determinatives" were invented, *i. e.* special signs affixed to characters or groups of characters to determine the sense in which they were to be taken. For instance, the picture of a star (*) affixed to a group of hieroglyphics may be used to denote that they represent the name of a god, or some divine or heavenly attribute; and the picture of rippling water ~~~~ to show that the group means something connected with water, as a sea or river. Beyond this the Chinese have hardly gone, and it is reckoned that it requires some 1358 separate characters, or conventionalized pictures, taken in distinct groups, to be able to read and write correctly the 40,000 words in the Chinese language. Even for the ordinary purposes of life a Chinaman instead of committing to memory twenty-six letters of the alphabet, like an English child, has to learn by heart some 6000 or 7000

groups of characters often distinguished only by slight dots and dashes. Such a system is cumbrous in the extreme, and involves spending many of the best years of life in acquiring the first rudiments of knowledge. Indeed it is only possible when not only writing but speech has been arrested at the first stage of its development, and a nation speaks a language of monosyllables. In the case of Egypt and other ancient nations the standpoint of writing went further, and the symbolic pictures came to represent phonograms, *i. e.* sounds or spoken words instead of ideas or objects; and these again were further analyzed into syllabaries, or the component articulate sounds which make up words; and these finally into their ultimate elements of a few simple sounds, or letters of an alphabet, the various combinations of which will express all the complex sounds or words of a spoken language.

Now in the hieroglyphic writing of ancient Egypt, along with those pure phonetics or letters of an alphabet, are found numerous survivals of the older systems from which they sprung, and Champollion, who first attempted the task of forming a hieroglyphic dictionary and grammar, had to contend with all the difficulties of ideograms, polyphones, determinatives, and other obstacles.

Those who wish to pursue this interesting subject further will do well to read Dr. Isaac Taylor's book on the Alphabet, and Sayce on the Science of Writing; but for my present purpose it is sufficient to establish the scientific certainty of the process by which hieroglyphic texts are read. With this key a vast mass of constantly accumulating evidence has been brought to light, illustrating not only the chronology and history of

ancient Egypt, but also its social and political condition, its literature and religion, science and art. The first question naturally was how far the monuments confirmed or disproved the lists of Manetho. Manetho was a learned priest of a celebrated temple, who must have had access to all the temple and royal records and other literature of Egypt, and who must have been also conversant with foreign literature, to have been selected as the best man to write a complete history of his native country for the royal library in Greek. Manetho's lists of the reigns of dynasties and kings when summed up show a date of 5867 B.C. for the foundation of the united Egyptian Empire by Menes, a date which is of course absolutely inconsistent with those given by Genesis, not only for the Deluge, but for the original Creation.

It is evident that the monuments alone could confirm or contradict these lists, and give a solid basis for Egyptian chronology and history. This has now been done to such an extent that it may fairly be said that Manetho has been confirmed, and it is fully established, as a fact acquired by science, that nearly all his kings and dynasties are proved by monuments to have existed, and that successively and not simultaneously, so that the margin of uncertainty as to the date of Menes is reduced to one of a few hundred years on one side or other of 5000 B.C.

Mariette, who is the best and latest authority, and who has done so much to discover monuments of the earlier dynasties, concludes, as the result of a careful revision of Manetho's lists, and of the authentic records from temples, tombs, and papyri, that 5004 B.C. is the most probable date for the accession of Menes, and this

date is generally adopted by modern Egyptologists. Some make it rather longer, as Boeck 5702 B.C., and Unger 5613 B.C.; while others make it a little shorter, as Maspero 4500 B.C., and Brugsch [1] 4455; but it is to be observed that the date has always lengthened with the progress of discovery. Thus the earlier Egyptologists such as Wilkinson, Birch, and Poole assigned a date not exceeding 3000 B.C. for the accession of Menes; twenty years later Bunsen and Lepsius gave respectively 3623 and 3892 B.C.; and since the latest discoveries, no competent scholar assigns a lower date than 4500 B.C., while some go up to 5702 B.C., and that most generally accepted is 5004 B.C. It is safe to conclude, therefore, that about 5000 B.C., or very nearly 7000 years before the present time, may be taken provisionally as the date of the commencement of authentic Egyptian history, and that if this date be corrected by future discoveries it is more likely to be increased than diminished.

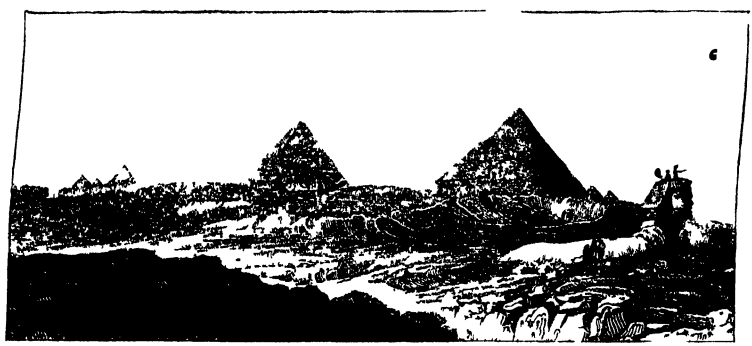
This immensely long period of Egyptian history is divided into three stages—the Old, the Middle, and the New Empires. The Old Empire began with Menes, and lasted without interruption for about 1500 years, under six dynasties of kings, who ruled over the whole of Egypt. It was a period of peace, prosperity, and progress, during which the pyramids, the greatest of all human works, were built, literature flourished, and the industrial and fine arts attained a high degree of perfection.

At the very commencement of this period we find

[1] Brugsch, however, confines himself mainly to kings whose names are confirmed by monuments, and takes no account of the numerous names of unknown kings in royal genealogies, of which no confirmation has yet been found, so that practically his estimate is not inconsistent with that of Mariette.

the first King Menes carrying out a great work of hydraulic engineering, by which the course of the Nile was diverted, and a site obtained on its western banks for the new capital of Memphis. His immediate successor is said to have written a celebrated treatise on Medicine, and the extremely life-like portrait-statues and wooden statucttes, which were never equalled in any subsequent stage of Egyptian art, date back to the fourth dynasty.

It is singular that this extremely ancient period is



PYRAMIDS OF GIZEH AND SPHYNX (From Champollion's *Egypt*)

the one of which, although the oldest, we know most, for the monuments, the papyri, and especially the tombs in the great cemeteries of Sakkarah and Ghizeh, give us the fullest details of the political and social life of Egypt during the fourth, fifth, and sixth dynasties, with sufficient information as to the three first dynasties to check and confirm the lists of Manetho. We really know the life of Memphis 6000 years ago better than we do that of London under the Saxon kings, or of Paris under the descendants of Clovis.

The sixth dynasty was succeeded by a period which

seems to have been one of civil war and anarchy, during which there was a complete cessation of monuments; or, if they existed, they have not yet been discovered. The probable duration of this eclipse of Egyptian records is somewhat uncertain, as we cannot be sure, in the absence of monuments, that the four dynasties of short reigns assigned to the interval between the sixth and the eleventh dynasties by Manetho, and the numerous names of unknown kings on the tablets, were successive sovereigns who reigned over united Egypt, or local chiefs who got possession of power in different parts of the Empire. All we can see is that the supremacy of Memphis declined, and that its last great dynasty was replaced, either in whole or in part, by a rebellion in Upper Egypt which introduced two dynasties whose seat was at Heracleopolis on the Middle Nile. In any case the duration of this period must have been very long, for the eclipse was very complete, and when we once more find ourselves in the presence of records in the eleventh dynasty, the seat of empire is established at Thebes, and the state of the arts, religion, and civilization are different and much ruder than they were at the close of the great Memphite Empire with the sixth dynasty. Mariette says, "When Egypt, with the eleventh dynasty, awoke from its long sleep, the ancient traditions were forgotten. The proper names of the kings and ancient nobility, the titles of the high functionaries, the style of the hieroglyphic writing, and even the religion, all seemed new. The monuments are rude, primitive, and sometimes even barbarous, and to see them one would be inclined to think that Egypt under the eleventh dynasty was beginning again the period of infancy

which it had already passed through 1500 years earlier under the third." The tomb of one of these kings of the eleventh dynasty, Entef I., is remarkable as showing on a funeral pillar the sportsman-king surrounded by his four favourite dogs, whose names are given, and which are of different breeds, from a large greyhound to a small turnspit.

However, the chronology of this eleventh dynasty is well attested, its kings are known, and under them Upper and Lower Egypt were once more consolidated into a single state, forming what is known as the Middle Empire. Under the twelfth dynasty, which succeeded it, this Empire bloomed rapidly into one of the greatest and most glorious periods of Egyptian history. The dynasty only lasted for 213 years, under seven kings, whose names were all either Amenemes or Osirtasen; but during their reigns the frontiers of Egypt were extended far to the south, Nubia was incorporated with the Empire, and Egyptian influence extended over the whole Soudan, and perhaps nearly to the equator on the one hand, and over Southern Syria on the other. But the dynasty was still more famous for the arts of peace.

One of the greatest works of hydraulic engineering which the world has seen was carried out by Amenemes III., who took advantage of a depression in the desert limestone near the basin of Fayoum, to form a large artificial lake connected with the Nile by canals, tunnelled through rocky ridges and provided with sluices, so as to admit the water when the river rose too high, and let it out when it fell too low, and thus regulate the inundation of a great part of Middle and Lower Egypt, independently of the seasons. Connected with

this Lake Mœris was the famous Labyrinth, which Herodotus pronounced to be a greater wonder than even the great Pyramid. It was a vast square building erected on a small plateau on the east side of the lake, constructed of blocks of granite which must have been brought from Syene, with a façade of white limestone; and containing in the interior a vast number of small square chambers and vaults—Herodotus says 3000—each roofed with a single large slab of stone, and connected by narrow passages, so intricate that a stranger entering without a clue would be infallibly lost. The object seems to have been to provide a safe repository for statues of gods and kings and other precious objects. In the centre was a court containing twelve hypostyle chapels, six facing the south and six the north, and at the north angle of the square was a pyramid of brick faced with stone forming the tomb of Amenemes III.

In addition to this colossal work, the kings of this dynasty built and restored many of the most famous temples and erected statues and obelisks, among the latter the one now standing at Heliopolis. It was also an age of great literary activity, and the biographies of many of the priests, nobles, and high officers, inscribed on their tombs and recorded in papyri, give us the most minute knowledge of the history and social life of this remote period.

The prosperity of Egypt during the Middle Empire was continued under the thirteenth dynasty of sixty Theban kings, to whom Manetho assigns the period of 453 years. Less is known of this period than of the great twelfth dynasty which preceded it, but a sufficient number of monuments have been preserved to confirm the general accuracy of Manetho's statements. A

colossal statue of the twenty-fourth or twenty-fifth king, Sevekhotef VI., found on the island of Argo near Dongola, shows that the frontier fixed by the conquests of Amenemes at Semneh, had not only been maintained, but extended nearly fifty leagues to the south into the heart of Ethiopia; and another statue found at Tanis shows that the rule of this dynasty was firmly established in Lower Egypt. But the scarcity of the monuments, and the inferior execution of the works of art, show that this long dynasty was one of gradual decline, and the rise of the next or fourteenth dynasty at Xois, transferring the seat of power from Thebes to the Delta, points to civil wars and revolutions.

Manetho assigns seventy-five kings and 484 years to the fourteenth dynasty, and it is to this period that a good deal of uncertainty attaches, for there are no monuments, and nothing to confirm Manetho's lists, except a number of unknown names of kings of the dynasty enumerated among the royal ancestors in the Papyrus of Turin. If Manetho's figures are correct, the period must have been one of anarchy and civil war, for the average duration of each reign is less than six and a half years, while that of the twelfth and other well-known historical dynasties exceeds thirty years. The same remark applies to the thirteenth dynasty, the reigns of whose sixty kings average only seven and a half years each, and it is probable that the end of this dynasty and the whole of the fourteenth was a period of anarchy, during which so-called kings rose and fell in rapid succession, as in the case of our own dynasties of Lancaster and York, and the annals are so confused that the dates are unreliable. What is certain is that the great Middle Empire sank rapidly into a state of

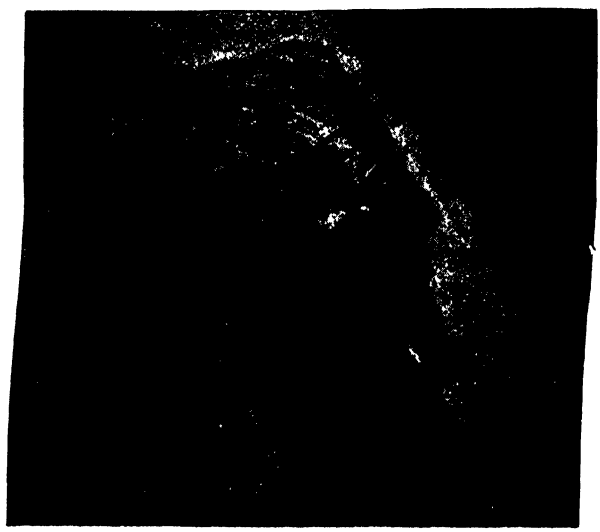
anarchy and impotence, which prepared the way for a great catastrophe. This catastrophe came in the form of an invasion of foreigners, who, about the year 2000 B.C., broke through the eastern frontier of the Delta, and apparently without much resistance, conquered the whole of Lower Egypt up to Memphis, and reduced the princes of the Upper Provinces to a state of vassalage.



FELLAH WOMAN AND HEAD OF SECOND HYKSOS STATUE. (From photograph by Naville in *Harper's Magazine*)

There is considerable doubt who these invaders were, who were known as Hyksos or Shepherd Kings. They consisted probably, mainly of nomad tribes of Canaanites, Arabians, and other Semitic races, but the Turanian Hittites seem to have been associated with them, and the leaders to have been Turanian, judging from the portrait-statues of two of the later kings of the Hyksos

dynasty which have been recently discovered by Naville at Bubastis, and which are unmistakably Turanian and even Chinese in type. Our information as to this Hyksos conquest is derived mainly from fragments of Manetho quoted by Josephus, and from traditions repeated by Herodotus, and is very vague and imperfect. But this much seems certain, that at first the Hyksos



HYKSOS SPHYNX. (From photograph by Naville in *Harper's Magazine.*)

acted as savage barbarians, burning cities, demolishing temples, and massacring part of the population and reducing the rest to slavery. But, as in the parallel case of the Tartar conquest of China, as time went on they adopted the superior civilization of their subjects, and the later kings were transformed into genuine Pharaohs, differing but little from those of the old national dynasties. This is conclusively proved by the

discoveries recently made at Tanis and Bubastis, which have revealed important monuments of this dynasty. At Tanis an avenue of sphynxes was discovered, copied evidently from those at Thebes and from the Great Sphynx at Gizeh, with lion bodies and human heads, the latter with a different head-dress from the Egyptian, and a different type of feature. At Bubastis two colossal statues of Hyksos kings, with their heads broken off, but one of them nearly perfect, were unexpectedly discovered by Naville in 1887, and it was proved that they had stood on each side of the entrance to an addition made by those kings to the ancient and celebrated temple of the Egyptian goddess Bast, thus proving that the Hyksos had adopted not only the civilization but also the religion of the Egyptian nation. There are but few inscriptions known of the Hyksos dynasty, for their cartouches have generally been effaced, and those of later kings chiselled over them; but enough remains to show that they were in the hieroglyphic character, and the names of two or three of their kings can still be deciphered, among which are two Apepis, the second probably the last of the dynasty. It was probably under one of these Hyksos kings that Joseph came to Egypt, and the tribes of Israel settled on its eastern frontier. The duration of the Hyksos rule is thus left in some uncertainty. Manetho, if correctly quoted by Josephus, says they ruled over Egypt for 511 years, though his lists only show one dynasty of 259 years, and then the Theban dynasty, who reigned over Upper Egypt for 260 years contemporaneously with Hyksos kings in Lower Egypt. We regain, however, firm historical ground with the rise of the eighteenth Theban dynasty of native Egyptian kings,

who finally expelled the Hyksos, after a long war, and founded what is known as the New Empire. The date of this event is fixed by the best authorities at about 1750 B.C., and from this time downwards we have an uninterrupted succession of undoubted historical records, confirmed by contemporary monuments and by the annals of other nations, down to the Christian era. The reaction which followed the expulsion of the Hyksos led to campaigns in Asia on a great scale, in which Egypt came into collision with powerful nations, and for a long time was the dominant power in Western Asia, extending its conquests from the Persian Gulf to the Black Sea and Mediterranean, and receiving tribute from Babylon and Nineveh. Then followed wars, waged on more equal terms, with the Hittites, who had founded a great empire in Asia Minor and Syria; and as their power declined and that of Assyria rose, with the long series of warlike Assyrian monarchs, who gradually obtained the ascendency, and not only stripped Egypt of its foreign conquests, but on more than one occasion invaded its territory and captured its principal cities. It is during this period that we find the first of the certain synchronisms between Egyptian history and the Old Testament, beginning with the capture of Jerusalem by Shishak in the reign of Rehoboam, and ending with the captivity of the Jews and temporary conquest of Egypt by Nebuchadnezzar. Then came the Persian conquest by Cambyses and alternate periods of national independence and of Persian rule, until the conquest of Alexander and the establishment of the dynasty of the Ptolemies, which lasted until the reign of Cleopatra, and ended finally by the annexation of Egypt as a province of the Roman Empire.

The history of this long period is extremely interesting, as showing what may be called the commencement of the modern era of great wars, and of the rise and fall of civilized empires; but for the present purpose I only refer to it as helping to establish the chronological standard which I am in search of as a measuring-rod to gauge the duration of historical time. We may sum up the conclusions derived from Manetho's lists and the monuments as follows :—

Manetho's lists, as they have come down to us, show a date of 5867 years B.C. for the accession of Menes. Of this period, we may say that we know 1750 years for the New Empire and the period of the Persians and the Ptolemies, from contemporary monuments and records, with such certainty that any possible error cannot exceed fifty or one hundred years. The Hyksos period is less certain, but there is no sufficient reason for doubting that it may have lasted for about 511 years. Manetho could have had no object in overstating the duration of the rule of hated foreigners, and a long time must have elapsed before the rude invaders could have so completely adopted the civilization of the subject race. The dates of the Middle Empire, to which Manetho assigns 1241 years, are more uncertain, and we can only check them by monuments for the eleventh, twelfth, and thirteenth dynasties. The length of the fourteenth Xoite dynasty seems to be exaggerated, and the later obscure Theban dynasties may have been contemporary with the rule of the Hyksos in Lower Egypt. Of the 2105 years assigned to the Ancient Empire, the first 1645 from Menes to the end of the sixth dynasty are well authenticated by monuments and inscriptions, and the 460 for the seventh,

eighth, ninth, and tenth are obscure, though a considerable time must have elapsed for such a complete eclipse of the monuments and arts as appears to have occurred between the flourishing period of the sixth dynasty and the revival of the Middle Empire under the eleventh. We may say, therefore, that we have about 4000 years of undoubted history between the accession of Menes and the Christian era, and 1600 more years for which we have only the authority of Manetho's lists, and the names of unknown kings in genealogical records, with a few scattered monuments, and to which it is difficult to assign specific dates. This may enable us to appreciate the nature of the evidence upon which Mariette and so many of the best and oldest authorities base their estimates in assigning a date of about 5000 B.C. for the accession of Menes.

The glimpses of light into the prehistoric stages of Egyptian civilization prior to Menes are few and far between. We are told that before the consolidation of the Empire by Menes, Egypt was divided into a number of separate nomes or provinces, each gathered about its own independent city and temple, and ruled by the Horsheshu or servants of Horus, who were apparently the chief priests of the respective temples, combining with the character of priest that of king, or local ruler. Parts of the Todtenbuch or Sacred Book of the Dead certainly date from this period, and the great Temple of the Sun at Heliopolis had been founded, for we are told that certain prehistoric Heliopolitan hymns formed the basis of the sacred books of a later age. At Edfu the later temple occupies the site of a very ancient structure, traditionally said to date back to the mythic reign of the gods, and to have been built

according to a plan designed by Nuhotef the son of Pthah. At Denderah an inscription found by Mariette in one of the crypts of the great temple, expressly identifies the earliest sanctuary built upon the spot with the time of the Horsheshu. It reads, "There was found the great fundamental ordinance of Denderah, written upon goat-skin in ancient writing of the time of the Horsheshu. It was found in the inside of a brick wall during the reign of King Pepi" (*i. e.* Pepi-Merira of the sixth dynasty). The name of Chufu, the king of the fourth dynasty, who built the great pyramid, was found by Naville in a restoration of part of the famous temple of Bubastis, and its foundation doubtless dates back to the same prehistoric period.

But the most important prehistoric monuments are those connected with the great Sphynx. An inscription of Chufu (Cheops) preserved in the museum of Boulak, says that a temple adjoining the Sphynx was discovered by chance in his reign, which had been buried under the sand of the desert, and forgotten for many generations. This temple was uncovered by Mariette, and found to be constructed of enormous blocks of granite of Syene and of alabaster, supported by square pillars, each of a single block of stone, without any mouldings or ornaments, and no trace of hieroglyphics. It is, in fact, a sort of transition from the rude dolmen to scientific architecture. But the masonry, and still more the transport of such enormous blocks from Syene to the plateau of the desert at Gizeh, show a great advance already attained in the resources of the country and the state of the industrial arts. The Sphynx itself probably dates from the same period, for it is mentioned on the same inscription as being much older than the great

Pyramids, and requiring repairs in the time of Chufu. It is a gigantic work consisting of a natural rock sculptured into the form of a lion's body, to which a human head has been added, built up of huge blocks of hewn stone. It is directed accurately towards the east so as to face the rising sun at the equinox, and was an image of Hormachen, the Sun of the Lower World, which traverses the abode of the dead. In addition to the direct evidence for its prehistoric antiquity, it is certain that if such a monument had been erected by any of the historical kings, it would have been inscribed with hieroglyphics, and the fact recorded in Manetho's lists and contemporary records, whereas all tradition of its origin seems to have been lost in the night of ages.

Although there are no monuments of the Stone Age in Egypt like those of the Swiss lake villages and Danish kitchen-middens, to enable us to trace in detail the progress of arts and civilization from rude commencements through the neolithic and prehistoric ages, yet there is abundant evidence to show that the same stages had been traversed in the valley of the Nile long prior to the time of Menes. Borings have been made on various occasions and at various localities through the alluvial deposits of the Nile valley, from which fragments of pottery have been brought up from depths which show a high antiquity. Horner sunk ninety-six shafts in four rows at intervals of eight miles, across the valley of the Nile, at right angles to the river near Memphis, and brought up pottery from various depths, which, at the known rate of deposit of the Nile mud of about three inches per century, indicate an antiquity of at least 11,000 years. In another boring a copper knife was brought up from a depth of twenty-four feet, and

pottery from sixty feet below the surface. This is specially interesting, as making it probable that here, as in many other countries, an age of copper preceded that of bronze, while a depth of sixty feet at the normal rate of deposit would imply an antiquity of 26,000 years. Borings, however, are not very conclusive, as it is always open to contend that they may have been made at spots where, owing to some local circumstances, the deposit was much more rapid than the average.

These objections, however, cannot apply to the evidence which has been afforded by the discovery of flint implements, both of the neolithic and palæolithic type, in many localities and by various skilled observers. Professor Haynes found, a few miles east of Cairo, not only a number of flint implements of the types usual in Europe, but an actual workshop or manufactory where they had been made, showing that they had not been imported, but produced in the country in the course of its native development. He also found multitudes of worked flints of the ordinary neolithic and palæolithic types scattered on the hills near Thebes. Lenormant and Hamy saw the same workshop and remains of the stone period, and various other finds have been reported by other observers. Finally, General Pitt-Rivers and Professor Haynes found well-developed palæolithic implements of the St. Acheul type, not only on the surface and in superficial deposits, but from six and a half to ten feet deep in hard stratified gravel at Djebel-Assas, near Thebes, in a terrace on the side of one of the ravines falling from the Libyan desert into the Nile valley, which was certainly deposited in early quaternary ages by a torrent pouring down from a plateau where, under existing geographical and climatic conditions,

rain seldom or never falls. These relics, as Mr. Campbell says, who was associated with General Pitt-Rivers in the discovery, are "beyond calculation older than the oldest Egyptian temples and tombs," and they certainly go far to prove that the high civilization of Egypt at the earliest dawn of history or tradition had been a plant of extremely slow growth from a state of provincial savagery.

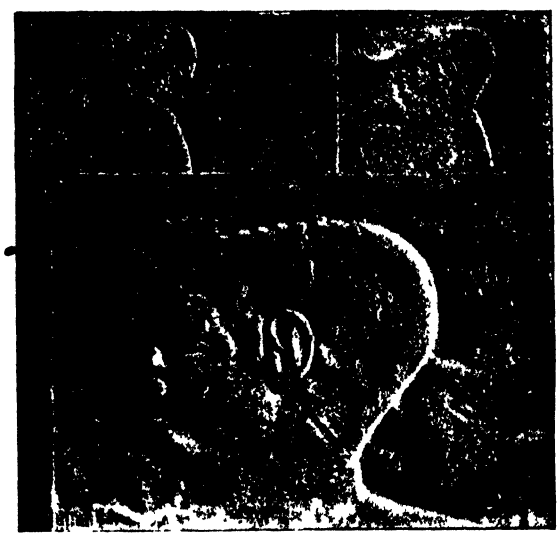


STATUE OF PRINCE RAHOTEP'S WIFE. (Refined type.)
(Gizeh Museum.—Discovered in 1870 in a tomb near Meydoon.—According to the chronological table of Mariette, it is 5800 years old.—From a photograph by Sebah, Cairo.)

It is remarkable that all the traditions of the Egyptians represent them as being autochthonous. There is no legend of any immigration, no Oannes who comes out of the sea and teaches the arts of civilization. On the contrary, Thoth and Osiris are native Egyptian gods or kings, who reigned long ago in Egyptian cities. There are no legends of an inferior race who were exterminated or driven up the Nile; though it would seem from the portraits on early monuments that there were two types

in the very early ages, one coarse and approximating to the African, the other a refined and aristocratic type, more resembling that of the highest Asiatic or Arabian races.

It has been conjectured that this latter race may have come from Punt, that is, from Southern Arabia, and the opposite African coast of Soumali land, where there are



KHUFU-ANKH AND HIS SERVANTS EARLY EGYPTIANS. (Coarse type.)

traces of a high civilization at a very early period. This conjecture is based on the fact that Punt is constantly referred to in the Egyptian monuments as a divine or sacred land, while other surrounding nations are loaded with opprobrious epithets. Also the earliest traditions refer the origin of Egyptian civilization not to Lower Egypt, where the Isthmus of Suez affords a land route from Asia, nor to Upper Egypt, as if it had

descended the Nile from Africa, but to Abydos and This in Middle Egypt, where the gods were feigned to have reigned, which are comparatively close to Coptos, the port on the Red Sea by which intercourse was most easily kept up between the valley of the Nile and the land of Punt.

This conjecture, however, is very vague, and when we come to positive facts we find that the language and system of writing, when we first meet with them, are fully formed and apparently of native growth, not derived from any Semitic, Aryan, or Turanian speech of any historical nation. It is certainly an agglutinative language originally, but far advanced beyond the simpler forms of that mode of speech as spoken by Mongolians. It shows some distant affinities with Semitic, or rather with what may have been a proto-Semitic, before it had been fully formed, and is perhaps nearer to what may have been the primitive language of the Libyans of North Africa. But there is nothing in the language from which we can infer origin, and the pictures from which hieroglyphics are derived are those of animals and objects proper to the Nile valley, and not like those of the Accadians and Chinese, such as point to a prehistoric nomad existence on elevated plains. The only positive fact tending to confirm the existence of two races in Egypt, one rude and aboriginal, the other of high type, is the difference of type shown by the early portraits and the discovery by Mr. Flinders Petrie, in the very old cemetery of Meydoon, of two distinct modes of interment, one of the ordinary mummy extended at full length, the other in a crouching attitude, as is common in neolithic graves.

For any further inquiries as to the origin and

antiquity of Egyptian civilization, we have to fall back on the state of religion, science, literature, and art, which we find prevailing in the earliest records which have come down to us, and which I will proceed to examine in subsequent chapters. But before doing so, I will endeavour to exhaust the field of positive history, and inquire how far the annals of other ancient nations contradict or confirm the date of about 5000 years B.C., which has been shown to be approximately that of the accession of Menes.

CHAPTER II.

CHALDÆA.

Chronology—Berosus—His Dates mythical—Dates in Genesis—Synchronisms with Egypt and Assyria—Monuments—Cuneiform Inscriptions—How deciphered—Behistan Inscription—Grotefend and Rawlinson—Layard—Library of Koyunjik—How preserved—Accadian Translations and Grammars—Historical Dates—Elamite Conquest—Commencement of Modern History—Ur-Ea and Dungi—Nabonidus—Sargon I., 3800 B.C.—Ur of the Chaldees—Sharrukin's Cylinder—His Library—His son Naram-Sin—Semites and Accadians—Accadians and Chinese—Period before Sargon I.—Patesi—De Sarzec's find at Sirgalla—Gud-Ea, 4000 to 4500 B.C.—Advance of Delta—Astronomical Records—Chaldæa and Egypt give similar results—Historic Period 6000 or 7000 years—and no trace of a beginning.

CHALDÆAN chronology has within the last few years been brought into the domain of history, and carried back to a date almost, if not quite, as remote as that of Egypt. And this has been effected by a process identical in the two cases, the decipherment of an unknown language in inscriptions on ancient monuments. Until this discovery the little that was known of the early history of Chaldæa was derived almost entirely from two sources: the Bible, and the fragments quoted by later writers from the lost work of Berosus. Berosus was a learned priest of Babylon, who lived about 300 B.C., shortly after the conquest of Alexander, and wrote in Greek a history of the country from the most ancient times, compiled from the annals preserved in the

temples, and from the oldest traditions. He began with a Cosmogony, fragments of which only are preserved, from which little could be inferred, except that it bore some general resemblance to that of Genesis, until the complete Chaldæan Cosmogony was deciphered by Mr. George Smith from tablets in the British Museum. Then followed a mythical period of the reigns of ten gods or demi-gods, reigning for 432,000 years, in the middle of which period the divine fish-man, Ea-Han or Oannes, was said to have come up out of the Persian Gulf, and taught mankind letters, sciences, laws, and all the arts of civilization; 259,000 years after Oannes, under Xisuthros (the Greek translation of Hasisastra), the last of the ten kings, a Deluge is said to have occurred, which is described in terms so similar to the narrative of Noah's deluge in Genesis, as to leave no doubt that they are different versions of the same legend.

Prior to the appearance of Oannes, Berosus relates, "that Chaldæa had been colonized by a mixed multitude of men of foreign race, who lived without order like animals," thus carrying back the existence of mankind in large numbers, to some date anterior to 259,000 years before the Deluge. There is also a legend resembling that of the Tower of Babel and the confusion of languages, recorded in another fragment of Berosus. These accounts are all so obviously mythical that no historical value can be attached to them, and they have only been preserved because early Christian writers saw in them some sort of distorted confirmation of the corresponding narratives in the Old Testament.

For anything like historical dates therefore the Bible remained the principal authority, until the recent

discoveries made from the monuments of Chaldæa and Assyria. This authority does not carry us very far back. The first event which can advance any claim to be considered as historical, is that of the migration of Terah from Ur of the Chaldees to Haran, and the further migration of his son Abraham from Haran to Palestine. This is said to have taken place in the ninth generation after Noah, about 290 years after the Deluge, and it presupposes the existence of a dense population and a number of large cities both in Upper and Lower Mesopotamia. It mentions also an event, apparently historical, as occurring in Abraham's time, viz. a campaign, by Chedorlaomer, King of Elam, with four allies, one of whom is a King of Shinar, against five petty kings in Southern Syria. Chedorlaomer has been identified from inscriptions with Khuder-lagomer, one of the kings of the Elamite dynasty, who conquered Chaldæa about 2300 B.C., and were expelled before 2000 B.C.

A long interval then occurs during which the scattered notices in the Bible relate mainly to the intercourse of the Hebrews with Egypt, with the races of Canaan, with the Philistines, with the Phœnicians of Tyre, and with the Syrians of Damascus. Mesopotamia first appears after the rise of the Assyrian Empire had united nearly the whole of Western Asia under the warlike kings who reigned at Nineveh, and when Palestine had become the battle-field between them and the declining power of Egypt, which under the eighteenth and nineteenth Egyptian dynasties had extended to the Euphrates. The capture of Jerusalem in the reign of Rehoboam by Shishak, the first king of the twenty-second Egyptian dynasty, affords the first certain synchronism between sacred and profane history. The

date may be fixed within a few years at 970 B.C. Assyria first appears on the scene two hundred years later in the reign of Menahem King of Israel, when Pul, better known as Tiglath-Pileser II., came against the land, and exacted a large ransom from Menahem, whom he confirmed as a tributary vassal.

From this time forward the succession of Assyrian kings is recorded more or less accurately in the Bible. Tiglath-Pileser accepted vassalage and a large tribute from Ahaz to come to his assistance against Rezin King of Syria, and Pekah King of Israel, who were besieging Jerusalem, and Tiglath-Pileser came to his aid and captured and sacked Damascus. Shalmaneser came up against Hoshea King of Judah, who submitted, but was deposed for intriguing with Egypt, and Shalmaneser then took Samaria and carried the ten tribes of Israel away into Assyria, placing them in the cities of the Medes. Sennacherib, in the fourteenth year of Hezekiah, took all the fenced cities of Judah, and his general, Rab-shakeh, besieged Jerusalem, which was saved by the repulse of the main army under the king when marching to invade Egypt. The murder of Sennacherib by his two sons and the succession of Esarhaddon are next mentioned.

Nineveh then disappears from the scene, and the great Babylonian conqueror, Nebuchadnezzar, puts an end to the kingdom of Judæa, by taking Jerusalem and carrying the people captive to Babylon. This historical retrospect carries us back a very short distance, and little can be gathered in the way of accurate chronology from the few vague references prior to this date. So stood the question until the date of Chaldæan history and civilization was unex-

pectedly carried back at least 3000 years by the discovery of its monuments.

When the first Assyrian sculptures were found by Botta and Layard not fifty years ago in the mounds of rubbish which covered the ruins of Nineveh, and brought home to Europe, it was seen that they were covered with inscriptions in an unknown character. It was called the cuneiform, because it was made up of combinations of a single sign, resembling a thin wedge or arrow-head. This sign was made in three fundamental ways, *i. e.* either horizontal —, vertical |, or angular <, and all the characters were made up of combinations of these primary forms, which were obviously produced by impressing a style with a triangular head on moist clay. They resembled, in fact, very much the strokes and dashes used in spelling out the words conveyed by the electric telegraph, in which letters are formed by oscillations of the needle.

This mode of writing had apparently been developed from picture-writing, for several of the groups of characters bore an unmistakable resemblance to natural objects. In the very oldest inscriptions which have been discovered the writing is hardly yet cuneiform, and the primitive pictorial character of the signs is apparent.

But the bulk of the cuneiform inscriptions not being pictorial, there could be little doubt that they were phonetic, or represented sounds. The question was, what sounds these characters signified, and when translated into sounds, what words and what language did the groups of signs represent?

The first clue to these questions was, as in the parallel case of Egypt, afforded by a trilingual inscription.

The kings of the Persian Empire reigned over subjects of various races and languages. The three principal were the Persians, an Aryan race who spoke an inflectional language which has been preserved in old Persian and Zend; Semites, who spoke Aramaic, a language closely allied to Hebrew; and descendants of the older Accadian races, whose language was Turanian, or agglutinative.

It is almost the same at the present day in the same region, where edicts or inscriptions, to be readily intelligible to all classes of subjects, would require to be made in Persian, Arabic, and Turkish.

Accordingly, the pompous inscriptions and royal edicts of these ancient monarchs were frequently made in the three languages, and specimens of these were brought to Europe. The difficulty of deciphering them was, however, great, for the inscriptions were all written, though in different languages, in the same cuneiform characters, so that the aid afforded in the case of the Rosetta stone by a Greek translation of the hieroglyphic inscription was not forthcoming.

The ingenuity of a German scholar, Grotefend, furnished the first clue by discovering that certain groups of signs represented the names of known Persian kings, and thus identifying the component signs in the Persian inscription as letters of an alphabet.

A few years later Sir Henry Rawlinson copied, and succeeded in deciphering, a famous inscription engraved by the great Persian monarch, Darius the first, high up in the face of a precipice forming the wall of a narrow defile at Behistan, and giving an historical record of the exploits of his reign. The clue thus afforded was rapidly followed up by a host of scholars, among whom

the names of Rawlinson, Burnouf, Lassen, and Oppert were most conspicuous, and before long the text of inscriptions in Persian and Semitic could be read with great certainty. The task was one which required a vast amount of patience and ingenuity, for the cuneiform writing turned out to be one of great complexity. Though phonetic in the main, the characters did not always represent the simple elements of sounds, or letters of an alphabet, but frequently syllables containing one or more consonants united by vowels, and a considerable number were ideographic or conventional representations of ideas, like our numerals 1, 2, 3, which have no relation to spoken sounds.

Thus the simple vertical wedge  represented "man," and was prefixed to proper names of kings so as to show that the signs which followed denoted the name of a man; the sign  denoted country, and so on. The difficulties were, however, surmounted, and inscriptions in the two known languages could be read with considerable certainty.

The third language, however, remained unknown until the finishing stroke to its decipherment was given by the discovery by Layard under the great mound of Koyunjik near Mosul on the Tigris, the site of the ancient Nineveh, of the royal palace of Asshurbanipal, or Sardanapalus, the grandson of Sennacherib, and one of the greatest Assyrian monarchs, who lived about 650 B.C. This palace contained a royal library like that of Alexandria or the British Museum, the contents of which had been carefully collected from the oldest records of previous libraries and temples, and almost miraculously preserved. The secret of the preservation of these Assyrian and Chaldæan remains, is that the

district contains no stone, and all the great buildings were constructed mainly of sun-dried bricks, and built on mounds or platforms of the same material to raise them above the alluvial plain. These, when the cities were deserted, crumbled rapidly under the action of the air and rains, which are torrential at certain seasons, into shapeless rubbish heaps of fine dry dust and sand, under which everything of more durable material was securely buried.

So rapid was the process, that when Xenophon on the famous retreat of the ten thousand traversed the site of Nineveh only two hundred years after its destruction, he found nothing but the ruins of a deserted city, the very name and memory of which had been lost.

As regards the contents of the library the explanation of their perfect preservation is equally simple. The books were written, not on perishable paper or parchment, but on cylinders of clay. It is evident that the cuneiform characters were exceedingly well adapted for this description of writing, and probably originated from the nature of the material. A fine tenacious clay cost nothing, was readily moulded into cylinders, and when slightly moist was easily engraved by a tool or style stamping on it those wedge-like characters, so that when hardened by a slow fire the book was practically indestructible. So much so, indeed, that though the palace, including the library with its shelves and upper stories, had all fallen to the ground, and the book-cylinders lay scattered on the floor, they were mostly in a state of perfect preservation. Other similar finds have been made since, notably one of another great library of the priestly college at Erech, founded or enlarged as far back as 2000 B.C. by Sargon II. Among the books

thus preserved there are fortunately translations of old Accadian works into the more modern Aramaic or Assyrian, either interlined or in parallel columns, and also grammars and dictionaries of the old language to assist in its study. It appears that as far back as 2000 years B.C. this old language had already become obsolete, and was preserved as Latin or Vedic Sanscrit are at the present day, as the venerable language for religious uses, in which the earliest sacred books, historical annals, and astrological and magical formulas had been written. With these aids this ancient Accadian language can now be read with almost as much certainty as Egyptian hieroglyphics, and the records written in it are accumulating rapidly with every fresh exploration. Some idea of the wealth of the materials already found may be formed from the fact that the number of tablets in the different museums of Europe from the Nineveh library alone exceeds 10,000. They present to us a most interesting picture of the religion, literature, laws, and social life of a period long antecedent to that commonly assigned for the destruction of the world by Noah's Deluge, or even to that of the creation of Adam. To some of these we shall have occasion subsequently to refer, but for the present I confine myself to the immediate object in view, that of verifying the earliest historical dates.

The first certain date is fixed by the annals of the Assyrian King Asshurbanipal, grandson of Sennacherib, who conquered Elam and destroyed its capital, Susa, in the year 645 B.C. The king says that he took away all the statues from the great temple of Susa, and among others, one of the Chaldæan goddess Nana, which had been carried away from her own temple in the city of

Erech, by a king of Elam who conquered the land of Accad 1635 years before. This conquest, and the accession of an Elamite dynasty which lasted for nearly 300 years, is confirmed from a variety of other sources, and its date is thus fixed, beyond the possibility of a doubt, at 2280 B.C. A king of this dynasty, Khudur-Lagamar, synchronizes with Abraham, assuming Abraham and the narrative in the Old Testament respecting his defeat of that monarch to be historical.

This Elamite conquest of Chaldæa is a memorable historical era, for it inaugurates the period of great wars and of the rise and fall of empires, which play such a conspicuous part in the subsequent annals of nations. Elam was a small province between the Kurdish mountains and the Tigris, extending to the Persian Gulf, and its capital, Susa, was an ancient and famous city, which afterwards became one of the principal seats of the Persian monarchs. The Elamites were originally a Turanian race like the Accads, and spoke a language which was a dialect of Accadian, but, as in Chaldæa and Assyria, the kings and aristocracy appear to have been Semites from an early period. It was apparently an organized and civilized State, and the conquest was not a passing irruption of barbarians, but the result of a campaign by regular troops, who founded a dynasty which lasted for more than 200 years. It evidently disturbed the equilibrium of Western Asia, and led to a succession of wars. The invasion of Egypt by the Hyksos followed closely on it. Then came the reaction which drove the Elamites from Chaldæa and the Hyksos from Egypt. Then the great wars of the eighteenth Egyptian dynasty, which carried the arms of Ahmes and Thotmes to the Euphrates and Black Sea, and

established for a time the supremacy of Egypt over Western Asia. Then the rise of the Hittite Empire, which extended over Asia Minor, and contended on equal terms with Ramses II. in Syria. Then the rise of the Assyrian Empire, which crushed the Hittites and all surrounding nations, and twice conquered and overran Egypt. Finally, the rise of the Medes, the fall of Nineveh, the short supremacy of Babylon, and the establishment of the great Persian Empire. From the Persian we pass to the Greek, and then to the Roman Empire, and find ourselves in full modern history. It may be fairly said, therefore, that modern history, with its series of great wars and revolutions, commences with this record of the Elamite conquest of Chaldæa in 2280 B.C.

The next tolerably certain date is that of Ur-ea, and his son Dungi, two kings of the old Accadian race, who reigned at Ur over the united kingdoms of Sumir and Accad. They were great builders and restorers of temples, and have left numerous traces of their existence in the monuments both at Ur, and at Larsam, Sirgalla, Erech, and other ancient cities. Among other relics of these kings there is in the British Museum the signet-cylinder of Ur-ea himself, on which is engraved the Moon-God, the patron deity of Ur, with the king and priests worshipping him. The date of Ur-ea is ascertained as follows—Nabonidus, the last king of Babylon, 550 B.C., was a great restorer of the old temples, and, as Professor Sayce says, "a zealous antiquarian who busied himself much with the disinterment of the memorial cylinders which their founders and restorers had buried beneath their foundations." The results of his discoveries he recorded on special

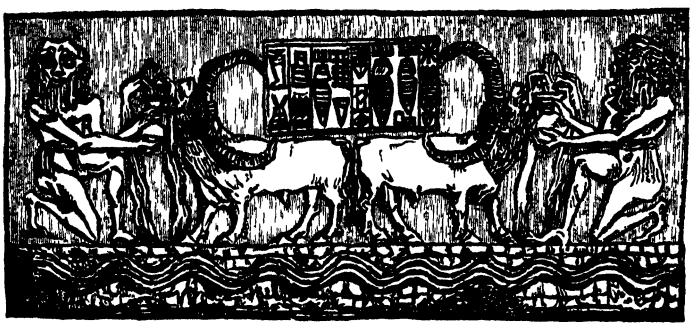
cylinders for the information of posterity, which have fortunately been preserved. Among others he restored the Sun-temple at Larsam, in which he found intact in its chamber under the corner-stone, a cylinder of King Hummurabi or Khammuragas, stating that the temple was commenced by Ur-ea and finished by his son Dungi, 700 years before his time. Hummurabi was a well-known historical king who expelled the Elamites, and made Babylon for the first time the capital of Chaldæa, about 2000 B.C. The date of Ur-ea cannot therefore be far from 2700 B.C.

The same fortunate circumstance of the habit, by kings who built or restored famous temples, of laying the foundation-stone, such as our royal personages often do at the present day, and depositing under it, in a secure chamber, a cylinder recording the fact, has given us a still more ancient date, that of Sharrukin or Sargon I. of Agade. The same Nabonidus repaired the great Sun-temple of Sippar, and he says "that having dug deep in its foundations for the cylinders of the founder, the Sun-god suffered him to behold the foundation cylinder of Naram-Sin, son of Sharrukin or (Sargon I.), which for three thousand and two hundred years none of the kings who lived before him had seen." This gives 3750 B.C. as the date of Naram-Sin, or, allowing for the long reign of Sargon I., about 3800 B.C. as the date of that monarch. This discovery revolutionized the accepted ideas of Chaldæan chronology, and carried it back at one stroke 1000 years before the date of Ur-ea, making it contemporary with the fourth Egyptian dynasty who built the great Pyramids. The evidence is not so conclusive as in the case of Egypt, where the lists of Manetho give us the whole series of successive kings

and dynasties, a great majority of which are confirmed by contemporary records and monuments. The date of Sargon I. rests mainly on the authority of Nabonidus, who lived more than 3000 years later, and may have been mistaken, but he was in the best position to consult the oldest records, and had apparently no motive to make a wilful mis-statement. Moreover, other documents have been found in different places confirming the statement on the cylinder of Nabonidus, and the opinion of the best and latest authorities has come round to accept the date of about 3800 B.C. as authentic. Professor Sayce, in his Hibbert Lecture in 1888, gives a detailed account of the evidence which had overcome his original scepticism, and forced him to admit the accuracy of this very distant date. Since the discovery of the cylinder of Nabonidus, several tablets have been found and deciphered, containing lists of kings and dynasties of the same character as the Egyptian lists of Manetho. One tablet of the kings who reigned at Babylon takes us back, reign by reign, to about 2400 B.C. Other tablets, though incomplete, give the names of at least sixty kings which are not found in this record of the Babylonian era, and who presumedly reigned during the interval of about 1400 years between Khammuragas and Sargon I. The names are mostly Accadian, and if they did not reign during this interval they must have preceded the foundation of a Semite dynasty by Sargon I., and thus extend the date of Chaldæan history still further back. The probability of such a remote date is enhanced by the certainty that a high civilization existed in Egypt as long ago as 5000 B.C., and there is no apparent reason why it should not have existed in the valleys of the Tigris and Euphrates as soon as in that of the Nile.

Boscawen, in a paper read at the Victoria Institute in 1886, says that inscriptions found at Larsa, a neighbouring city to Ur of the Chaldees, show that from as early a period as 3750 B.C. a Semitic population existed in the latter city, speaking a language akin to Hebrew, carrying on trade and commerce, and with a religion which, although not Monotheist, had at the head of its pantheon a supreme god, Ilu or El, from whose name that of Elohim and Allah has been inherited as the name of God by the Hebrews and Arabs. The latest discoveries all point to the earliest dates, and some authorities think that genuine traces of the earliest Accadian civilization can be found as far back as 6000 B.C. There can be no doubt, moreover, that this Sharrukin or Sargon I. is a perfectly historical personage. A statue of him has been found at Agade or Accad, and also his cylinder with an inscription on it giving his name and exploits. It begins, "Sharrukin the mighty king am I," and goes on to say, "that he knew not his father, but his mother was a royal princess, who to conceal his birth placed him in a basket of rushes closed with bitumen, and cast him into the river, from which he was saved by Akki the water-carrier, who brought him up as his own child." It is singular how the same or a very similar story is told of Moses, Cyrus, and other heroes of antiquity. It is probable from this that he was a military adventurer who rose to the throne; but there can be no doubt that he was a great monarch, who united the two provinces of Shumir and Accad, or of Lower and Upper Mesopotamia, into one kingdom, as Menes did the Upper and Lower Egypts, and extended his rule over some of the adjoining countries. He says "that he had reigned for forty-

five years, and governed the black-headed (Accadian) race. In multitudes of bronze chariots I rode over rugged lands. I governed the upper countries. Three times to the coast of the sea I advanced." If there is any truth in this inscription it would be very interesting as showing the existence in Western Asia of nations to be conquered in great campaigns, with a force of horse-chariots, at this remote period, 2000 years earlier than the campaigns of Ahmes and Thotmes recorded in the Egyptian monuments of the eighteenth dynasty.



CYLINDER SEAL OF SARGON I., FROM AGADE (Hommel, "Gesch Babyloniens u. Assyriens")

The reality of these campaigns is moreover confirmed by inscriptions and images of this Sargon having been found in Cyprus and on the opposite coast of Syria, and by a Babylonian cylinder of his son Naram-Sin, found by Cesnola in the Cyprian temple of Kurion. In another direction he and his son carried their arms into the peninsula of Sinai, attracted doubtless by the copper and turquoise mines of Wady Maghera, which were worked by the Egyptians under the third dynasty. Sargon I. is also known to have been a great patron of literature, and to have founded the library of Agade,

which was long one of the most famous in Babylonia. A work on Astronomy and Astrology, in seventy-two books, which was so well known in the time of Berosus as to be translated by him into Greek, was also compiled for him.

Another king of the same name, known as Sargon II., who reigned about 2000 B.C., either founded or enlarged the library of the priestly college at Erech, which was one of the oldest and most famous cities of Lower Chaldæa, and known as the "City of Books." It was also considered to be a sacred city, and its necropolis extends over a great part of the adjoining desert, and contains innumerable tombs and graves ranging over all periods of Chaldæan and Assyrian history, up to an unknown antiquity.

The exact historical date of Sargon I. may be a little uncertain; but whatever its antiquity may be, it is evident that it is already far removed from the beginnings of Chaldæan civilization. Sargon II. is perfectly historical, and his library and the state of the arts and literature in his reign prove this conclusively. He states in his tablets that 350 kings had reigned before him, and in such a literary age he could hardly have made such a statement without some foundation. If anything like this number of kings had reigned before 2000 B.C., the date of Sargon II.'s Chaldæan chronology would have to be extended to a date preceding that of Egypt. Moreover, Sargon was a Semite, who founded a powerful monarchy over a mixed population, consisting mainly of a primitive Accadian race, who had already built large cities and famous temples, written sacred books, and made considerable progress in literature, science, agriculture, and industrial arts. This primitive race was

neither Semitic nor Aryan, but Turanian. They spoke an agglutinative language, and resembled the Chinese very much both in physical type and in character. They were a short, thick-set people, with yellow skins, coarse black hair, and, judging from the ancient statues recently discovered, of decidedly Tartar or Mongolian features. They were, like the Chinese, a peaceable, patient, and industrious people, addicted to agriculture, and specially skilled in irrigation. They were educated and literary, but very superstitious in regard to ghosts, omens, and evil spirits. This resemblance to the Chinese has been remarkably confirmed by the discovery made within the last few years, that the Accadian and Chinese languages are closely allied, and that a great many words are identical. The early prehistoric and astronomical legends were almost similar, and in some instances, as in the division of the year, the names and order of the planets, and the number and duration of the fabulous reigns of gods, so identical as to leave no doubt of their having had a common origin. But as the Chinese annals do not extend farther back than about 2700 B.C., the priority of invention must be assigned to the Accadians.

This Turanian population had been long settled in Mesopotamia before the accession of Sargon I., and before the supremacy of the Semitic races began to assert itself. Though called Accadian, which is said to mean "Highlanders," their principal seat was in Shumir or Lower Mesopotamia, in the alluvial delta formed in the course of ages by the Euphrates, Tigris, and other rivers which flow into the Persian Gulf; and their traditions point to their civilization having come from the shores of this Gulf, and having gradually spread northwards. Their

most ancient cities and temples were in the Lower Province of Shumir, and the bulk of the population continued for ages to be Turanian, while in Accad or Upper Mesopotamia, where the land rises from the alluvial plain up to the mountains of Kurdistan and Armenia, the Semitic element preponderated from an early period, though the civilization and religion long remained those of Shumir or Chaldæa proper.

When the Semite Sargon I. founded the united monarchy, the capital of which was Agade in the upper province, he made no change in the established state of things, maintained the old temples, and built new ones to the same gods. Before his reign we have, as in the parallel case of Egypt before Menes, little definite information from monuments or historical records. We only know that the country was divided into a number of small states, each grouped about a city with a temple dedicated to some god; as Eridhu, the sanctuary of Ea, one of the trinity of supreme gods; Larsam, with its Temple of the Sun; Ur, the city of the Moon-god; Sirgalla, with another famous temple. These small states were ruled by *patesi*, or priest-kings, a term corresponding to the Horsheshu of Egypt; and a fortunate discovery by M. de Sarzec in 1881 at Tell-loh, the site of the ancient Sirgalla, has given us valuable information respecting its *patesi*. To the surprise of the scientific world, with whom it had been a settled belief that no statues were ever found in Assyrian art, M. de Sarzec discovered and brought home nine large statues of diorite, a very hard black basalt of the same material as that of the statue of Chephren, the builder of the second pyramid, and in the same sitting attitude. The heads had been broken off, but one head was discovered which was of

unmistakably Turanian type, beardless, shaved, and with a turban for head-dress. With these statues a number of small works of art were found, representing men and animals of a highly artistic design and exquisite finish, and also several cylinders. Both these and the backs of the statues are covered with cuneiform inscriptions in the old Accadian characters, which furnish valuable historical information. The name of one of the *patesi* whose statues were found was Gud-Ea, and his date is computed by some of the best authorities at



HEAD OF ANCIENT CHALDEAN FROM TELLOH (SIRGALLA) SARZEC COLLECTION
(Perrot and Chipiez)

from 4000 to 4500 B.C., probably earlier, and certainly not later than 4000 B.C. This makes the *patesi* of Sirgalla contemporary with the earliest Egyptian kings, or even earlier, and it shows a state of the arts and civilization then prevailing in Chaldæa very similar to those of the fourth dynasty in Egypt, and in both cases as advanced as those of 2000 or 3000 years later date.

Before such a temple as that of Sirgalla could have been built and such statues and works of art made, there must have been older and smaller temples and ruder

works, just as in Egypt the brick pyramids of Sakkarah and the oldest temples of Heliopolis and Denderah preceded the great pyramids of Gizeh, the temple of Pthah at Memphis, and the diorite statues, wooden statuettes, and other finished works of art of the fourth dynasty.



STATUE OF GUDEA, WITH INSCRIPTION, FROM TELL-LOH (SIRBURLA OR SIRGARLA) SARZEC COLLECTION (Hommel)

It is important to remark that in those earliest monuments both the language and art are primitive Accadian, with no trace of Semitic influences, which must have long prevailed before Sargon I. could have established a Semitic dynasty over an united population

of Accads and Semites living together on friendly terms. The normal Semites must have settled gradually in Chaldæa, and adopted to a great extent the higher civilization of the Accadians, much as the Tartars in later times did that of the Chinese. It is remarkable also that this pre-Semitic Accadian people must have had extensive intercourse with foreign regions, for the diorite of which the statues of Sirgalla are formed is exactly similar to that of the statue of the Egyptian Chephren, and in both cases is only found in the peninsula of Sinai. In fact, an inscription on one of the statues tells us that the stone was brought from the land of Magan, which was the Accadian name for that peninsula. This implies a trade by sea, between Eridhu, the sea-port of Chaldæa in early times, and the Red Sea, as such blocks of diorite could hardly have been transported such a distance over such mountains and deserts by land; and this is confirmed by references in old geographical tablets to Magan as the land of bronze from the copper mines of Wady-Maghera, and to "ships of Magan" trading from Eridhu.

In any case, it is certain that a very long period of purely Accadian civilization must have existed prior to the introduction of Semitic influences, and long before the foundation of a Semitic dynasty by Sargon I. With these facts it will no longer seem surprising that some high authorities assign as early a date as 6000 B.C. for the dawn of Chaldæan civilization, and consider that it may be quite as old or even older than that of Egypt.

The great antiquity assigned to these dates from books and monuments is confirmed by other deductions. The city of Eridhu, which was generally considered to

be the oldest in Chaldæa, and was the sanctuary of the principal god, Eâ, appears to have been a sea-port in those early days, situated where the Euphrates flowed into the Persian Gulf. The ruins now stand far inland, and Sayce computes that about 6000 years must have elapsed since the sea reached up to them.

Astronomy affords a still more definite confirmation. The earliest records and traditions show that before the commencement of any historic period the year had been divided into twelve months, the course of the sun mapped out among the stars, and a zodiac established of the twelve constellations, which has continued in use to the present day. The year began with the vernal equinox, and the first month was named after the "propitious Bull," whose figure constantly appears on the monuments as opening the year. The sun, therefore, was in Taurus at the vernal equinox when this calendar was formed, which could only be after long centuries of astronomical observation; but it has been in Aries since about 2500 B.C., and first entered in Taurus about 4700 B.C.

Records of eclipses were also kept in the time of Sargon I., which imply a long preceding period of accurate observation; and the Ziggurat, or temple observatory, built up in successive stages above the alluvial plain, which gave rise to the legend of the Tower of Babel, is found in connection with the earliest temples. The diorite statues also and engraved gems found at Sirgalla testify to a thorough knowledge of the arts of metallurgy at this remote period, and to a commercial intercourse with foreign countries from which the copper and tin must have been derived for making bronze tools capable of cutting such hard materials.

The existence of such a commercial intercourse in remote times is confirmed by the example of Egypt, where bronze implements must have been in use long before the date of Menes; and although copper might have been obtained from Sinai or Cyprus, tin or bronze must have been imported from distant foreign countries alike in Egypt and in Chaldæa.

Chaldæan chronology therefore leads to almost exactly the same results as that of Egypt. In each case we have a standard or measuring-rod of authentic historical record, of certainly not less than 6000, and more probably 7000 years from the present time; and in each case we find ourselves at this remote date, in presence, not of rude beginnings, but of a civilization already ancient and far advanced. We have populous cities, celebrated temples, an organized priesthood, an advanced state of agriculture and of the industrial and fine arts; writing and books so long known that their origin is lost in myth; religions in which advanced philosophical and moral ideas are already developed; astronomical systems which imply a long course of accurate observations. How long this prehistoric age may have lasted, and how many centuries it may have taken to develop such a civilization, from the primitive beginnings of neolithic and palæolithic origins, is a matter of conjecture. Bunsen thinks it may have taken 10,000 years, but there are no dates from which we can infer the time that may be required for civilization to grow up by spontaneous evolution, among nations where it is not aided by contact with more advanced civilizations from without. All we can infer is, that it must have required an immense time, probably much longer than that embraced by the subsequent period of historical record. And

we can say with certainty that during the whole of this historical period of 6000 or 7000 years there has been no change in the established order of Nature. The earth has revolved round its axis and round the sun, the moon and planets have pursued their courses, the duration of human life has not varied, and there have been no destructions and renovations of life or other traces of miraculous interference. And more than this, we can affirm with absolute certainty that 6000 years have not been enough to alter in any perceptible degree the existing physical types of the different races of men and animals, or the primary linguistic types of their forms of speech. The Negro, the Turanian, the Semite, and the Aryan, all stand out as clearly distinguished in the paintings on Egyptian monuments as they do at the present day; and the agglutinative languages are as distinct from the inflectional, and the Semite from the Aryan forms of inflections, in the old Chaldæan cylinders as they are in the nineteenth century.

CHAPTER III.

OTHER HISTORICAL RECORDS.

China—Oldest existing Civilization—but Records much later than those of Egypt and Chaldæa—Language and Traditions Accadian—Communication how effected.

Elam—Very Early Civilization—Susa, an old City in First Chaldæan Records—Conquered Chaldæa in 2280 B.C.—Conquered by Assyrians 645 B.C.—Statue of Nana—Cyrus an Elamite King—His Cylinder—Teaches Untrustworthiness of Legendary History.

Phœnicia—Great Influence on Western Civilization—but Date comparatively late—Traditions of Origin—First distinct Mention in Egyptian Monuments 1600 B.C.—Great Movements of Maritime Nations—Invasions of Egypt by Sea and Land, under Menepthah, 1330 B.C., and Ramses III., 1250 B.C.—Lists of Nations—Show Advanced Civilization and Intercourse—but nothing beyond 2000 or 2500 B.C.

Hittites—Great Empire in Asia Minor and Syria—Turanian Race—Origin Cappadocia—Great Wars with Egypt—Battle of Kadesh—Treaty with Ramses II.—Power rapidly declined—but only finally destroyed 717 B.C. by Sargon II.—Capital Carchemish—Great Commercial Emporium—Hittite Hieroglyphic Inscriptions and Monuments—Only recently and partially deciphered—Results.

Arabia—Recent Discoveries—Inscriptions—Sabæa—Minæans—Thirty-two Kings known—Ancient Commerce and Trade-routes—Incense and Spices—Literature—Old Traditions—Oannes—Punt—Seat of Semites—Arabian Alphabet—Older than Phœnician—Bearing on Old Testament Histories.

Troy and Mycenæ—Dr. Schliemann's Excavations—Hissarlik—Buried Fortifications, Palaces, and Treasures of Ancient Troy—Mycenæ and Tiryns—Proof of Civilization and Commerce—Tombs—Absence of Inscriptions and Religious Symbols—Date of Mycenæan Civilization—School of Art—Pictures on Vases—Type of Race.

CHINA.

THE first country to which we might naturally look for independent annals approaching in antiquity those of

Egypt and Chaldæa is China. Chinese civilization is in one respect the oldest in the world; that is, it is the one which has come down to the present day from a remote antiquity with the fewest changes. What China is to-day it was more than 4000 years ago; a populous empire with a peaceful and industrial population devoted to agriculture and skilled in the arts of irrigation; a literary people acquainted with reading and writing; orderly and obedient, organized under an emperor and official hierarchy; paying divine honours to ancestors, and a religious veneration to the moral and ceremonial precepts of sages and philosophers. Addicted to childish superstitions, and yet eminently prosaic, practical, and utilitarian. Unlike other nations they have no traditions attributing the origin of arts and sciences to foreign importation, as in the Chaldæan legend of Oannes, or, as in Egypt, to native gods; that is, to development on the soil from an unknown antiquity. The Chinese annals begin with human emperors, who are only divine in the sense of being wise and virtuous ancestors, and who are represented as uttering long discourses on the whole duty of man, in a high moral and philosophical tone.

But these annals do not profess to go back further than to about 2500 B.C., or to a period at least 2000 and probably 3000 years later than the commencement of historical annals, confirmed by monuments in Egypt and Chaldæa, and any traditions prior to this period are of the vaguest and most shadowy descriptions. We only know with certainty that prior to Chinese civilization there was an aboriginal, semi-savage race, the Miou-tse, remnants of whom are still to be found in the mountainous western provinces; and it had been conjectured

from the form of the hieroglyphics to which the Chinese written characters can be traced back, that they were invented by a pastoral people who roamed with flocks and herds over the steppes of Central Asia. Thus the sheep plays a very prominent part, the idea of "beauty" being conveyed by an ideogram meaning "a large sheep"; that of "right" or "property" by one which means "my sheep," and so on in many other instances.

There is a tradition also of a clan of 100 families who came down from the West and descended the valley of the Yang-tse-Kiang, expelling the aboriginal Miou-tse. But for any real information as to Chinese origins we are indebted to recent discoveries of Accadian records. It has been proved by Lacouperie, Bell, and other experts in the oldest forms of the Chinese and Accadian languages, that they are not only closely allied, as both forming part of the Ugrian or Turkish branch of the Turanian family, but almost identical. Thus, by following the well-known philological law by which an initial 'g' is often softened in course of time into a 'y,' it was found that by writing 'g' for 'y' in many Chinese words beginning with the latter letter, pure Accadian words were obtained. Thus "to speak" is in Accadian *gu*, in the Mandarin Chinese *yu*, and in the old form of Chinese spoken in Japan *go*; night is *ye* in Chinese, *ge* in Accadian. The very close connection between Accadian and Chinese civilization is still more conclusively shown by the identity in many matters which could not have been invented independently. Thus the prehistoric period of Chaldæa before the Deluge is divided, according to Berosus and the tablets, into ten periods of ten kings, whose reigns lasted for 120 Sari or 432,000 years, a myth which is purely astronomical.

The early Chinese writers had a myth of precisely the same number of ten kings and the same period of 432,000 years for their united reigns. Chinese astronomy also, said by their annals to have been invented by the Emperor Yao about 2000 B.C., was an almost exact counterpart of that of the earliest Accadian records. They recognized the same planets, and gave them names with the same meanings; they divided the year into the Chaldæan period of twelve months of thirty days each, making the new year begin, as in Chaldæa, in the third month after the winter solstice; and counting the calendar for the surplus days by the same cycle of intercalary days. The oldest Chinese dictionaries give names of the months, which had become obsolete, since the usage of mentioning the months by their numbers, as second, third, and fourth months, had become general, and the meaning of which had been lost. It turns out that several of these names correspond with those of the Accadian calendar.

Such coincidences as these cannot be accidental, and it is obvious that one nation must have derived its civilization from the other, or both from a common source. There can be little doubt in this case that Chaldæa taught China, for its astronomy, knowledge of the arts, and general culture are proved by its records to have existed at least 4000, and probably 5000 years B.C., and then to be attributed to mythical gods and to a fabulous antiquity; while in China they are said to have been taught ready-made by human emperors, at a date from 2000 to 3000 years later. The inference is irresistible that somehow the elements of Accadian civilization must have been imported into China from Chaldæa, at what is a comparatively modern date in the

history of the latter country. The only approach to a clue to this date is that the great Chinese historian Szema-Tsien says that the first of their emperors was Nai-kwangti, who built an observatory, and by the aid of astronomy "ruled the varied year." The name is singularly like that of Kuder-Na-hangti, who was the Elamite king who conquered Babylonia about 2280 B.C. It is difficult to see how such an intercourse between Chaldæa and China could have been established across such an enormous intervening distance of mountains and deserts, or by such a long sea-voyage; but it is still more difficult to conceive how not only language, physical characteristics, and civilization should have been so similar, but myths and calendars should have been almost *verbatim* the same in the two countries, unless a communication really existed between them. Nor will the theory of a common origin apply, for it is impossible to suppose that any common ancestors of the Chinese and Accadians could have attained to such a knowledge of astronomy, and of the industrial arts and agriculture, while wandering as nomad shepherds over the steppes of Central Asia.

We must remember also the fact that caravans actually do travel, and have travelled for time immemorial, over enormous distances, across the steppes of Central and Northern Asia, and that within quite recent historical times, a whole nation of Calmucks migrated under every conceivable difficulty from hostile tribes, pursuing armies, and the extremes of winter cold and summer heat, first from China to the Volga, and then back again from the Volga to China. Nor must we overlook the fact that Ur and Eridhu were great seaports at a very remote period, and that the facilities for

pushing their commerce far to the east were great, owing to the regular monsoons, and the configuration of the coast.

We must be content, therefore, to take the facts as we find them, and admit that China gives us no aid in carrying back authentic history for anything like the time for which we have satisfactory evidence from the monuments and records of Egypt and Chaldæa.

ELAM.

As regards other nations of antiquity, their own historical records are either altogether wanting or comparatively recent, and our only authentic information respecting them in very early times is derived from Egyptian or Babylonian monuments. The most important of them is Elam, which was evidently a civilized kingdom at a very remote period, contemporary probably with the earliest Accadian civilization, and which continued to play a leading part in history down to the recent date of Cyrus. Elam was a small district between the Zagros mountains and the Tigris, extending to the south along the eastern shore of the Persian Gulf to the Arabian Sea. Its capital was Shushan or Susa, an ancient and renowned city, the name of which survives in the Persian province of Shusistan, as that of Persia proper does in the mountainous district next to the east of Elam, known as Farsistan. The original population was Turanian, speaking an agglutinative language, akin to though not identical with Accadian, and its religion and civilization were apparently the same, or closely similar. As in Chaldæa and Assyria, a Semitic element seems to have intruded on the Turanian at an early date, and to have become the ruling race,

while much later the Aryan Persians to some extent superseded the Semites. The name "Elam" is said to have the same significance as "Accad," both meaning "Highland," and indicating that both races must have had a common origin in the mountains and steppes of Central Asia. The native name was Anshad, and Susa was "the City of Anshad." Elam was always considered an ancient land and Susa an ancient city, by the Accadians, and there is every reason to believe that Elamite civilization must have been at least as old as Accadian. This much is certain, that as far back as 2280 B.C., Elam was a sufficiently organized and powerful state to conquer the larger and more populous country of Mesopotamia, and found an Elamite dynasty which lasted for nearly 300 years, and carried on campaigns in districts as far distant as Southern Syria and the Dead Sea.

The dynasty was subverted and the Elamites driven back within their own frontiers, but there they retained their independence, and took a leading part in all the wars waged by Chaldæa and other surrounding nations against the rising power of the warlike Assyrian kings of Nineveh. The statue of the goddess Nana, which had been taken by the Elamite conquerors from Erech in 2280 B.C., remained in the temple at Susa for 1635 years, until the city was at length taken by one of the latest Assyrian kings, Asshurbanipal, in the year 645 B.C.

We have already pointed out the great historical importance of the Elamite conquest of Mesopotamia in 2280 B.C. as inaugurating the era of great wars between civilized states, and probably giving the impulse to Western Asia, which hurled the Hyksos on Egypt, and by its reaction first brought the Egyptians to Nineveh, and then the Assyrians to Memphis. A still more

important movement at the very close of what may be called ancient history, originated from Elam. To the surprise of all students of history, it has been proved that the account we have received from Herodotus and other Greek sources, of the great Cyrus, is to a great extent fabulous. A cylinder and tablet of Cyrus himself were quite recently discovered by Mr. Rassam and brought to the British Museum, in which he commemorates his conquest of Babylon. He describes himself as "Cyrus the great King, the King of Babylon, the King of Sumir and Accad, the King of the four zones, the son of Kambyses the great King, the King of Elam; the grandson of Cyrus the great King, the King of Elam; the great-grandson of Teispes the great King, the King of Elam; of the Ancient Seed-royal, whose rule has been beloved by Bel and Nebo"; and he goes on to say how by the favour of "Merodach the great lord, the god who raises the dead to life, who benefits all men in difficulty and prayer," he had conquered the men of Kurdistan and all the barbarians, and also the black-headed race (the Accadians), and finally entered Babylon in peace and ruled there righteously, favoured by gods and men, and receiving homage and tribute from all the kings who dwelt in the high places of all regions from the Upper to the Lower Sea, including Phœnicia." And he concludes with an invocation to all the gods whom he had restored to their proper temples from which they had been taken by Nabonidus, "to intercede before Bel and Nebo to grant me length of days; may they bless my projects with prosperity; and may they say to Merodach my lord, that Cyrus the King, thy worshipper, and Kambyses his son deserve his favour." This is confirmed by a cylinder of a few years earlier

date, of Nabonidus the last King of Babylon, who relates how "Cyrus the King of Elam, the young servant of Merodach," overthrew the Medes, there called "Mandan" or barbarians, captured their King Astyages, and carried the spoil of the royal city Ecbatana to the land of Elam.

How many of our apparently most firmly established historical dates are annihilated by these little clay cylinders! It appears that Cyrus was not a Persian at all, or an adventurer who raised himself to power by a successful revolt, but the legitimate King of Elam, descended from its ancient royal race through an unbroken succession of several generations. He was in fact a later and greater Kudur-Na-hangti, like the early conqueror of that name who founded the first Elamite empire some 1800 years earlier. It may be doubtful whether he was even an Aryan. At any rate this much *is certain, that his religion was Babylonian, and that* we must dismiss all Jewish myths of him as a Zoroastrian Monotheist, the servant of the most high God, who favoured the chosen race from sympathy with their religion. On his own showing he was as devoted a worshipper of Merodach, Bel, and Nebo, and the whole pantheon of local gods, as Nebuchadnezzar or Tiglath-Pileser.[1]

[1] Sayce, in his *Fresh Light from Ancient Monuments*, says. "Both in his cylinder and in the annalistic tablet, Cyrus, hitherto supposed to be a Persian and Zoroastrian Monotheist, appears as an Elamite and a polytheist." It is pretty certain, however, that although descended from Elamite kings, these were kings of Persian race, who, after the destruction of the old monarchy by Asshurbanipal, had established a new dynasty at the city of Anshad or Susa. Cyrus always traces his descent from Achæmenes, the chief of the leading Persian clan of Pasargadæ, and he was buried there in a tomb visited by Alexander.

What a lesson does this teach us as to the untrustworthy nature of the scraps of ancient history which have come down to us from verbal traditions, and are not confirmed by contemporary monuments! Herodotus wrote within a few generations of Cyrus, and the relations of Greece to the Persian Empire had been close and uninterrupted. His account of its founder Cyrus is not in itself improbable, and is full of details which have every appearance of being historical. It is confirmed to a considerable extent by the Old Testament, and by the universal belief of early classical writers, and yet it is shown to be in essential respects legendary and fabulous, by the testimony of Cyrus himself.

PHŒNICIA.

Phœnicia is another country which exercised a great influence on the civilization and commerce of the ancient world, though its history does not go back to the extreme antiquity of the early dynasties of Egypt and of Chaldæa. The Phœnicians spoke a language which was almost identical with that of the Hebrews and Canaanites, and closely resembled that of Assyria and Babylonia, after the Semite language had superseded that of the ancient Accadians. According to their own tradition, they came from the Persian Gulf, and the island of Tyros, now Bahrein, in that Gulf, is quoted

But as regards religion, it is clear that Cyrus professed himself, and was taken by his contemporaries to be, a devoted servant of Merodach, Nebo, and the other Babylonian deities, to whom he prays for protection and thanks for victories, without any mention of the Zoroastrian supreme God, Ahura-Mazda. Zoroastrian Monotheism only came in with Darius Hystaspes, the founder of the purely Persian second dynasty, after that of Cyrus became extinct with his son Cambyses.

as a proof that it was the original seat of the people who founded Tyre. There is no certain date for the period when they migrated from the East, and settled in the narrow strip of land along the coast of the Mediterranean between the mountain range of Lebanon and the sea, stretching from the promontory of Carmel on the south to the Gulf of Antioch on the north. This little strip of about 150 miles in length, and ten to fifteen in breadth, afforded many advantages for a maritime people, owing to the number of islands close to the coast and small indented bays, which afforded excellent harbours and protection from enemies, which was further secured by the precipitous range of the Lebanon sending down steep spurs into the Mediterranean, and thus isolating Phœnicia from the military route of the great Valley of Cœlo-Syria, between the parallel ranges of the Lebanon and Anti-Lebanon, which was taken by armies in the wars between Egypt and Asia. Here the Phœnicians founded nine cities, of which *Byblos or Gebal was reputed to be the most ancient,* and first Sidon and then Tyre became the most important. They became fishermen, manufacturers of purple from the dye procured from the shell-fish on their shores, and above all mariners and merchants. Before the growth of other naval powers in the Mediterranean they had established factories along the coasts of Asia Minor, Greece, and Italy, and in all the islands of the Egæan and the Cyclades. They had founded colonies in Cyprus, Crete, Sicily, and on the mainland of Greece at Bœotian Thebes. They had mined extensively wherever metals were to be found, and, as Herodotus states, had overturned a whole mountain at Thasos by tunnelling it for gold. They had even

extended their settlements into the Black Sea, along the northern coast of Africa, and somewhat later to Spain, passed the Straits of Gibraltar, and finally reached the British Isles in pursuit of tin.

There can be no question that this Phœnician commerce was a principal element in introducing not only their alphabet, but many of the early arts of civilization, among the comparatively rude races of Greece, Italy, Spain, and Britain. The date however of this earliest Phœnician commerce is very uncertain. All we can discern is that, after having enjoyed an undisputed supremacy, the progress of civilization among the Mediterranean races enabled them to develop a maritime power of their own, superior to that of Phœnicia, and to drive the Phœnicians from most of their settlements on the mainland and islands, confining them to a few trading posts and factories, and directing their more important enterprises towards the Western Mediterranean, where they encountered less formidable rivals.

But although Phœnicia contributed thus largely to the civilization of the ancient world, its antiquity cannot be compared to that of Egypt and Chaldæa. The first reference to the country is found in the cylinder of Sargon I., B.C. 3800, who marched to the coast of the Mediterranean, and crossed over to Cyprus, where a cylinder of his son Dungi has been found, but there is nothing to show that the district was then occupied by the Phœnicians of later times. Kopt, or the land of palms, of which Phœnicia is the Greek translation, is first mentioned in the Egyptian annals of the Middle Empire, and during the rule of the Hyksos the mouth of the Nile had become so thickly populated by Phœnician emigrants as to be known as Kopt-ur,

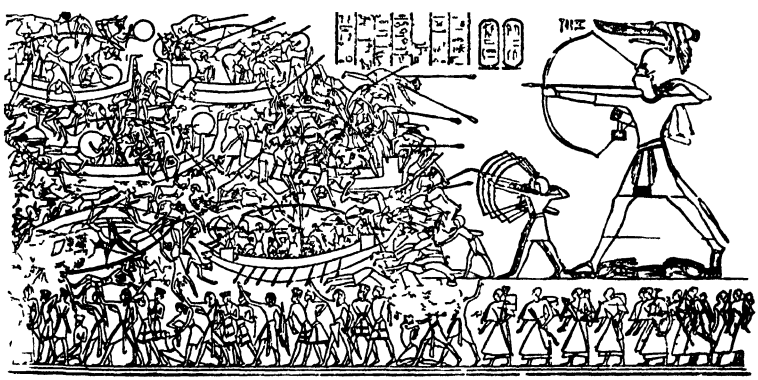
Caphtor, or greater Phœnicia. The priests of the temple of Baal Melcart, the patron deity of Tyre, told Herodotus that it had been founded 2300 years before his time, or about 2750 B.C., and Old Tyre which stood on the mainland was reputed to be more ancient than the city of New Tyre which stood on an island. But this date is negatived by the fact that in an Egyptian papyrus in which an envoy from Ramses II. or Menepthah to the Court of Babylon about 1320 B.C. records his journey, he mentions Byblos, Beryta, and Sidon as important cities, while Tyre is only an insignificant fishing town.

The first distinct mention of Phœnician cities in Egyptian annals is in the enumeration of towns captured by Thotmes III., B.C. 1600, in his victorious campaigns in Syria, among which are to be found the names of Beyrut and Acco, and two centuries later Seti I., the father of Ramses II., records the capture of Zor or Tyre, probably the old city on the mainland.

The first authentic information, however, as to the movements of the Mediterranean maritime races is afforded by the Egyptian annals, which describe two formidable invasions by combined land armies and fleets, which were with difficulty repulsed. The first took place in the reign of Menepthah, son of the great Ramses II. of the eighteenth dynasty, about 1330 B.C.; the second under Ramses III. of the nineteenth dynasty, about 1250 B.C. The first invasion came from the West, and was headed by the King of the Libyans, a white race, who have been identified with the Numidians and modern Kabyles, but were reinforced to a confederacy of nearly all the Mediterranean races who sent auxiliary contingents both of sea and land forces. Among these

appear, along with Dardanians, Teucri and Lycians of Asia Minor, who were already known as allies of the Hittites in their wars against Ramses II., a new class of auxiliaries from Greece, Italy, and the islands, whose names have been identified by some Egyptologists as Achæans, Tuscans, Sicilians, and Sardinians.

The second and more formidable attack came from the East, and was made by a combined fleet and land army, the latter composed of Hittites and Philistines, with the same auxiliaries from Asia Minor, and the fleet



SEA-FIGHT IN THE TIME OF RAMSES III (From temple of Ammon at Medinet-Abou)

of the same confederation of Maritime States as in the first invasion, except that the Achæans have disappeared as leaders of the Greek powers, and their place is taken by the Danaoi, confirming the Greek tradition of the substitution of the dynasty of Danaus for that of Inachus, on the throne of Argos and Mycenæ. The Phœnicians alone of the Maritime States do not seem to have taken any part in these invasions, and, on the contrary, to have lived on terms of friendly vassalage and close commercial relations with Egypt ever since the ex-

pulsion of the Hyksos, and the great conquests of Ahmes and Thotmes III. in Syria and Asia. It is probably during this period that the early commerce and navigation of Jebail and Sidon took such a wide extension.

The details of these two great invasions, which are fully given in the Egyptian monuments, together with a picture of the naval combat, in which the invading fleet was finally defeated by Ramses III., after having forced an entrance into the eastern branch of the Nile, are extremely interesting. They show an advanced state of civilization already prevailing among nations whose very names were unknown or legendary. More than 300 years before the siege of Troy it appears that Asia Minor and the Greek mainland and islands were already inhabited by nations sufficiently advanced in civilization to fit out fleets which commanded the seas, and to form political confederations, to undertake distant expeditions, and to wage war on equal terms with the predominant powers of Asia and of Egypt. But though ancient as regards classical history, these beginnings of Greek civilization are comparatively modern, and cannot be carried back further than about 1500 B.C., while there is no evidence to carry the preceding period of Phœnician supremacy and commerce in the eastern Mediterranean, with the existence of the great trading cities of its earliest period, Byblos and Sidon, beyond 2000, or, at the very outside, 2500 B.C.

HITTITES.

The history of another great Empire has been partially brought to light, which was destroyed in 717 B.C. by the progress of Assyrian conquest, after having lasted

more than 1000 years, and long exercised a predominant influence over Western Asia, viz. that of the Hittites. The first mention of them in the Old Testament appears in the time of Abraham, when we find them in Southern Syria, mixed with tribes of the Canaanites and Amorites, and grouped principally about Hebron. They are represented as on friendly terms with Abraham, selling him a piece of land for a sepulchre, and intermarrying with his family—Rebecca's soul being vexed by the contuma-



KING OF THE HITTITES (From photograph by Flinders Petrie, from Egyptian Temple at Luxor)

cious behaviour of her daughters-in-law, "the daughters of Heth." This, however, was only an outlying branch of the nation, whose capital cities, when they appear clearly in history, were further north at Kadesh on the Orontes, and Carchemish on the Upper Euphrates, commanding the fords on that river on the great commercial route between Babylonia and the Mediterranean. They were a Turanian race, whose original seat was in Cappadocia, and the high plateaux and mountainous region extending from the Taurus range to the Black

Sea. They are easily recognized on the Egyptian monuments by their yellow colour, peculiar features which are of Ugro-Turkish type, and their dress, which is that of highlanders inhabiting a snowy district, with close-fitting tunics, mittens, and boots resembling snow-shoes with turned-up toes. They have also the Mongolian characters of beardless faces, and coarse black hair, which is sometimes trained into a pigtail.

The earliest mention of them is found in the tablets which were compiled for the library of Sargon I. of Accad, in which reference is made to the Khatti, which probably means Hittites, showing that at this remote period, about 3800 B.C., they had already moved down from their northern home into the valley of the Euphrates and Upper Syria.

Their affinity with the Accadians of Chaldæa is clearly proved by their language, which the recent discovery of papyri at Tell-el-Amara, containing despatches from the tributary King of the Hittites to Amenophus IV., written in cuneiform characters, has proved to be almost identical with Accadian. It seems probable that part of the army which fought in defence of Troy may have been Hittite, and there are many indications that the Etruscans, who were generally believed to have come from Lydia, were of the same race and spoke the same language.

It is in Egyptian records, however, that we meet with the first definite historical data respecting this ancient Hittite Empire. In these they are referred to as "Kheta," and probably formed part of the great Hyksos invasion; but the first certain mention of them occurs in the reign of Thotmes I., about 1600 B.C., and they appear as a leading nation in the time of

Thotmes III., who defeated a combined army of Canaanites and Hittites under the Hittite King of Kadesh, at Megiddo, and in fourteen victorious campaigns carried the Egyptian arms to the Euphrates and Tigris.

For several subsequent reigns we find the Hittites enumerated as one of the nations paying tribute to Egypt, whose extensive Empire then reckoned Mesopotamia, Assyria, Phœnicia, Palestine, Cyprus, and the Soudan among its tributary states. Gradually the power of Egypt declined, and in the troubled times which followed the attempt of the heretic King Ku-en-Aten to supersede the old religion of Egypt by the worship of the solar disc, the conquered nations threw off the yoke, and the frontiers of Egypt receded to the old limits. As Egypt declined, the power of the Hittites evidently increased, for when we next meet with them it is contending on equal terms in Palestine with the revival of the military power of Egypt under Ramses I., the founder of the nineteenth dynasty, and his son Seti I.

The contest continued for more than a century with occasional treaties of peace and various vicissitudes of fortune, and at last culminated in the great battle of Kadesh, commemorated by the Egyptian epic poem of Pentaur, and followed by the celebrated treaty of peace between Ramses II. and Kheta-Sira, "the great King of the Hittites," the Hittite text of which was engraved on a silver tablet in the characters of Carchemish, and the Egyptian copy of it was engraved in hieroglyphics on the walls of the temples of Ramses, of which we fortunately possess the entire text. The alliance was on equal terms, defining the frontier, and providing for the mutual extradition of refugees, and it was ratified by

the marriage of Ramses with the daughter of the Hittite King.

The peace lasted for some time; but in the reign of Ramses III. of the twentieth dynasty, we find the Hittites again heading the great confederacy of the nations of Asia Minor and of the islands of the Mediterranean, who attacked Egypt by sea and land. The Hittites formed the greater part of the land army, which was defeated with great slaughter after an obstinate battle at Pelusium, about 1200 B.C. From this time forward the power both of the Hittites and of Egypt seems to have steadily declined. We hear no more of them as a leading power in Palestine and Syria, where the kingdoms of Judah, Israel, and Damascus superseded them, until all were swallowed up by the Assyrian conquests of the warrior-kings of Nineveh, and finally the Hittites disappear altogether from history with the capture of their capital Carchemish by Sargon III. in 717 B.C.

The wide extent, however, of the Hittite Empire when at its height is proved by the fact that at the battle of Kadesh the Hittite army was reinforced by vassals or allies from nearly the whole of Western Asia. The Dardanians from the Troad, the Mysians from their cities of Ilion, the Colchians from the Caucasus, the Syrians from the Orontes, and the Phœnicians from Arvad are enumerated as sending contingents; and in the invasion of Egypt in the reign of Ramses III., the Hittites headed the great confederacy of Hittites, Teucrians, Lycians, Philistines, and other Asiatic nations who attacked Egypt by land, in concert with the great maritime confederacy of Greeks, Pelasgians, Tuscans, Sicilians, and Sardinians who attacked it by sea.

The mere fact of carrying on such campaigns and forming such political alliances is sufficient to show that the Hittites must have attained to an advanced state of civilization. But there is abundant proof that this was the case from other sources. They were a commercial people, and their capital, Carchemish, was for many centuries the great emporium of the caravan trade between the East and West. The products of the East, probably as far as Bactria and India, reached it from Babylon and Nineveh, and were forwarded by two great commercial routes, one to the south-west to Syria and Phœnicia, the other to the north-west through the pass of Karakol, to Sardis and the Mediterranean. The commercial importance of Carchemish is attested by the fact that its silver mina became the standard of value at Babylon, and throughout the whole of Western Asia. The Hittites were also great miners, working the silver mines of the Taurus on an extensive scale, and having a plentiful supply of bronze and other metals, as is shown by the large number of chariots attached to their armies from the earliest times. They were also a literary people, and had invented a system of hieroglyphic writing of their own, distinct alike from that of Egypt and from the cuneiform characters of the Accadians. Inscriptions in these peculiar characters, associated with sculptures in a style of art different from that of either Egypt or Chaldæa, but representing figures identical in dress and features with those of Hittites in the Egyptian monuments, have been found over a wide extent of Asia Minor, at Hamath and Aleppo; Boghaz-Keni and Eyuk in Cappadocia; at the pass of Karakol near Sardis, and at various other places. Several of those attributed by the Greeks to Sesostris

or to fabulous passages of their own mythology, have been proved to be Hittite, as, for instance, the figure carved on the rocks of Mount Sipylos, near Ephesus, and said to be that of Niobe, is proved to be a sitting figure of the great goddess of Carchemish.

For a long time these inscriptions were an enigma to philologists, but the researches of Professor Sayce and other scholars have quite recently thrown much light on the subject, and enabled us partially to decipher some of them, and the recent discovery of papyri at Tel-el-Amara written partly in the Hittite language in cuneiform characters, removes all doubt as to its nature and affinities.

It may be sufficient to state the result, that the Hittite language was Turanian or agglutinative, closely allied, and indeed almost identical, with Accadian on the one hand, and on the other so similar to the ancient Lydian and Etruscan, as to leave it doubtful whether these nations were themselves Hittites, or only very close cousins descended from a common stock. For instance, the well-known Etruscan names of Tarquin and Lar occur as parts of many names of Hittite kings, and in the same, or a slightly modified form, in Accadian, and survive to the present day in various Turkic and Mongolian dialects. This much appears to be clear, that this Hittite Empire, which vanished so completely from history more than 2500 years ago, had for nearly 1000 years previously exercised a paramount influence in Western Asia, and was one of the principal channels through which Asiatic mythology and art reached Greece in early times, and through the Etruscans formed an important element in the civilization of ancient Rome. It was itself probably an offshoot

from the still older civilization of Accadia, though after a time Semitic and Egyptian influences were introduced, as appears from the fact that Sutek, Set or Seth, was the supreme god of the Hittites, as is shown by the text of the treaty of peace between their great King Khota-Sira and Ramses II.

As regards chronology, therefore, Hittite history only carries us back about half-way to the earliest dates of Egypt and Chaldæa, and only confirm these dates incidentally, by showing that other powerful and civilized states already existed in Asia at a remote period.

ARABIA.

The best chance of finding records which may vie in antiquity with those of Egypt and Chaldæa, has come to us quite recently from an unexpected quarter. Arabia has been from time immemorial one of the least known and least accessible regions of the earth. Especially of recent years Moslem fanaticism has made it a closed country to Christian research, and it is only quite lately that a few scientific travellers, taking their lives in their hands, have succeeded in penetrating into the interior, discovering the sites of ruined cities, and copying numerous inscriptions. Dr. Glaser especially has three times explored Southern Arabia, and brought home no less than 1031 inscriptions, many of them of the highest historical interest.

By the aid of these and other inscriptions we are able to reduce to some sort of certainty the vague traditions that had come down to us of ancient nations and an advanced state of civilization and commerce, existing in Arabia in very ancient times. In the words of Professor Sayce, " the dark past of the Arabian

peninsula has been suddenly lighted up, and we find that long before the days of Mohammed it was a land of culture and literature, a seat of powerful kingdoms and wealthy commerce, which cannot fail to have exercised an influence upon the general history of the world."[1]

The visit of the Queen of Sheba to Solomon affords one of the first glimpses into this past history. It is evident that she either was, or was supposed to be by the compiler of the Book of Kings not many centuries later, the queen of a well-known, civilized, and powerful country, which, from the description of her offerings, could hardly be other than Arabia Felix, the spice country of Southern Arabia, the Sabæa or Saba of the ancient world, though her kingdom, or commercial relations, may have extended over the opposite coast of Abyssinia and Somali-land, and probably far down the east coast of Africa. Assyrian inscriptions show that Saba was a great kingdom in the eighth century B.C., when its frontiers extended so far to the north as to bring it in contact with those of the Empire of Nineveh under Tiglath-Pileser and Sargon III. It was then an ancient kingdom, and, as the inscriptions show, had long since undergone the same transformation as Egypt and Chaldæa, from the rule of priest-kings of independent cities into an unified empire. These priest-kings were called "Makârib," or high-priests of Saba, showing that the original state must have been a theocracy, and the name Saba like Assur that of a god.

But the inscriptions reveal this unexpected fact, that

[1] The facts of this section are taken mainly from two articles by Professor Sayce in the *Contemporary Review*, entitled "Ancient Arabia" and "Results of Oriental Archæology."

old as the kingdom of Saba may be, it was not the oldest in this district, but rose to power on the decay of a still older nation, whose name of Ma'in has come down to us in dim traditions under the classical form of Minæans.

We are already acquainted with the names of thirty-two Minæan kings, and as comparatively few inscriptions have as yet been discovered, many more will doubtless be found. Among those known, however, are some which show that the authority of the Minæan kings was not confined to their original seat in the south, but extended over all Arabia and up to the frontiers of Syria and of Egypt. Three names of these kings have been found at Teima, the Tema of the Old Testament, on the road to Damascus and Sinai; and a votive tablet from Southern Arabia is inscribed by its authors, "in gratitude to Athtar (Istar or Astarte), for their rescue in the war between the ruler of the South and the ruler of the North, and in the conflict between Madhi and Egypt, and for their safe return to their own city of Quarnu." The authors of this inscription describe themselves as being under the Minæan King "Abi-yadá Yathi," and being "governors of Tsar and Ashur and the further bank of the river."

Tsar is often mentioned in the Egyptian monuments as a frontier fortress on the Arabian side of what is now the Suez Canal, while another inscription mentions Gaza, and shows that the authority of the Minæan rulers extended to Edom, and came into close contact with Palestine and the surrounding tribes. Doubtless the protection of trade-routes was a main cause of this extension of fortified posts and wealthy cities, over such a wide extent of territory. From the most ancient

times there has always been a stream of traffic between East and West, flowing partly by the Red Sea and Persian Gulf, and from the ends of these Eastern seas to the Mediterranean, and partly by caravan routes across Asia. The possession of one of these routes by Solomon in alliance with Tyre, led to the ephemeral prosperity of the Jewish kingdom at a much later period; and the wars waged between Egyptians, Assyrians, and Hittites were doubtless influenced to a considerable extent by the desire to command these great lines of commerce.

Arabia stood in a position of great advantage as regards this international commerce, being a half-way house between East and West, protected from enemies by impassable deserts, and with inland and sheltered seas in every direction. Its southern provinces also had the advantage of being the great, and in some cases the sole, producers of commodities of great value and in constant request. Frankincense and other spices were indispensable in temples where bloody sacrifices formed part of the religion. The atmosphere of Solomon's temple must have been that of a sickening slaughter-house, and the fumes of incense could alone enable the priests and worshippers to support it. This would apply to thousands of other temples through Asia, and doubtless the palaces of kings and nobles suffered from uncleanliness and insanitary arrangements, and required an antidote to evil smells to make them endurable. The consumption of incense must therefore have been immense in the ancient world, and it is not easy to see where it could have been derived from except from the regions which exhaled

"Sabæan odours from the shores of Araby the blest."

The next interesting result, however, of these Arabian discoveries is, that they disclose not only a civilized and commercial kingdom at a remote antiquity, but that they show us a literary people, who had their own alphabet and system of writing at a date comparable to that of Egyptian hieroglyphics and Chaldæan cuneiforms, and long prior to the oldest known inscription in Phœnician characters. The first Arabian inscriptions were discovered and copied by Seetzen in 1810, and were classed together as Himyaritic, from Himyar, the country of the classical Homerites. It was soon discovered that the language was Semitic, and that the alphabet resembled that of the Ethiopic or Gheez, and was a modification of the Phœnician written vertically instead of horizontally. Further discoveries and researches have led to the result, which is principally due to Dr. Glaser, that the so-called Himyaritic inscriptions fell into two groups, one of which is distinctly older than the other, containing fuller and more primitive grammatical forms. These are Minæan, while the inscriptions in the later dialect are Sabæan. It is apparent, therefore, that the Minæan rule and literature must have preceded those of Sabæa by a time sufficiently long to have allowed for considerable changes both in words and grammar to have grown up, not by foreign conquest, but by evolution among the tribes of the same race within Arabia itself. Now the Sabæan kingdom can be traced back with considerable certainty to the time of Solomon, 1000 years B.C., and had in all probability existed many centuries before; while we have already a list of thirty-three Minæan kings, which number will doubtless be enlarged by further discoveries; and the oldest inscriptions point, as in Egypt, to an antecedent

state of commerce and civilization. It is evident therefore that Arabia must be classed with Egypt and Chaldæa as one of the countries which point to the existence of highly civilized communities in an extreme antiquity; and that it is by no means impossible that the records of Southern Arabia may ultimately be carried back as far as those of Sargon I., or even of Menes.

This is the more probable as several ancient traditions point to Southern Arabia, and possibly to the adjoining coast of North-eastern Africa, as the source of the earliest civilizations. Thus Oannes is said to have come up from the Persian Gulf and taught the Chaldæans the first arts of civilization. The Phœnicians traced their origin to the Bahrein Islands in the same Gulf. The Egyptians looked with reverence and respect to Punt, which is generally believed to have meant Arabia Felix and Somali-land; and they placed the origin of their letters and civilization, not in Upper or Lower, but in Middle Egypt, at Abydos where Thoth and Osiris were said to have reigned, where the Nile is only separated from the Red Sea by a narrow land pass which was long one of the principal commercial routes between Arabia and Egypt.

The close connection between Egypt and Punt in early times is confirmed by the terms of respect in which Punt is spoken of in Egyptian inscriptions, contrasting with the epithets of "barbarian" and "vile," which are applied to other surrounding nations such as the Hittites, Libyans, and Negroes. And the celebrated equipment of a fleet by the great queen Hatasu of the nineteenth dynasty, to make a commercial voyage to Punt, and its return with a rich freight, and the king

and queen of the country with offerings, on a visit to the Pharaoh, reminding one of the visit of the Queen of Sheba to Solomon, shows that the two nations were on friendly terms, and that the Red Sea and opposite coast of Africa had been navigated from a very early period. The physical type also of the chiefs of Punt as depicted on the Egyptian monuments is very like that



CHIEF OF PUNT AND TWO MEN.

of the aristocratic type of the earliest known Egyptian portraits.

One point seems sufficiently clear; that wherever may have been the original seat of the Aryans, that of the Semites must be placed in Arabia. Everywhere else we can trace them as an immigrating or invading people, who found prior populations of different race,

but in Arabia they seem to have been aboriginal. Thus in Chaldæa and Assyria, the Semites are represented in the earliest history and traditions as coming from the South, partly by the Persian Gulf and partly across the Arabian and Syrian deserts, and by degrees amalgamating with and superseding the previous Accadian population. In Egypt the Semitic element was a late importation which never permanently affected the old Egyptian civilization. In Syria and Palestine, the Phœnicians, Canaanites, and Hebrews were all immigrants from the Persian Gulf or Arabian frontier, either directly or through the medium of Egypt and Assyria, who did not even pretend to be the earliest inhabitants, but found other races, as the Amorites and Hittites, in possession, whose traditions again went back to barbarous aborigines of Zammumim, who seemed to them to stammer their unintelligible language. The position of Semites in the Moslem world in Asia and Africa is distinctly due to the conquests of the Arab Mohammed and the spread of his religion.

In Arabia alone we find Semites and Semites only, from the very beginning, and the peculiar language and character of the race must have been first developed in the growing civilization which preceded the ancient Minæan Empire, probably as the later stone age was passing into that of metal, and the primitive state of hunters and fishers into the higher social level of agriculturists and traders.

To return from these remote speculations to a subject of more immediate interest, the discovery of these Minæan inscriptions shows the existence of an alphabet older than that of the earliest known inscriptions in Phœnician letters. The alphabets of Greece, Rome, and

all modern nations are beyond all doubt derived from that of Phœnicia, and it has been generally supposed that this was formed from an abridgment of the hieroglyphics or hieratics of Egypt. But the Minæan inscriptions raise the question whether the Phœnician alphabet itself and the kindred alphabets of Palestine, Syria, and other countries near the Arabian frontier were not derived from Arabia rather than from Egypt. The Minæan language and letters are certainly older forms of Semitic speech and writing, and it seems more likely that they should have been adopted, with dialectic variations, by other Semitic races, with whom Arabia had a long coterminous position and constant intercourse by caravans, than that these races should have remained totally ignorant of letters, until Phœnicia borrowed them from Egypt. Moreover, as Professor Sayce shows, this theory gives a better explanation of the names of the Phœnician letters, which in many cases have no resemblance to the symbols which denote them. Thus the first letter Aleph, "an ox," really resembles the head of that animal in the Minæan inscriptions, while no likeness can be traced to any Egyptian hieroglyph used for 'a.'

Should these speculations be confirmed, they will considerably modify our conceptions as to the early history of the Old Testament. It would seem that Canaan, before the Israelite invasion, was already a settled and civilized country, with a distinct alphabet and literature of its own, older than those of Phœnicia; and it may be hoped that further researches in Arabia and Palestine may disclose records, buried under the ruins of ancient cities, which may vie in antiquity with those of Egypt and Chaldæa.

But in the meantime we must be content to rely on the records and monuments of these two countries, and especially those of Egypt, as giving us the longest standard of genuine historical time, extending backwards about 7000 years from the present century.

TROY AND MYCENÆ.

The existence of civilization and commerce among other ancient nations which have disappeared from history, have received a remarkable confirmation from the excavations of Dr. Schliemann at Troy and Mycenæ. The site of Troy has been identified with the mound of Hissarlik which formed its citadel, and the accuracy of the descriptions in Homer's *Iliad* has been wonderfully verified. The ruins of seven successive towns, superimposed one on the other, have been found in excavating the mass of *débris* down to the bed rock. The lowest of these was a settlement apparently of the later neolithic or earliest bronze ages, while the next, built on the ruins of the first at a level of eleven to twenty feet above it, was a strongly fortified city, which had been destroyed by fire, and which answers almost exactly to the description of Homer's Troy. The citadel hill had been inclosed by massive walls, and was surmounted by a stately palace and other buildings, the foundations of which still remain. It was protected on one side by the river Scamander, and on the other the city extended over the plain at the foot of the citadel, and was itself also surrounded by a strong wall, of which a small fragment remains. The third, fourth, fifth, and sixth settlements consisted of mean huts or dwelling-houses built of quarry stones and clay, and the seventh, or uppermost, was the Græco-Roman Ilion of

classical writers. The main interest therefore centres in the second city, which, from the articles found in it and the many repairs and alterations of the walls and buildings, must have been for a long time the seat of a flourishing and powerful people, enriched by commerce, and far advanced in the industrial and fine arts.

Notwithstanding the destruction and probable plunder of the city, the quantity of gold and silver found was very considerable, chiefly in the vaults or casemates built into the foundations of the walls, which were covered up with *débris* when the citadel was burnt, and the roofs and upper buildings fell in. In one place alone Dr. Schliemann found the celebrated treasure containing sixty articles of gold and silver, which had evidently been packed together in a square wooden box, which had disappeared with the intense heat. The nature of these citadels shows a high degree not only of civilization but of wealth and luxury, as proved by the skill and taste of jeweller's work displayed in the female ornaments, which comprise three sumptuous diadems, ear-rings, hairpins, and bracelets.

There are also numerous vases and cups of terra-cotta, and a few of gold and silver, and bars of silver which have every appearance of being used for money, being of the same form and weight. The fragments of ordinary pottery are innumerable, the finer and more perfect vases are often of a graceful form, and moulded into shapes of animals or human heads, and decorated with spirals, rosettes, and other ornaments of the type which is more fully illustrated as that of the pre-Hellenic civilization of Mycenæ.

For Schliemann has not only restored the historic reality of Priam and the city of Troy, but also that of

Agamemnon "King of men," and his capital of Mycenæ. The result of his explorations on this site has been to show that a still larger and more wealthy city existed here for a longer period than Troy, and which affected a more extensive area, for its peculiar art and civilization were widely diffused over the whole of the eastern coast of Greece and the adjoining islands, and specimens of it have been found on the opposite coasts of Asia Minor, as we have seen at Troy, and as far off as Cyprus and Egypt, where they were doubtless carried by commerce. The existence of an extensive commerce is proved by the profusion of gold which has been found in the vaults and tombs buried under the *débris* of the ruined city, for gold is not a native product, but must have been obtained from abroad, as also the bronze, copper, and tin required for the manufacture of weapons. The city also evidently owed its importance to its situation on the Isthmus of Corinth, commanding the trade route between the Gulfs of Argos and of Corinth, and thus connecting the Eastern Mediterranean and Asia with the Western Sea and Europe. The still older city of Tiryns, of which Mycenæ was probably an offshoot, stood nearly on the shore of the eastern gulf, while Mycenæ was in the middle of the isthmus about eight miles from either gulf. Tiryns was also explored by Schliemann, and showed the same plans of buildings and fortifications as Troy and Mycenæ, and the same class of relics, only less extensive and more archaic than those of Mycenæ, which was evidently the more important city during the golden period of this great Mycenæan civilization.

Those who wish to pursue this interesting subject further will find an admirable account of it in the

English translation of Schliemann's works and essays, with a full description of each exploration, and numerous illustrations of the buildings and articles found. For my present object I only refer to it as an illustration of the position that Egypt and Chaldæa do not stand alone in presenting proofs of high antiquity, but that other nations, such as the Chinese, the Hittites, the Minæans of Southern Arabia, the Mycenæans, Trojans, Lydians, Phrygians, Cretans, and doubtless many others, also existed as populous, powerful, and civilized states at a time long antecedent to the dawn of classical history. If these ancient empires and civilization became so completely forgotten, or survived only in dim traditions of myths and poetical legends, the reason seems to be that they kept no written records, or at any rate none in the form of enduring inscriptions. We know ancient Egypt from its hieroglyphics, and from Manetho's history; Chaldæa and Assyria from the cuneiform writing on clay tablets; China, up to about 2500 B.C., from its written histories; but it is singular that the other ancient civilizations have left few or no inscriptions. This is the more remarkable in the case of the Mycenæan cities explored by Dr. Schliemann, for their date is not so very remote, their jewellery, vases, and signet-rings are profusely decorated, their dead interred in stately tombs with large quantities of gold and silver, and yet not a single instance has been found of anything resembling alphabetical or symbolical writing, or of any form of inscription. Atreus, Agamemnon, and a long line of kings lie in their stately tombs, with their gold masks and breastplates, and their arms and treasures about them, without a word or sign to distinguish father from son, ancestor from successor.

Their queens are buried in their robes of cloth of gold, their tiaras, necklaces, bracelets, rings and jewels, equally without a word to say which was Clytemnestra and which Electra. How different is this from the Egyptian royal tombs and palaces, where pompous inscriptions record the genealogies of kings for fifty or more generations, and the first care of every Pharaoh is to carve the annals of his exploits on imperishable granite!

Another strange peculiarity of this Mycenæan civilization is the absence of religious subjects. Images and pictures of their gods abound on all the monuments of Egypt and Chaldæa. Every frieze and tablet, every seal and scarabæus, is full of representations of Osiris and Isis, of Thoth and Ammon; or in Chaldæa of Bel, Merodach, and Istar, and their other pantheon of gods, each under its own symbolical form, and innumerable little idols or figurines attested their hold on the population. But at Troy, Tiryns, and Mycenæ there is nothing of the sort. Animals and mortal men are freely depicted on the vases, and moulded as ornaments for domestic utensils, but religious subjects are so scarce that it is even doubtful whether a few scanty specimens bear this character or not.

There is a pit in the central court of the palace at Mycenæ which has been thought to be a sacrificial pit under an altar, but this rather because such an altar is described in Homer, than for any positive evidence. There are also a very few figurines of terra-cotta, which have been thought to be idols, because they are too clumsy to be taken for representations of the human figure by such skilled artists, and because they bear some sort of resemblance to the rude Phœnician idols of the goddess Astarte. But, with this exception, there is

nothing at Troy or Mycenæ to indicate a belief in the Homeric or any other mythology.

As a question of dates, we know that the supremacy of Mycenæ and its civilization came to an end with the invasion of the Dorians, which is generally placed about 1000 B.C. We know also that it must have had a long existence, but for anything approaching to a date we must refer to the few traces which connect it with Egypt. A scarabæus was found at Mycenæ with the name of Queen Ti engraved on it who lived in the thirteenth century B.C. Mycenæan vases have been found of the older type with lines and spirals, in Egyptian tombs of about 1400 B.C., and of the later type with animals in tombs of about 1100 B.C., and Mr. Flinders Petrie, by whom they were discovered, says that any error in these dates cannot exceed 100 years. Mycenæan pottery has also been found at Thera under volcanic ashes which geologists say were thrown up about 1500 B.C.

We are pretty safe, therefore, in supposing this Mycenæan civilization to have flourished between the limits of 1600 and 1000 B.C. In this case it must have been contemporary with the great events of the New Empire in Egypt which followed on the expulsion of the Hyksos; with the victorious campaigns of Ahmes and Thotmes which carried the Egyptian arms to the Euphrates and to the Black Sea; with the rise of the Hittite power which extended far and wide over Asia Minor, and contended on equal terms in Syria with Ramses II.; and with the coalition of naval powers which on two occasions, in the reigns of Menepthah and Ramses III., commanded the sea and invaded Egypt. The mention of Achæans among the allies whose fleet was defeated in the sea-fight on the Pelusian mouth of

the Nile, depicted on the triumphal tablet of Ramses III., becomes an historical reality, and some of the hostile galleys may well have been those of a predecessor of Agamemnon.

It is doubtful, however, whether these Mycenæans or Achæans can be properly called Greek. Both their civilization and art are Asiatic rather than Hellenic; they have left no clue to their language in any writing



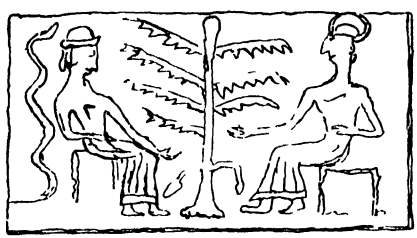
QUEEN SENDING WARRIOR TO BATTLE.
(From "Warrior Vase," Mycenæ Schliemann)

or inscription; and the type of the race, as far as we can judge of it from paintings on the vases, was totally unlike that of classical Greece.

In one instance alone the human form is represented on the vases found at Mycenæ, viz. on that known as the great "warrior vase." This is a large amphora, with a broad band of figures round it, representing on one side attacking warriors hurling spears, and on the other a queen, or female figure, sending out warriors to

repel them. The vase is broken, but there are in all eight figures with their heads nearly perfect, and all of the same type, which is such an extraordinary one, that I annex a copy of the woman and one of the warriors.

One asks oneself in amazement, can this swine-snouted caricature of humanity be the divine Helen, whose beauty set contending nations in arms, and even as a shade made Faust immortal with a kiss; and this other, Agamemnon, king of men, or the god-like Achilles? And yet certainly they must be faces which the dwellers in Mycenæ either copied from nature, or introduced



ADAM, EVE, AND THE SERPENT. (From a Babylonian cylinder)

as conventional ideals. They cannot be taken as first childish attempts at drawing the human face, like those of the palæolithic savages of the grottos of the Vezere, for they are the work of advanced artists who, in other cases, drew beautiful decorations and life-like animals; and in these figures the attitudes, dress, and armour show that they could draw with spirit and accuracy, and give a faithful representation of details when they chose to do so.

The only approach to a clue I can find for an explanation of these extraordinary Mycenæan faces is afforded by the picture of Adam and Eve, with the

Serpent and Tree of Life, on an old Babylonian cylinder in the British Museum.

It will be seen at once that there is a considerable resemblance between the two types of countenance, and it strikes me as possible that, as Mycenæan art was so largely derived from Babylonian, this may have become a conventional type for the first human ancestors, in which it was thought by the Mycenæan copyists that heroes and kings ought to be represented.

This, however, is a mere conjecture, and all we can infer with any certainty from Troy and Mycenæ is, that a considerable civilization and commerce must have prevailed in the Eastern Mediterranean at a date long prior to the commencement of classical history, though much later than that of the older records of Egypt and Chaldæa.

CHAPTER IV.

ANCIENT RELIGIONS.

Egypt—Book of the Dead—Its Morality—Metaphysical Character—Origins of Religions—Ghosts—Animism—Astronomy and Astrology—Morality—Pantheism and Polytheism—Egyptian Ideas of Future Life and Judgment—Egyptian Genesis—Divine Emanations—Plurality of Gods and Animal Worship—Sun Worship and Solar Myths—Knowledge of Astronomy—Orientation of Pyramids—Theory of Future Life—the Ka—the Soul—Confession of Faith before Osiris.

Chaldæan Religion—Oldest Form Accadian—Shamanism—Growth of Philosophical Religion—Astronomy and Astrology—Accadian Trinities—Anu, Mull-il, Ea—Twelve great Gods—Bel-Ishtar—Merodach — Assur — Pantheism — Wordsworth — Magic and Omens—Penitential Psalms—Conclusions from.

THE religious ideas of a nation afford a pretty good test of the antiquity of its civilization. Thus, if 5000 years hence all traces of England being lost except a copy of the Athanasian Creed, it would be a legitimate inference that the race who retained such a creed as part of their ritual, had long passed the primitive period of fetichism or animism, had schools of priests and philosophers, and that their religion had developed into a stage of subtle and profound metaphysical speculations. If this would be true in the hypothetical case of England, it is equally true in the actual case of Egypt. In its sacred book, the Todtenbuch, or Book of the Dead, which we meet with at the earliest periods of Egyptian history,

we find conceptions of the Great First Cause of the Universe, which are in many respects identical with those of Athanasius. In fact, with some slight alterations of expression, his creed might be a chapter of the Todtenbuch, and it is clear that in his controversy with Arius he got his inspiration from his native Alexandria, and from the old Egyptian religion stripped of its polytheistic and idolatrous elements, and adapted to the modern ideas of the Neo-Platonic philosophy and of Christianity.

The Egyptian religion, as disclosed to us in the earliest records, is one which of itself proves its great antiquity. There is an extensive literature of a religious character; the Book of the Dead, which contains many of the principal prayers and hymns, and descriptions of the Last Judgment, is already a sacred book. Portions of it are certainly older than the time of Menes, and it had already acquired such an authority in the times of Pepi, Teta, and Unas, of the sixth dynasty, about 3800 B.C., that the inner walls of their pyramids are covered with hieroglyphics of chapters taken from it. From this time forward, almost every tomb and mummy-case contains quotations from it, just as passages of the Bible are quoted on our own gravestones. The Book of Isis, and hymns to various gods, are of the same nature and early date; and in addition to these, there are ethical treatises, ascribed to kings of the oldest dynasties, as well as works on medicine, geometry, mensuration, and arithmetic. Education was very general, as is proved by the fact that the workmen at the mines of Wady Magarah could scrawl hieroglyphic inscriptions on the walls of their tunnels, and on their blocks of dressed stone. Birch, in his *Ancient History of Egypt from*

the Monuments, which I prefer to quote from as, being published by the Society for Promoting Christian Knowledge, it cannot be suspected of any bias to discredit orthodoxy, says that, "In their moral law the Egyptians followed the same precepts as the Decalogue (ascribed to Moses 2500 years later), and enumerated treason, murder, adultery, theft, and the practice of magic as crimes of the deepest dye." The position of women is one of the surest tests of an advanced civilization; for in rude times, and among savage races, force reigns supreme, and the weaker sex is always the slave or drudge of the stronger one. It is only when intellectual and moral considerations are firmly established that the claims of women to an equality begin to be recognized. Now in the earliest records of domestic and political life in Egypt, we find this equality more fully recognized than it is perhaps among ourselves in the nineteenth century. Quoting again from Birch, "The Egyptian woman appears always as the equal and companion of her father, brethren, and husband. She was never secluded in a harem, sat at meals with them, had equal rights before the law, served in the priesthood, and even mounted the throne."

In fact the state of civilization in Egypt 6000 years ago appears to have been higher in all essential respects than it has ever been since, or is now, in any Asiatic and in many European countries. And it has every appearance of being indigenous, and having grown up on the soil. There are no traces in the oldest traditions of any foreign importation, such as we find in the early traditions of other countries. There is no fish-man who comes up out of the Persian Gulf and teaches the Chaldæans the first elements of civilization; no Cadmus

who teaches the Greeks their first letters; no Manco-Capac who lands on the shore of Peru. On the contrary, all the Egyptian traditions are of Egyptian gods, like Osiris and Thoth, who reigned in the valley of the Nile, and invented hieroglyphics and other arts.

These are lost in a fabulous antiquity, and the only trace of a link to connect the historical Egyptians with the neolithic races whose remains are found in abundance in the form of flint knives and arrows, and are brought up by borings through thick deposits of Nile mud, or the still older palæolithic savages, whose rude implements were found by General Pitt-Rivers and other explorers in quaternary gravels near Thebes of geological antiquity, is furnished by the use of a stone knife to make the first incision on the corpse in turning it into a mummy, and by the animal worship, which may have been a relic of primitive fetichism and totemism.

The highly metaphysical nature of the Egyptian creed is another conclusive proof of the antiquity of the religion. Among existing races we find similar religions corresponding to similar stages of civilization. With the very rudest races, religion consists mainly of ghost worship and animism. Herbert Spencer has shown how dreams lead to the belief that man consists of two elements, a body and a spirit, or shadowy self, which wanders forth in sleep, meets with strange adventures, and returns when the body awakes. In the longer sleep of death, this shadowy self becomes a ghost which haunts its old abodes and former associates, mostly with an evil intent, and which has to be deceived or propitiated, to prevent it from doing mischief. Hence the sacrifices and offerings, and the many devices for cheating the ghost by carrying the dead body by

devious paths to some safe locality. Hence also the superstitious dread of evil spirits, and the interment with the corpse of food and implements to induce the ghost to remain tranquilly in the grave, or to set out comfortably on its journey to another world.

Animism is another tap-root of savage superstition. As the child sees life in the doll, so the savage sees life in every object, animate or inanimate, which comes in contact with him, and affects his existence. Animals, and even stocks and stones, are supposed to have souls, and who knows that these may not be the souls of departed ancestors, and have some mysterious power of helping or of hurting him? In any case the safer plan is to propitiate them by worship and sacrifice.

From these rude beginnings we see nations as they advance in civilization rising to higher conceptions, developing their ghosts into gods, and confining their operations to the greater phenomena of Nature, such as the sky, the earth, the sea, the sun, the stars, storms, seasons, thunder, and the like. And by degrees the unity of Nature begins to be felt by the higher minds; priestly castes are established who have leisure for meditation; ideas are transmitted from generation to generation; and the vague and primitive Nature worship passes into the phase of philosophical and scientific religion. The popular rites and superstitions linger on with the mass of the population, but an inner circle of hereditary priests refines and elevates them, and begins to ask for a solution of the great problems of the universe; what it means, and how it was created; the mystery of good and evil; man's origin, future life and destiny; and all the questions which, down to the

present day, are asked though never answered by the higher minds of the higher races of civilized man. In this stage of religious development metaphysical speculations occupy a foremost place. Priests of Heliopolis, Magi of Eridhu and of Ur, reasoned like Christian fathers and Milton's devils of

> "Fate, free-will, foreknowledge absolute,"

and like them

> "Found no end, in wandering mazes lost."

Theories of theism and pantheism, of creations and incarnations, of Trinities and atonements, of polarities between good and evil, free-will and necessity, were argued and answered, now in one direction and now in another. Science contributed its share, sometimes in the form of crude cosmogonies and first attempts at ethnology, but principally through the medium of astronomy. An important function of the priests was to form a calendar, predict the seasons, and regulate the holding of religious rites at the proper times. Hence the course of the heavens was carefully watched, the stars were mapped out into constellations, through which the progress of the sun and planets was recorded; and myths sprang into existence based on the sun's daily rising and setting, and its annual journey through the seasons and the signs of the zodiac. Mixed up with astronomy was astrology, which, watching the sun, moon, and five planets, inferred life from motion, and recognized Gods exerting a divine influence on human events. The sacred character of the priests was confirmed by the popular conviction that they were at the same time prophets and magicians, and that they alone

were able to interpret the will of personified powers of Nature, and influence them for good or evil.

The element of morality is one of the latest to appear. It is only after a long progress in civilization that ideas of personal sin and righteousness, of an overruling justice and goodness, of future rewards and punishments, are developed from the cruder conceptions and superstitious observances of earlier times. It was a long road from the jealous and savage local god of the Hebrew tribes, who smelt the sweet savour of burnt sacrifices and was pleased, and who commanded the extermination of enemies, and the slaughter of women and children, to the Supreme Jehovah, who loved justice and mercy better than the blood of bulls and rams. It is one great merit of the Bible, intelligently read, that it records so clearly the growth and evolution of moral ideas, from a plane almost identical with that of the Red Indians, to the supreme height of the Sermon on the Mount and St. Paul's definition of charity.

There is one phenomenon which appears very commonly in these ancient religions, that of degeneration. After having risen to a certain height of pure and lofty conception they cease to advance, branch out into fanciful fables accompanied by cruel and immoral rites, and finally decay and perish. This is an inevitable consequence of the law of birth, growth, maturity, decay and death, which underlies all existence.

"The old order changes, giving place to new."

Environment changes, and religions, laws, and social institutions change with it. Empires rise and fall, old civilizations disappear, old creeds become incredible, and often, for a time, the course of humanity seems to be

retrograde. But as the flowing tide rises, though the successive waves on the shore advance and recede, evolution, or the law of progress, in the long run prevails, and amidst the many oscillations of temporary conditions, carries the human race ever upwards towards higher things.

In the case of ancient religions it is easy to see how this process of degeneration is carried out. Priests who were the pioneers of progress, and leaders of advanced thought, became first conservatives, and then obscurantists. Pantheistic conceptions, and personifications of divine attributes, lead to polytheism. As religions become popular, and pass from the learned few to the ignorant many, they become vulgarized, and the real meaning of myths and symbols is either lost or confined to a select inner circle.

But for my present purpose, which is mainly chronological, these vicissitudes in religious beliefs are not important. If, at the earliest date to which authentic history extends, we find a national religion which has already passed from the primitive into the metaphysical stage, and which embodies abstract ideas, astronomical observations, and a high and pure code of morals, it is a legitimate inference that it is the outcome of a long antecedent era of civilization. This is eminently the case with regard to the ancient religions of Egypt and Chaldæa.

The ancient Egyptians were the most religious people ever known. Their thoughts were so fixed on a future life that, as Herodotus says, they looked upon their houses as mere temporary inns, and their tombs as their true permanent homes. The idea of an immediate day of judgment for each individual soul after death

was so fixed in their minds that it exercised a constant practical influence on their life and conduct. Piety to the gods, loyalty to the throne, obedience to superiors, justice and mercy to inferiors, and observance of all the principal moral laws, and especially that of truthfulness, were enforced by the conviction that no sooner had the breath departed from the body, and it had been deposited as a mummy, with its Ka or second shadowy self, in the tomb, than the soul would have to appear before the supreme judge



JUDGMENT OF THE SOUL BY OSIRIS.—WEIGHING GOOD AND BAD DEEDS.
(From Champollion's *Egypt.*)

Osiris, and the forty-two heavenly jurors, where it would have to confess the naked truth, and be tried and rewarded or punished according to its merits. It is very interesting, therefore, to learn what the religion was which had taken such a firm hold of the minds of an entire nation, and which maintained that hold for the best part of 5000 years.

Our authority for the nature of this religion is derived mainly from the Todtenbuch or Book of the Dead, which was the Egyptian bible. This sacred Book was of immense antiquity, and much of it was certainly

in existence before the time of Menes. We know it from the multiplied copies which were frequently deposited in tombs, and from the innumerable extracts and quotations which appear on almost every mummy-case and sarcophagus, as well as from the many manuscripts of works on religious subjects which have been preserved in papyri.

The fundamental idea was that of a primitive ocean, or, if you like to call it chaos, of nebulous matter without form and void, and of a one infinite and eternal God who evolved himself and the Universe from his own essence. He is called in the Todtenbuch "the one only being, the sole Creator, unchangeable in his infinite perfection, present in all time, past and future, everywhere and yet nowhere." But although one in essence, God is not one in person. He exists as Father, but reproduces himself under another aspect as Mother, and under a third as Son. This Trinity is three and yet one, and has all the attributes of the one—infinity, eternity, and omnipotence. Thus far the Athanasian Creed might be a chapter of the Todtenbuch, and it is very evident where the Alexandrian saint got those subtle metaphysical ideas, which are so opposed to the rigid monotheistic creeds of Judaism and Mahometanism.

But the Egyptian religion was more logical, and carried these ideas much further than an original Trinity. It is evident that if we admit the two fundamental ideas, 1st, that God is the only real existence, author of and identical with the universe; 2nd, that this incomprehensible essence or First Cause can be made more comprehensible by personifying his various qualities and manifestations, there is no reason why we should stop at three. If we admit a Trinity of Father,

Mother, and Son, why not admit a daughter and other descendants; or if you personify the Power to make a universe, the Knowledge how to make it, and the Will to do it, as Father, Son, and Holy Ghost, why not the Benevolence to do it well, the Malevolence to do it badly, and a hundred other attributes which metaphysical ingenuity can devise to account for the complication of the known, and the mysteries of the unknown facts of existence?

The Egyptian priests accepted this view, and admitted a whole Pantheon of secondary gods who were either personifications of different attributes of the Supreme God, or separate portions of the one Divine Essence. Thus Ammon was God considered in his attribute of the first Generative power; Pthah the supreme Artist who fashioned all things wisely; Osiris the good and benevolent aspect of the Deity; Set or Typhon his opposite or the Author of Evil, and so on. And once personified, these attributes soon came to be considered as separate beings; to have a female principle or wives added to them, and to be worshipped as the patron gods of separate temples and provinces. Finally, the pantheistic idea became so prevalent, and that of separate personifications of the Deity was carried so far, that portions of the Divine essence were supposed to be incarnated in the sun and heavenly bodies, in the Pharaoh and his family, and even in bulls, cats, and other sacred animals. In the latter case it may be a question whether we do not see a survival of the old superstitious fetiches and totems of semi-savage times, adopted by the priests into their theology, as so many pagan superstitions were by the early Christian missionaries. At any rate such was the result, a mixture of the

most childish and absurd forms of popular superstition, with a highly philosophical and moral creed, held by the educated classes and stamped upon the mass of the nation by the firmly established belief in a future life and day of judgment.

Among the more philosophical articles of this creed, astronomy assumed a prominent place from a very early date. The sun, it is true, was described in the original Cosmogony as having been called into existence by the word of the Supreme God, but it came to be taken as his visible representative, and finally worshipped as a god itself. Its different phases were studied and received different names, as Horus when on the horizon rising or setting, Ra in its midday splendour, Osiris during its journey in the night through the underground world of darkness. Of these Ra naturally had the pre-eminence; the title of Pharaoh, or Pi-ra, was that given to kings, who were assumed to be semi-divine beings descended from the Sun. The Osiris myth which was the basis of the national belief in a future life and day of judgment was clearly solar. Egyptian astronomy, like that of the Chaldees and all early nations, assumed that the sky was a crystal dome or firmament which separated the waters of the upper world from the earth and waters below, and corresponded with a similar nether world of darkness below the earth. The Sun was born or rose into the upper world every morning, waxed in strength and glory as his bark navigated the upper waters until noon, then declined and finally sank into the nether world or died, slain by an envious Typhon, but to be born again next morning after traversing the perils and encountering the demons of the realm of darkness. The same idea was repeated by the annual course of the

sun through Spring, Summer, Autumn, and Winter, and it translated itself as applied to man into the ideas of birth, growth, manhood, decline, and death, to be followed by a sojourn in Hades, a day of judgment, and a resurrection.

The Egyptian religion, however, seems never to have been so largely astronomical as that of Chaldæa, and to have concentrated itself mainly on the Sun. The planets and signs of the zodiac did not, as with the Chaldees, afford a principal element of their sacred books and mythologies. The Egyptian priests had doubtless long studied astronomy; they had watched the stars, traced the annual course of the sun, divided the year into months and the circle into 360°, and constructed calendars for bringing the civil into correspondence with the sidereal year. They not only had intercalated the five supplemental days, bringing the duration of the year from 360 to 365, but they had invented a sothic cycle for the odd quarter of a day, by which at the end of every 1460 years a year was added, and the sun brought back to rise on the first day of the first month of Thoth in the same place in the heavens, determined by the heliacal risings of the brightest of the stars, Sothis or Sirius.

But they applied this knowledge, which must have been gathered from long observations, mainly to practical purposes, such as the reform of the calendar and the orientation of the pyramids, temples, and tombs, rather than to mythology. The idea of a future life, which took such a firm hold of all classes of ancient Egypt, is that to which we are indebted for the preservation of these wonderful records of the remote past. The theory was that man consisted of three parts; the body

or ordinary living man; the Ka or Double, which was a sort of shadowy self which came out of the body and returned to it as in dreams; and the soul, a still more subtle essence, which at death went to the gods, was judged, and either rewarded for its merits by living with them in heaven, or punished for its sins by being sent to the nether world of torment. But this soul still retained such a connection with its former body as to come down from time to time to visit it; while the Ka or Double retained the old connection so closely as to live habitually in it, only coming out to eat, drink, and repeat the acts of its former life, but incapable of existing without a physical basis in the old body or some likeness of it. The same doctrine of the Double was applied to all animated and even to inanimate objects, so that the shadowy man could come out of his mummy, live in his own shadowy house, feed on shadowy food, be surrounded by shadowy geese, oxen, and other objects of his former possessions. Hence arose the extraordinary care in providing a fitting tomb and preserving the mummy, or, failing the mummy, which in course of time might decay, providing a portrait-statue or painted likeness, which might give a *point d'appui* for the Ka, and a receptacle for the occasional visits of the soul. While these were preserved, conscious personal life was continued beyond the grave, and the good man who went to heaven was immortal. But if these were destroyed and the physical basis perished, the Ka and soul were left without a home, and either perished also, or were left to flit like gibbering ghosts through the world of shadows without a local habitation or a name. The origin of this theory as regards the Ka is easily explained. It is, as Herbert Spencer has conclusively

shown, a natural inference from dreams, and is found everywhere, from interments of the stone period down to the crude beliefs of existing savages. It even survives among many civilized races in the belief in ghosts, and the precautions taken to prevent the Ka's of dead men from returning to haunt their former homes and annoy their posterity. The origin of the third element or soul is not so clear. It may either be a relic of the animism, which among savage races attributes life to every object in nature, or a philosophical deduction of more advanced periods, which sees an universal spirit underlying all creation, and recognizing in man a spark of this spirit which is indestructible, and either migrates into fresh forms, or into fresh spheres of celestial or infernal regions, and is finally absorbed in the great ocean from which it sprang.

It is singular that we find almost the precise form of this Egyptian belief among many existing savage or semi-civilized men separated by wide distances in different quarters of the world. The Negroes of the Gold Coast believe in the same three entities, and they call the soul which exists independently of the man, before his birth and after his death, the Kra, a name which is almost identical with the Egyptian Ka. The Navajos and other tribes of Red Indians have precisely the same belief. It seems probable that as we find it in the earliest Egyptian records, it was a development, evolved through ages of growing civilization by a succession of learned priests, from the primitive fetichism and fear of ghosts of rude ancestors; and in the animal worship and other superstitions of later times we find traces of these primitive beliefs still surviving among the mass of the population. Be this as it may,

this theory of a future life was firmly rooted at the dawn of Egyptian history, and we are indebted to it, and to the dryness of the climate, for the marvellous preservation of records which give us such an intimate acquaintance with the history, the religion, the literature, and the details of a domestic and social life which is distant from our own by an interval of more than 6000 years.

No other nation ever attained to such a vivid and practical belief in a future existence as these ancient Egyptians. Taking merely the material test of money, what an enormous capital must have been expended in pyramids, tombs, and mummies; what a large proportion of his income must every Egyptian of the upper classes have spent in the preparations for a future life; how shadowy and dim does the idea of immortality appear in comparison among the foremost races of the present day!

The elevated moral code of the Todtenbuch is another proof of the great antiquity of Egyptian civilization. Morality is a plant of slow growth which has hardly an existence among rude and primitive tribes, and is only slowly evolved either by contact with superior races or by long ages of settled social order. How many centuries did it take before the crude and ferocious ideas of the Hebrew tribes wandering in the desert or warring with the Canaanites, were transformed into the lofty and humane conceptions of the later prophets, of Hillel and of Jesus! And yet we find all the best maxims of this later morality already existing 5000 years before the Sermon on the Mount, in the Sacred Book of ancient Egypt. The prayer of the soul pleading in the day of judgment before Osiris and the Celestial Jury, which

embodies the idea of moral perfection entertained by the contemporaries of Menes, contains the following articles—

"I have told no lies; committed no frauds; been good to widows; not overtasked servants; not lazy or negligent; done nothing hateful to the gods; been kind to slaves; promoted no strife; caused no one to weep; committed no murder; stolen no offerings to the dead; made no fraudulent gains; seized no lands wrongfully; not tampered with weights and measures; not taken the milk from sucklings; not molested sacred beasts or birds; not cut off or monopolized water-courses; have sown joy and not sorrow; have given food to the hungry, drink to the thirsty, and clothed the naked:

"I am pure, I am pure."

It is evident that such an ideal of life, not imported from foreign sources, but the growth of an internal civilization, must be removed by an enormous time from the cannibal feasts and human sacrifices of the first glimpses of ideas of a future life in the stone ages.

It is to be observed also that the religion of ancient Egypt seems to be of native growth. No trace is to be found, either in record or tradition, of any importation from a foreign source, such as may be seen in the Chaldæan legend of Oannes and other religions of antiquity. On the contrary, all the Egyptian myths and traditions ascribe the invention of religion, arts, and literature, to Thoth, Osiris, Horus, and other native Egyptian gods.

The invention of the art of writing by hieroglyphics affords strong confirmation of this view. It is evidently a development on Egyptian soil, in prehistoric times, of

the picture-writing of a primitive period. The symbols are taken from Egypt and not from foreign objects, and are essentially different from those of the Chaldæan cuneiform, which is the only other form of writing which might possibly compare in point of antiquity with the Egyptian hieroglyphics and hieratic. These were certainly known prior to the time of Menes, and they are the parents of the Phœnician, Hebrew, Greek, and all more modern alphabets.

In all other ancient systems of writing, such as Chaldæan and Chinese, we see the development from the original picture-writing into conventional signs, syllabaries, and finally into ideographs and phonetics; but in the case of Egyptian, when we first get sight of it in the earliest dynasties, it is already fully formed, and undergoes no essential changes during the next 5000 years. Even the hieratic, or cursive hieroglyphic for ordinary purposes, was current in the Old Empire, as is proved by the celebrated Prisse papyrus.

The Chaldæan religion is not so easily described as that of Egypt, for it started from a lower level, and went through more changes in the course of its evolution. In the case of Egypt, the earliest records show us a highly intellectual and moral religion, with only a few traces remaining of primitive barbarism in the form of animal worship, and this religion remained substantially unchanged until the conversion of the country to Christianity. The influences of Semitic and other foreign conquests and intercourse left few traces, and the only serious attempt at a radical religious revolution by the heretic king who endeavoured to dethrone the old Egyptian gods, and substitute a system more nearly monotheistic under the emblem of the winged solar-

disc, produced no permanent effect, and disappeared in one or two generations. But in Chaldæa, Semitic influences prevailed from a very early period, and when we reach the historical periods of the great Babylonian and Assyrian empires, the kings, priests, and nobles were Semite, and the Accadian had become a dead language, which could only be read as we read Latin or Hebrew, by the aid of translations and of grammars and dictionaries. Still its records remained, as the Hebrew Bible does to us, and the sacred books of the old religion and its fundamental ideas were only developed and not changed.

In the background of this Accadian religion we seem to see a much nearer approach than we do in that of Egypt to the primitive superstitions peculiar to the Turanian race. To this day the religion of the semi-barbarous races of that stock is essentially what is called "Shamanism"; a fear of ghosts and goblins, a belief that the universe swarms with myriads of spirits, mostly evil, and that the only escape from them is by the aid of conjuror-priests, who know magical rites and formulas which can baffle their malevolent designs. These incantations, and the interpretation of omens and auguries, occupy a great part of the oldest sacred books, and more than 100 tablets have been already recovered from the great work on Astronomy and Astrology, compiled from them by the priests of Agade, for the royal library of Sargon I. They are for the most part of the most absurd and puerile character; as, for instance, "if a sheep give birth to a lion there will be war"; "if a mare give birth to a dog there will be disaster and famine"; "if a white dog enter a temple its foundation will subsist; if a gray dog, the temple will lose its

possessions," and so on. This character of magicians and soothsayers clung to the Chaldæan priests even down to a later period, and under the Roman Empire Chaldæan rites were identified with sorcery and divination.

But out of this jungle of silly superstitions the elements of an enlightened and philosophical religion had evolved themselves in early Accadian times, and were continually developed as Semitic influences gradually fused themselves with Accadian, and formed the composite races and religions which came to be known in later times as Babylonian and Assyrian. The fundamental principle of this religion was the same as that of Egypt, and of most of the great religions of the East, viz. Pantheism. The great underlying First Cause, or Spirit of the universe, was considered as identical with his manifestations. The subtle metaphysical conceptions which still survive in the Creed of St. Athanasius, were invoked to make the incomprehensible comprehensible, by emanations, incarnations, and personified attributes. These again were attached to the striking phenomena of the universe, the sun, moon, and planets, the earth and sky, the winds, rains, and thunder. And ever as more phenomena were observed more gods were invented, who were thought to be symbols, or partial personifications, of the one great Spirit, and not more inconsistent with his unity than the "and yet there are not three Gods, but one God" of Athanasius.

But the Chaldæan, like the Egyptian priests, did not stop at one Trinity, but invented a whole hierarchy of Trinities, rising one above the other to form the twelve great gods, while below them were an indefinite number of minor gods and goddesses personifying different aspects of natural phenomena, and taken for

the most part from astronomical myths of the sun, moon, planets, and seasons. For the religion of the Chaldees was, even more than that of the Egyptians, based on astronomy and astrology, as may be seen in their national epic of Izdubar, which is simply a solar myth of the passage of the sun through the twelve signs of the zodiac, the last chapter but one being a representation of the passage through the sign of Aquarius, in the fable of a universal deluge.

The first Accadian triad was composed of Anu, Mull-il, and Ea. Anu, or Ana, is the word for heaven, and the god is described as the "Lord of the starry heavens," and "the first-born, the oldest, the Father of the gods." It is the same idea in fact as that expressed by the Sanscrit Varuna, the Greek Ouranus. Mull-il, the next member of this triad, is the god of the abyss and nether world, while Ea is the god of the earth, seas, and rivers, "the Lord of the Deep," and personifies the wise and beneficent side of the Divine Intelligence, the maintainer of order and harmony, the friend of man. Very early with the introduction of Semitic influences Mull-il dropped out of his place in the Trinity, and was superseded by Bel, who was conceived as being the son of Ea, the personification of the active and combative energy which carries out the wise designs of Ea by reducing the chaos to order, creating the sun and heavenly bodies, and directing them in their courses, subduing evil spirits and slaying monsters. His name simply signifies "the Lord," and is applied to other inferior deities as a title of honour, as Bel-Marduk, the Lord Marduk or Merodach, the patron god of Babylon. In this capacity Bel is clearly associated with the mid-day sun, as the emblem of a terrible yet

beneficent power, the enemy of evil spirits and dragons of darkness.

The next triad is more distinctly astronomical. It consists of Uruk the moon, Ud the sun, and Mermer the god of the air, of rain and tempest. These are the old Accadian names, but they are better known by the Semitic translations of Sin, Shamash, and Raman. The next group of gods is purely astronomical, consisting of the five planets, Mars, Mercury, Jupiter, Venus, and Saturn, personified as Nergal, Nebo, Marduk, Ishtar, and Nindar. The number of gods was further increased by introducing the primary polarity of sex, and assigning a wife to each male deity. Thus Belit, or "the Lady," was the wife of Bel, he representing the masculine element of Nature, strength and courage; she the feminine principle of tenderness and maternity. So also Nana the earth was the wife of Anu, the god of the strong heavens; Annunit the moon the wife of Shamash the sun; and Ishtar (Astarte, Astoreth, or Aphrodite), the planet Venus, the Goddess of Love and Beauty, though a great goddess in her own right, was fabled to have had Tammuz or Thammuz, one of the names of the sun, as a husband, whence in later times came the myth of Nature mourning for the sun-god, slain by the envious boar, winter.

But of these only Belit and Istar were admitted into the circle of the twelve great gods, consisting of the two triads and the planets, who held the foremost place in the Chaldæan and Assyrian mythology. Of the minor gods, Meri-dug or Marduk, the Merodach of the Bible, is the most remarkable, for he represents the idea which, some 5000 years later, became the fundamental one of the Christian religion; that of a Son of

God, "being of one substance with the Father," who acts the part of Mediator and friend of man. He is the son of Ea and Damkina, *i. e.* of heaven and earth, and an emanation from the Supreme Spirit considered in its attribute of benevolence. The tablets are full of inscriptions on which he is represented as applying to his father Ea for aid and advice to assist suffering humanity, most commonly by teaching the spells which will drive away the demons who are supposed to be the cause of all misfortunes and illness. It is not surprising, therefore, to find that he and Istar, the lovely goddess, were the favourite deities, and occupied much the same position as Jesus and the Virgin Mary do in the Catholic religion of the present day, while the other deities were local gods attached to separate cities where their temples stood, and where they occupied a position not unlike that of the patron saints and holy relics of which almost every considerable town and cathedral boasted in mediæval Christianity. Thus they rose and fell in rank with the ascendancy or decline of their respective cities, just as Pthah and Ammon did in Egypt according as the seat of empire was at Memphis or Thebes. In one instance only in later times, in Assyria, which had become exclusively Semitic, do we find the idea of one supreme god, who was national and not local, and who overshadowed all other gods, as Jahve in the later days of the Jewish monarchy, and in the conception of the Hebrew prophets, did the gods of the surrounding nations. Assur, the local god of the city of Assur, the first capital of Assyria, became, with the growth of the Assyrian Empire, the one supreme god, in whose name wars were undertaken, cities destroyed, and captives massacred or mutilated. In fact the resemblance is

very close between Assur and the ferocious and vindictive Jahve of the Israelites during the rude times of the Judges. They are both jealous gods, delighting in the massacre and torture of prisoners, women and children, and enjoining the extermination of nations who insult their dignity by worshipping other gods. We almost seem to see, when we read the records of Tiglath-Pileser and Sennacherib and the Books of Judges and of Samuel, the origin of religious wars, and the spirit of cold-blooded cruelty inspired by a gloomy fanaticism, which is so characteristic of the Semitic nature, and which in later times led to the propagation of Mahometanism by the sword. With the Hebrews this conception of a cruel and vindictive Jahve was beaten out of them by persecutions and sufferings, and that of a one merciful god evolved from it, but Assyria went through no such schooling and retained its arrogant prosperity down to the era of its disappearance from history with the fall of Nineveh; but it is easy to see that the course of events might have been different, and Monotheism might have been evolved from the conception of Assur. These, however, are speculations relating to a much later period than the primitive religion with which we are principally concerned.

It is remarkable how many of our modern religious conceptions find an almost exact counterpart in those of this immensely remote period. Incarnations, emanations, atonements, personifications of Divine attributes, are all there, and also the subtle metaphysical theories by which the human intellect, striving to penetrate the mysteries of the unknowable, endeavours to account for the existence of good and evil, and to reconcile multi-

plicity of manifestation with unity of essence. If Wordsworth sings of a

> "sense sublime
> Of something far more deeply interfused,
> Whose dwelling is the light of setting suns,
> And the round ocean and the living air,
> And the blue sky, and in the mind of man;
> A motion and a spirit that impels
> All thinking things, all objects of all thought,
> And rolls through all things,"

he conveys the fundamental idea which was at the bottom of these earliest religions, and which has been perpetuated in the East through their successors, Brahmanism and Buddhism—the idea of Pantheism, or of an universe which is one with its First Cause, and not a mechanical work called into existence from without by a personal Creator.

An ancient priest of Egypt or Chaldæa might have written these verses of the philosophic poet of the nineteenth century, only he would have written Horus or Bel for the "setting sun"; Ea for the "round ocean"; Anur for the "sky," and so on. Side by side with these intellectual and philosophical conceptions of these ancient religions, we find the element of personal piety occupying a place which contrasts wonderfully with the childish and superstitious idea of evil spirits, magical spells, and omens. We read in the same collections of tablets, of mares bringing forth dogs and women lions; and psalms, which in their elevation of moral tone and intensity of personal devotion might readily be mistaken for the Hebrew Psalms attributed to David. There is a large collection of what are known as "the Penitential Psalms," in which the Chaldæan penitent confesses his sins, pleads ignorance,

and sues for mercy, almost in the identical words of the sweet singer of Israel. In one of these, headed "The complaints of the repentant heart," we find such verses as these—

"I eat the food of wrath, and drink the waters of anguish."

* * * * * *

"Oh, my God, my transgressions are very great, very great my sins.

"The Lord in his wrath has overwhelmed me with confusion."

* * * * * *

"I lie on the ground, and none reaches a hand to me. I am silent and in tears, and none takes me by the hand. I cry out, and there is none who hears me."

* * * * * *

"My God, who knowest the unknown,[1] be merciful to me. My Goddess, who knowest the unknown, be merciful."

* * * * * *

"God, who knowest the unknown, in the midst of the stormy waters take me by the hand; my sins are seven times seven, forgive my sins!"

Another hymn is remarkable for its artistic construction. It is in regular strophes, the penitent speaking in each five double lines, to which the priest adds two, supporting his prayer. The whole is in precisely the same style as the similar penitential psalms of the Hebrew Bible, as will appear from the following quotation of one of the strophes from the translation of Zimmern.

[1] Or, as some translators read, "Who knowest that I knew not," *i. e.* that I sinned in ignorance.

Penitent. "I, thy servant, full of sighs call to thee. Whoso is beset with sin, his ardent supplication thou acceptest. If thou lookest on a man with pity, that man liveth. Ruler of all, mistress of mankind, merciful one to whom it is good to turn, who dost receive sighs."

Priest. "While his god and his goddess are wroth with him he calls on thee. Thy countenance turn on him, take hold of his hand."

These hymns are remarkable, both as showing that the sentiments of personal piety and contrition for sin as a thing hateful to the Supreme Being, might be as intense in a polytheistic as in a monotheistic religion; and as illustrating the immense interval of time which must have elapsed before such sentiments could have grown up from the rude beginnings of savage or semi-civilized superstitions. The two oldest religions of the world, those of Egypt and Chaldæa, tell the same story; that of the immense interval which must have elapsed prior to the historical date of 5000 B.C. when written records begin, to allow of such ideas and such a civilization having grown up from such a state of things as we find prevailing during the neolithic period, and still prevailing among the inferior races of the world, who have remained isolated and unchanged in the hunting or nomad condition.

I have dwelt at some length on the ancient religions, for nothing tends more to open the mind, and break down the narrow barriers of sectarian prejudice, than to see how the ideas which we have believed to be the peculiar possession of our own religion, are in fact the inevitable products of the evolution of the human race from barbarism to civilization, and have appeared

in substantially the same forms in so many ages and countries. And surely, in these days, when faith in direct inspiration has been so rudely shaken, it must be consoling to many enlightened Christians to find that the fundamental articles of their creed, trinities, emanations, incarnations, atonements, a future life and day of judgment, are not the isolated conceptions of a minority of the human race in recent times, but have been held from a remote antiquity by all the nations which have taken a leading part in civilization.

To all enlightened minds also, whatever may be their theological creeds, it must be a cheering reflection that the fundamental axioms of morality do not depend on the evidence that the Decalogue was written on a stone by God's own finger, or that the Sermon on the Mount is correctly reported, but on the evolution of the natural instincts of the human mind. All advanced and civilized communities have had their Decalogues and Sermons on the Mount, and it is impossible for any dispassionate observer to read them without feeling that in substance they are all identical, whether contained in the Egyptian Todtenbuch, the Babylonian hymns, the Zoroastrian Zendavesta, the sacred books of Brahmanism and Buddhism, the Maxims of Confucius, the Doctrines of Plato and the Stoics, or the Christian Bible.

None are absolutely perfect and complete, and of some it may be said that they contain precepts of the highest practical importance which are either omitted or contradicted in the Christian formulas. For instance, the virtue of diligence, and the injunction not to be idle, in the Egyptian and Zoroastrian creeds contrast favourably with the "take no thought for the morrow," and "trust to be fed like the sparrows," of the Sermon on the

Mount. But in this, and in all these summaries of moral axioms, apparent differences arise not from fundamental oppositions, but from truth having two sides, and passing over readily into

"The falsehood of extremes."

Even the injunction to "take no thought for the morrow," is only an extreme way of stating that the active side of human life, strenuous effort, self-denial, and foresight, must not be pushed so far as to stifle all higher aspirations. Probably if the same concrete case of conduct had been submitted to an Egyptian, a Babylonian or Zoroastrian priest, and to the late Bishop of Peterborough, their verdicts would not have been different. Such a wide extension does the maxim take, "One touch of Nature makes the world akin," when we educate ourselves up to the culture which gives some general idea of how civilized man has everywhere felt and believed since the dawn of history very much as we ourselves do at the close of the nineteenth century.

CHAPTER V.

ANCIENT SCIENCE AND ART.

Evidence of Antiquity—Pyramids and Temples—Arithmetic—Decimal and Duodecimal Scales—Astronomy—Geometry reached in Egypt at earliest Dates—Great Pyramid—Piazzi Smyth and Pyramid-Religion—Pyramids formerly Royal Tombs, but built on Scientific Plans—Exact Orientation on Meridian—Centre in 30° N. Latitude—Tunnel points to Pole—Possible use as an Observatory—Procter—Probably Astrological—Planetary Influences—Signs of the Zodiac—Mathematical Coincidences of Great Pyramid—Chaldæan Astronomy—Ziggurats—Tower of Babel—Different Orientation from Egyptian Pyramids—Astronomical Treatise from Library of Sargon I., 3800 B.C.—Eclipses and Phases of Venus—Measures of Time from Old Chaldæan—Moon and Sun—Found among so many distant Races—Implies Commerce and Intercourse—Art and Industry—Embankment of Menes—Sphynx—Industrial Arts—Fine Arts—Sculpture and Painting—The Oldest Art the best—Chaldæan Art—De Sarzec's Find at Sirgalla—Statues and Works of Art—Imply long use of Bronze—Whence came the Copper and Tin—Phœnician and Etruscan Commerce—Bronze known 200 years earlier—Same Alloy everywhere—Possible Sources of Supply—Age of Copper—Names of Copper and Tin—Domestic Animals—Horse—Ox and Ass—Agriculture—All proves Extreme Antiquity.

THE conclusion drawn from the religions of Egypt and Chaldæa, as to the existence of a very long period of advanced civilization prior to the historical era, is fully confirmed by the state of the arts and sciences at the commencement of the earliest records. A knowledge of astronomy implies a long series of observations and a certain amount of mathematical calculation. The

construction of great works of hydraulic engineering, and of such buildings as temples and pyramids, also proves an advanced state of scientific knowledge. Such a building, for instance, as the Great Pyramid must have required a considerable acquaintance with geometry, and with the effects of strains and pressures; and the same is true of the early temples and ziggurats, or temple observatories of Chaldæa. There must have been regular schools of astronomers and architects, and books treating on scientific subjects, before such structures could have been possible.

The knowledge of science possessed by a nation affords a more definite test of its antecedent civilization than its religion. It is always possible to say that advanced religious ideas may have been derived from some supernatural revelation, but in the case of the exact sciences, such as arithmetic, geometry, and astronomy, this is no longer possible, and their progress can be traced step by step by the development of human reason. Thus there are savage races, like the Australians at the present day, who cannot count beyond "one, two, and a great number"; and some philologists tell us that traces of this state can be discovered in the origin of civilized languages, from the prevalence of dual forms which seem to have preceded those of the plural.

The next stage is that of counting by the fingers, which gives rise to a natural system of decimal notation, as shown by such words as ten, which invariably means two hands; twenty, which is twice ten, and so on. Many existing races, who are a little more advanced than the Australians, use their fingers for counting, and can count up to five or ten, and even the chim-

panzee Sally could count to five. But when we come to a duodecimal system we may feel certain that a considerable advance has been made, and arithmetic has come into existence as a science; for the number 12 has no natural basis of support like 10, and can only have been adopted because it was exactly divisible into whole numbers by 2, 3, 4, 6. The mere fact therefore of the existence of a duodecimal system shows that the nation which adopts it must have progressed a long way from the primitive "one, two, a great many," and acquired ideas both as to the relation of numbers, and a multitude of other things, such as the division of the circle, of days, months, and years, of weights and measures, and other matters, in which ready division into whole parts without fractions had become desirable. And at the very first in Egypt, Chaldæa, and among the Turanian races generally, we find this duodecimal system firmly established. The circle has 360 degrees, the year 360 days, the day 24 single or 12 double hours, and so on. But from this point the journey is a long one to calculations which imply a knowledge of geometry and mathematics, and observations of celestial bodies which imply a long antecedent science of astronomy, and accurate records of the motions of the sun, moon, and planets, and of eclipses and other memorable events.

The earliest records, both of Egypt and Chaldæa, show that such an advanced state of science had been reached at the first dawn of the historical period, and we read of works on astronomy, geometry, medicine, and other sciences, written, or compiled from older treatises, by Egyptian kings of the old empire, and by Sargon I. of Accade from older Accadian works. But

the monuments prove still more conclusively that such sciences must have been long known. Especially the Great Pyramid of Cheops affords a very definite proof of the progress which must have been made in geometrical, mechanical, and astronomical science at the time of its erection. If we were to believe Professor Piazzi Smyth, and the little knot of his followers who have founded what may be called a Pyramid-religion, this remarkable structure contains a revelation in stone for future ages, of almost all the material scientific facts which have been discovered since by 6000 years of painful research by the unaided human intellect. Its designers must have known and recorded, with an accuracy surpassing that of modern observation, such facts as the dimensions of the earth, the distance of the sun, the ratio of the area of a circle to its diameter, the precise determination of latitude and of a true meridian line, and the establishment of standards of measure taken, like the metre, from a definite division of the earth's circumference. It is argued that such facts as these could not have been discovered so accurately in the infancy of science, and without the aid of the telescope, and therefore that they must have been made known by revelation, and the Great Pyramid is looked upon therefore as a sort of Bible in stone, which is, in some not very intelligible way, to be taken as a confirmation of the inspiration of the Hebrew Bible, and read as a sort of supplement to it.

This is of course absurd. A supernatural revelation to teach a chosen people the worship of the one true God, is at any rate an intelligible proposition, but scarcely that of such a revelation to an idolatrous monarch and people, to teach details of abstruse sciences,

which in point of fact were not taught, for the monument on which they were recorded was sealed up by a casing of polished stone almost directly after it was built, and its contents were only discovered by accident, long after the facts and figures which it is supposed to teach had been discovered elsewhere by human reason. The only thing approaching to a revelation of religious import which Piazzi Smyth professed to have discovered in the Pyramid was a prediction, which is now more than ten years overdue, of the advent of the millennium in 1881.

But these extravagances have had the good effect of giving us accurate measurements of nearly all the dimensions of the Great Pyramid, and raising a great deal of discussion as to its aim and origin. In the first place it is quite clear that its primary object was to provide a royal tomb. A tomb of solid masonry with a base larger than Lincoln's Inn Fields, and 130 feet higher than St. Paul's, seems very incomprehensible to modern ideas, but there can be no doubt as to the fact. When the interior is explored both of this and other pyramids, nothing is found but one or two small sepulchral chambers containing the stone coffins of a king or queen. The Great Pyramid is not an exceptional monument, but one of a series of some seventy pyramid-tombs of kings, beginning with earlier and continued by later dynasties of the Old Empire. The reason of their construction is obvious. It originates from the peculiar ideas, which have been already pointed out, of the existence of a Ka or shadowy double, and a still more ethereal soul or spirit, whose immortality depended on the preservation of a material basis in the form of a mummy or likeness of the deceased person,

preferably no doubt by the preservation of the mummy. This led to the enormous outlay, not by kings only, but by private persons, on costly tombs, which, as Herodotus says, were considered to be their permanent habitations. With an absolute monarchy in which the divine right of kings was strained so far that the monarch was considered as an actual god, it was only natural that their tombs should far exceed those of their richest subjects, and that unusual care should be taken to prevent them from being desecrated in future ages by new and foreign dynasties. Suppose a great and powerful monarch to have an unusually long and prosperous reign, it is quite conceivable that he should wish to have a tomb which should not only surpass those of his predecessors, but any probable effort of his successors, and be an unique monument defying the attacks not only of future generations, but of time itself.

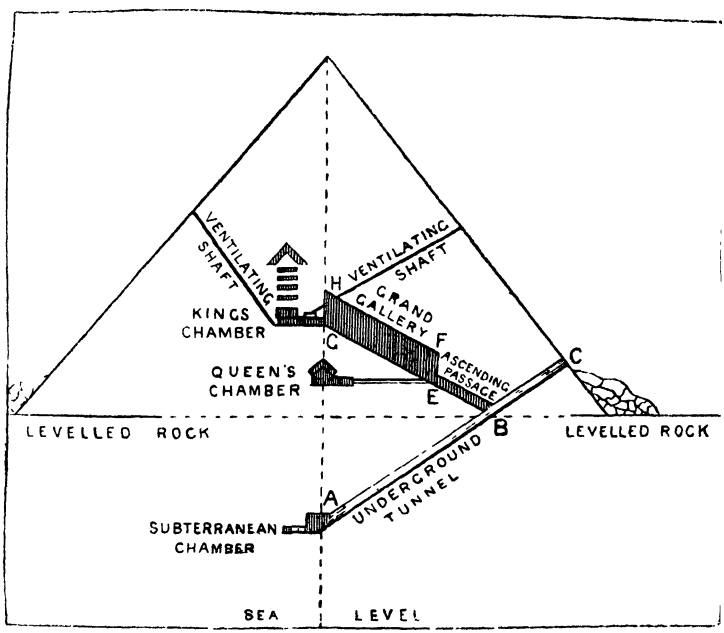
This seems, without doubt, to have been the primary motive of the Great Pyramid, and in a lesser degree of all pyramids, sepulchral mounds, and costly tombs. But the pyramids, and especially the Great Pyramid, are not mere piles of masonry heaped together without plan or design. On the contrary, they are all built on a settled plan, which implies an acquaintance with the sciences of geometry and astronomy, and which, in the case of the Great Pyramid, is carried to an extent which shows a very advanced knowledge of those sciences, and goes far to prove that it must have been used, during part of the period of its construction, as a national observatory. The full details of this plan are given by Procter in his work on the Great Pyramid, and although the want of a more accurate knowledge of Egyptology has led him into some erroneous speculations as to the age and object of

this pyramid, his authority is undoubted as to the scientific facts and the astronomical and geometrical conclusions which are to be drawn from them.

It appears that the first object of all pyramid builders was to secure a correct orientation; that is, that the four sides should face truly to the north, south, east, and west, or in other words that a line drawn through the centre of the base parallel to the sides should stand on a true meridian line. This would be a comparatively easy task with modern instruments, but before the invention of the telescope it must have required great nicety of observation to obtain such extremely accurate results in all the sides and successive layers of such an enormous building. There are only two ways in which it could be attempted—one by observing the shadow cast by a vertical gnomon when the sun was on the meridian, the other by keeping a standard line constantly directed to the true north pole of the heavens. In the case of the Great Pyramid another object seems to have been in view which required the same class of observations, viz. to place the centre of the base on the thirtieth degree of north latitude, being the latitude in which the pole of the heavens is exactly one-third of the way from the horizon to the zenith.

Both these objects have been attained with wonderful accuracy. The orientation of the Great Pyramid is correct, and the centre of its base corresponds with the thirtieth degree of north latitude within a slight error which was inevitable, if, as is probable, the Egyptian astronomers were unacquainted with the effect of atmospheric refraction in raising the apparent above the true place of celestial bodies, or had formed an insufficient estimate of its amount. The centre of the

base is 2328 yards south of the real thirtieth parallel of latitude, which is 944 yards north of the position which would have been deduced from the pole-star method, and 3459 yards south of that from the shadow method, by astronomers ignorant of the effect of refraction. The shadow method could never have been so reliable as the



polar method, and it is certain therefore *à priori* that the latter must have been adopted either wholly or principally, and this conclusion is confirmed by the internal construction of the pyramid itself, which is shown by the subjoined vertical section.

The tunnel A B C is bored for a distance of 350 feet underground through the solid rock, and is inclined

at an angle pointing directly to what was then the pole-star, Alpha Draconis, at its lower culmination. As there is no bright star at the true pole, its position is ascertained by taking the point half-way between the highest and lowest positions of the conspicuous star nearest to it, and which therefore revolves in the smallest circle about it. This star is not always the same on account of the precession of the equinoxes, and Alpha Draconis supplied the place of the present pole-star about 3440 B.C., and practically for several centuries before and after that date.

Now the underground tunnel is bored exactly at the angle of 26° 17′ to the horizon, at which Alpha Draconis would shine down it at its lower culmination when 3° 42′ from the pole; and the ascending passage and grand gallery are inclined at the same angle in an opposite direction, so that the image of the star reflected from a plane mirror or from water at B, would be seen on the southern meridian line by an observer in the grand gallery, while another very conspicuous star in the southern hemisphere, Alpha Centauri, would at that period shine directly down it. The passages therefore would have the double effect, 1st, of enabling the builders to orient the base and lower layers of the pyramid up to the king's chamber in a perfectly true north and south line; 2nd, of making the grand gallery the equivalent of an equatorially-mounted telescope of a modern observatory, by which the transit of heavenly bodies in a considerable section of the sky comprising the equatorial and zodiacal regions, across the meridian, and therefore at their highest elevations, could be observed by the naked eye with great accuracy.

Those who wish to study the evidence in detail should read Procter's work on the *Problems of the Pyramids*, but for the present purpose it may be sufficient to sum up the conclusions of that accomplished astronomer. He says, "The sun's annual course round the celestial sphere could be determined much more exactly than by any gnomon by observations made from the great gallery. The moon's monthly path and its changes could have been dealt with in the same effective way. The geometric paths, and thence the true paths of the planets, could be determined very accurately. The place of any visible star along the zodiac could be most accurately determined."

If therefore the pyramid had only been completed up to the fiftieth layer, which would leave the southern opening of the great gallery uncovered, the object might have been safely assumed to be the erection of a great national observatory. But this supposition is negatived by the fact that the grand gallery must have been shut up, and the building rendered useless for astronomical purposes in a very short time, by the completion of the pyramid, which was then covered over by a casing of polished stone, evidently with a view of concealing all traces of the passages which led to the tomb. The only possible solution seems to be that suggested by Procter, that the object was astrological rather than astronomical, and that all those minute precautions were taken in order to provide not only a secure tomb but an accurate horoscope for the reigning monarch. Astrology and astronomy were in fact closely identified in the ancient world, and relics of the superstition still linger in the form of Zadkiel almanacs.

When the sun, moon, and five planets had been identified as the celestial bodies possessing motion, and therefore, as it was inferred, life, and had been converted into gods, nothing was more natural than to suppose that they exercised an influence on human affairs, and that their configuration affected the destinies both of individuals and of nations. A superstitious people who saw auguries in the flight of birds, the movements of animals, the rustling of leaves, and in almost every natural occurrence, could not fail to be impressed by the higher influences and omens of those majestic orbs, which revolved in such mysterious courses through the stationary stars of the host of heaven. Accordingly in the very earliest traditions of the Accadians and Egyptians we find an astrological significance attached to the first astronomical facts which were observed and recorded. The week of seven days, which was doubtless founded on the first attempts to measure time by the four phases of the lunar month, became associated with the seven planets in the remotest antiquity, and the names of their seven presiding gods, in the same order and with the same meaning, have descended unchanged to our own times, as will be shown more fully in a subsequent chapter.

Observations on the sun's annual course led to the fixing of it along a zodiac of twelve signs, corresponding roughly to twelve lunar months, and defined by constellations, or groups of stars, having a fanciful resemblance to animals or deified heroes. Those zodiacal signs are of immense antiquity and world-wide universality. We find them in the earliest mythology of Chaldæa and Egypt, in the labours of Hercules, in the

traditions of a deluge associated with the sign of Aquarius, and even, though in a somewhat altered form, in such distant countries as China and Mexico. Probably they originated in Chaldæa, where the oldest records and universal tradition show the primitive Accadians to have been astronomers, who from time immemorial had made observations on the heavenly bodies, and who remained down to the Roman Empire the most celebrated astrologers, though it is not quite clear whether Egyptian astronomy and astrology were imported from Chaldæa or invented independently at an equally remote period.

Even if we admit, however, Procter's suggestion that the pyramids had an astrological origin in addition to their primary object as tombs, it is difficult to understand how such enormous structures could have been built. The Great Pyramid must have been built on a plan designed from the first, and not by any haphazard process of adding a layer each year according to the number of years the monarch happened to reign. How could he foresee the exact number of years of an unusually long life and reign, or what security could he have that, if he died early, his successor would complete his pyramid in addition to erecting one of almost equal magnitude for himself? How could three successive kings have devoted such an amount of the nation's capital and resources to the building of three such pyramids as those of Cheops, Chephren, and Mycerinus, without provoking insurrections?

Herodotus has a piece of gossip, probably picked up from some ignorant guides, which represents Cheops and Chephren as detested tyrants, who shut up the temples of the gods, and confounds the national hatred

of the shepherd kings, who conquered Egypt some 2000 years later, with that of these pyramid-builders; but this is confuted by the monuments, which show them as pious builders or restorers of temples of the national gods in other localities, as for instance at Bubastis, where the cartouche of Chephren was lately found by M. Naville on an addition to the Temple of Isis. All the records also of the fourth or pyramid-building dynasty, and of the two next dynasties, show it to have been a period of peace and prosperity.

The pyramids therefore must still remain a subject enveloped in mystery, but enough is certain from the undoubted astronomical facts disclosed in their construction to show the advanced state of this science at this remote period. Nor is this all, for the dimensions of the Great Pyramid, when stripped of the fanciful coincidences and mystical theories of Piazzi Smyth, still show enough to prove a wonderful knowledge of mathematics and geometry. The following may be taken as undoubted facts from the most accurate measurements of their dimensions.

1st. The triangular area of each of the four sloping sides equals the square of the vertical height. This was mentioned by Herodotus, and there can be no doubt that it was a real relation intended by the builders.

2nd. The united length of the four sides of the square base bears to the vertical height the same proportion as that of the circumference of a circle to its radius. In other words it gives the ratio, which under the symbol π plays such an important part in all the higher mathematics. There are other remarkable coincidences which seem to show a still more wonderful advance in science, though they are not quite so certain,

as they depend on the assumption that the builders took as their unit of measurement, a pyramid inch and sacred cubit different from those in ordinary use, the former being equal to the 500,000,000th part of the earth's diameter, and the latter containing twenty-five of those inches, or about the 20,000,000th part of that diameter. To arrive at such standards it is evident that the priestly astronomers must have measured very accurately an arc of the meridian or length of the line on the earth's surface which just raised or lowered the pole of the heavens by 1°; and inferred from it that the earth was a spherical body of given dimensions. Those dimensions would not be quite accurate, for they must have been ignorant of the compression of the earth at its poles and protuberance at the equator, but the measurement of such an arc at or near 30° of north latitude would give a close approximation to the mean value of the earth's diameter. Procter thinks that from the scientific knowledge which must have been possessed by the builders of the pyramid, it is quite possible that they may have measured an arc of the meridian with considerable accuracy, and calculated from it the length of the earth's diameter, assuming it to be a perfect sphere. And if so they may have intended to make the side of the square base of the pyramid of a length which would bear in inches some relation to the length of this diameter; for it is probable that at this stage of the world's science, the mysterious or rather magical value which was attached to certain words would attach equally to the fundamental facts, figures, and important discoveries of the growing sciences. It is quite probable, therefore, that the sacred inch and cubit may have been invented, like the *metre*, from an aliquot part of the

earth's supposed diameter, so as to afford an invariable standard. But there is no positive proof of this from the pyramid itself, the dimensions of which may be expressed just as well in the ordinary working cubit, and it must remain open to doubt whether the coincidences prove the pyramid inch, or the inch was invented to prove the coincidences.

Assuming, however, for the moment that these measures were really used, some of the coincidences are very remarkable. The length of each side of the square base is $365\frac{1}{4}$ of these sacred cubits, or equal to the length of the year in days. The height is 5819 inches, and the sun's distance from the earth, taken at 91,840,000 miles, which is very nearly correct, is just 5819 thousand millions of such inches. It has been thought, therefore, that this height was intended to symbolize the sun's distance. But independently of the fact that this distance could not have been known with any approach to accuracy before the invention of the telescope, it is forgotten that this height had been already determined by a totally unconnected consideration, viz. the ratio of the diameter of a circle to its circumference. The coincidence, therefore, of the sun's distance must be purely accidental.

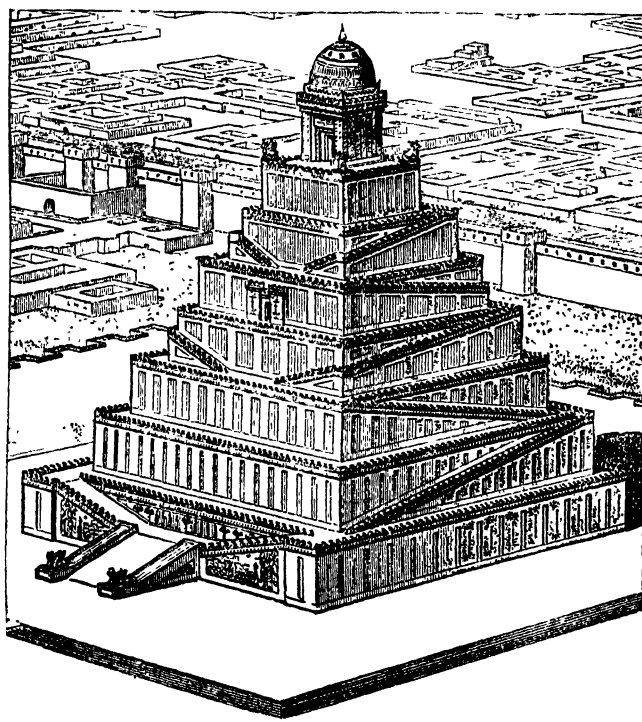
A still more startling coincidence has been found in the fact that the two diagonals of the base contain 25,824 pyramid inches, or almost exactly the number of years in the precessional period. This also must be accidental, for the number of inches in the diagonals follows as a matter of course from the sides being taken at $365\frac{1}{4}$ cubits, corresponding to the length of the year; and there can be no connection between this and the precession of the equinoxes, which, moreover, was

unknown in the astronomy of the ancient world until it was discovered in the time of the Ptolemies by Hipparchus.

But with all these doubtful coincidences, and the many others which have been discovered by devotees of the pyramid religion, quite enough remains to justify the conclusion that between 5000 and 6000 years ago there were astronomers, mathematicians, and architects in Egypt, who had carried their respective sciences to a high degree of perfection corresponding to that shown by their engineers and artists.

When we turn to Chaldæa we find similar evidence as to the advance of science, and especially of astronomical science, in the earliest historical times. Every important city had its temple, and attached to its temple its ziggurat, which was a temple-observatory. The ziggurat is in some respects the counterpart of the pyramid, being a pyramidal structure built up in successive stages or platforms superimposed on one another and narrowing as they rose, so as to leave a small platform on the top, on which was a small shrine or temple, and from which observations could be made. These ziggurats being built entirely of bricks, mostly sun-burnt, have crumbled into shapeless mounds of rubbish, but a fair idea of their size and construction may be obtained from the descriptions and pictures of them preserved in contemporary tablets and slabs, especially from those of the great ziggurat of the seven spheres or planets at Borsippa, a suburb of Babylon, which was rebuilt by Nebuchadnezzar about 500 B.C., on the site of a much more ancient ruined construction. This, which was the largest and most famous of the ziggurats, became identified in after

times with the tower of Babel and the legend of the confusion of tongues, but it was in fact an astronomical building in seven stages dedicated to the sun, moon, and five planets, taken in the order of magnitude of their respective orbits, and each distinguished by their respective colours. Thus the lowest or largest platform



RESTORED (Perrot and Chipiez), THE TOWER OF BABEL

was dedicated to Saturn, and coloured black; the second to Jupiter was orange; the third to Mars red; the fourth to the Sun golden; the fifth to Venus pale yellow; the sixth to Mercury an azure blue, obtained by vitrifying the facing bricks; and the seventh to the

Moon was probably coated with plates of silver. The height of this ziggurat was 150 feet, and standing as it did on a level alluvial plain, it must have been a very imposing object.

It may be affirmed of all these ziggurats that they were not tombs like the Egyptian pyramids, but were erected exclusively for astronomical and astrological purposes. The number of stages had always reference to some religious or astronomical fact, as three to symbolize the great triad; five for the five planets; or seven for these and the sun and moon; the number of seven being never exceeded, and the order the same as that adopted for the days of the week, viz. according to the magnitudes of their respective orbits. They were oriented with as much care as the pyramids, which is of itself a proof that they were used as observatories, but with this difference, that their angles instead of their faces were directed towards the true north and south. To this rule there are only two exceptions, probably of late date after Egyptian influences had been introduced, but the original and national ziggurats invariably observe the rule of pointing angles and not sides to the four cardinal points. This is a remarkable fact as showing that the astronomies of Egypt and Chaldæa were not borrowed one from the other, but evolved independently in prehistoric times. An explanation of it has been found in the fact recorded on a geographical tablet, that the Accadians were accustomed to use the terms north, south, east, and west to denote, not the real cardinal points, but countries which lay to the N.W., S.E., and S.W. of them. It is inconceivable, however, that such skilful astronomers should have supposed that the North Pole was in the

north-west, and a more probable explanation is to be found in the meaning of the word ziggurat, which is holy mountain.

It was a cardinal point in their cosmogony that the heavens formed a crystal vault, which revolved round an exceedingly high mountain as an axis, and the ziggurats were miniature representations of this sacred mountain of the gods. The early astronomers must have known that this mountain could be nowhere but in the true north, as the daily revolutions of the heavenly bodies took place round the North Pole. It was natural, therefore, that they should direct the apex or angle of a model of this mountain rather than its side to the position in the true north occupied by the peak of the world's pivot.

Be this as it may, the fact that the ziggurats were carefully oriented, and certainly used as observatories at the earliest dates of Chaldæan history, is sufficient to prove that the priestly astronomers must have already attained an advanced knowledge of science, and kept an accurate record of long-continued observations. This is fully confirmed by the astronomical and astrological treatise compiled for the royal library of Sargon I., date 3800 B.C., which treats of eclipses, the phases of Venus, and other matters implying a long previous series of accurate and refined astronomical observations.

The most conclusive proof, however, of the antiquity of Chaldæan science is afforded by the measures of time which were established prior to the commencement of history, and have come down to the present era in the days of the week and the signs of the zodiac. There can be no doubt that the first attempts to measure time

beyond the single day and night, were lunar, and not solar. The phases of the moon occur at short intervals, and are more easily discerned and measured than those of the sun in its annual revolution. The beginning and end of a solar year, and the solstices and equinoxes are not marked by any decided natural phenomena, and it is only by long-continued observations of the sun's path among the fixed stars that any tolerably accurate number of days can be assigned to the duration of the year and seasons. But the recurrence of new and full moon, and more especially of the half-moons when dusk and light are divided by a straight line, must have been noted by the first shepherds who watched the sky at night, and have given rise to the idea of the month, and its first approximate division into four weeks of seven days each. Accordingly we find that in all primitive languages and cosmogonies the moon takes its name from a root which signifies "the measurer," while the sun is the bright or shining one.

A relic of this superior importance of the moon as the measurer of time is found in the old Accadian mythology, in which the moon-god is masculine and the sun god feminine, while with the Semites and other nations of a later and more advanced civilization, the sun is the husband, and the moon his wife. For as observations multiplied and science advanced, it would be found that the lunar month of twenty-eight days was only an approximation, and that the solar year and months defined by the sun's progress through the fixed stars afforded a much more accurate chronometer. Thus we find the importance of the moon and of lunar myths gradually superseded by the sun, whose daily risings and settings, death in winter and resurrection

in spring, and other myths connected with its passage through the signs of the solar zodiac, assume a preponderating part in ancient religions. Traces, however, of the older period of lunar science and lunar mythology still survived, especially in the week of seven days, and the mysterious importance attached to the number 7. This was doubtless aided by the discovery which could not fail to be made with the earliest accurate observations of the heavens, that there were seven moving bodies, the sun, moon, and five planets, which revolved in settled courses, while all the other stars remained fixed. Scientific astrology, as distinguished from a mere superstitious regard of the flight of birds and other omens, had its origin in this discovery. The first philosophers who pondered on these celestial phenomena were certain to infer that motion implied life, and in the case of such brilliant and remote bodies divine life; and that as the sun and moon exerted such an obvious influence on the seasons and other human affairs, so probably did the other planets or the gods who presided over them. The names and order of the days of the week, which have remained so similar among such a number of ancient and modern nations, show how far these astrological notions must have progressed when they assumed their present form, for the order is a highly artificial one.

Why do we divide time into weeks of seven days, and call the days Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday, and why are these names of special planets, or of the special gods associated with them, identical, and occur in the same order among so many different nations? For whether we say Thor's-day or Jove's-day, and call it "Thursday" or "Jeudi," the same god is meant, who is identified

with the same planet, and so for the others. It is quite clear that the names of the seven days of the week were originally taken from the seven planets—*i. e.* from the seven celestial bodies which were observed by ancient astronomers to move, and, therefore, be presumably endowed with life, while the rest of the host of heaven remained stationary. These bodies are in order of apparent magnitude:—

1. The Sun.
2. The Moon.
3. Jupiter.
4. Venus.
5. Mars.
6. Saturn.
7. Mercury.

And this is the natural order in which we might have expected to find them appropriated to the days of the week. But, obviously, this is not the principle on which the days have been named; for, to give a single instance, the nimble Mercury, the smallest of the visible planets, comes next before the majestic Jupiter, the ruler of the heavens and wielder of the thunderbolt.

Let us try another principle, that of classifying the planets in importance, not by their size and splendour, but by the magnitude of their orbits and length of their revolutions. This will give the following order:—

1. Saturn.
2. Jupiter.
3. Mars.
4. The Sun (*i. e.* really the earth).
5. Venus.
6. Mercury.
7. The Moon.

We are now on the track of the right solution, though there is still apparently hopeless discord between this order and that of the days of the week. The true solution is such an artificial one, that we should never have discovered it if it had not been disclosed to us by the clay tablets exhumed from ancient royal libraries in the temples and palaces of Chaldæa. These tablets are extremely ancient, going back in many cases to the times of the old Accadians who inhabited Chaldæa prior to the advent of the Semites. Some of them, in fact, are from the royal library of Sargon I., of Accade, whose date is fixed by the best authorities at about 3800 B.C. These Accadians were a civilized and literary people, well versed in astronomy, but extremely superstitious, and addicted beyond measure to astrology. Every city had its ziggurat, or observatory-tower, attached to its temple, from which priests watched the heavens and calculated times and seasons. To some of those ancient priests it occurred that the planets must be gods watching over and influencing human events, and that, as Mars was ruddy, he was probably the god of war; Venus, the lovely evening star, the goddess of love; Jupiter, powerful; Saturn, slow and malignant; and Mercury, quick and nimble. By degrees the idea expanded, and it was thought that each planet exerted its peculiar influence, not only on the days of the week, but on the hours of the day; and the planet which presided over the first hour of the day was thought to preside over the whole of that day. But the day had been already divided into twenty-four hours, because the earliest Chaldæans had adopted the duodecimal scale, and counted by sixes, twelves, and sixties. Now, twenty-four is not divisible by seven, and, therefore,

the same planets do not recur in the same order, to preside over the same hours of successive days. If Saturn ruled the first hour, he would rule the twenty-second hour; and, if we refer to the above list of the planets, ranged according to the magnitude of their orbits, we shall find that the Sun would rule the first hour of the succeeding day, and then in succession the Moon, Mars, Mercury, Jupiter, and Venus, round to Saturn again, in the precise order of our days of the week. This order is so artificial that it cannot have been invented separately, and wherever we find it we may feel certain that it has descended from the astrological fancies of Accadian priestly astronomers at least 6000 years ago.

Now for the Sabbath. The same clay tablets, older by some 1000 years than the accepted Biblical date for the creation of the world, mention both the name and the institution. The "Sabbath" was the day ruled over by the gloomy and malignant Saturn, the oldest of the planetary gods, as shown by his wider orbit, but dimmed with age, and morose at having been dethroned by his brilliant son, Jupiter. It was unlucky in the extreme, therefore, to do any work, or begin any undertaking, on the "Sabbath," or Saturday. Hence, long centuries before Jewish Pharisees or English Puritans, rules of Sabbatarian strictness were enforced at Babylon and Nineveh, which remind one of the knight who

> "Hanged his cat on Monday
> For killing of a mouse on Sunday."

The king was not allowed to ride or walk on the Sabbath; and, even if taken ill, had to wait till the following day before taking medicine. This superstition

as to the unluckiness of Saturn's day was common to all ancient nations, including the Jews; but when the idea of a local deity, one among many others, expanded, under the influence of the later prophets and the exile, unto that of one universal God, the ruler of the universe and special patron of his chosen people, the compilers of the Old Testament dealt with the Sabbath as they did with the Deluge, the Creation, and other myths borrowed from the Chaldæans. That is to say, they revised them in a monotheistic sense, wrote "God" for "gods," and gave them a religious, rather than an astronomical or astrological, meaning. Thus the origin of the Sabbath, as a day when no work was to be done, was transferred from Saturn to Jehovah, and the reason assigned was that "in six days the Lord created the heaven and the earth, and all that therein is, and rested on the seventh day."

One more step only remains to bring us to our modern Sunday, and this also, like the last, is to be attributed to a religious motive. The early Christian Church wished to wean the masses from Paganism, and very wisely, instead of attacking old-established usages in front, turned their flank by assigning them to different days. Thus the day of rest was shifted from Saturday to Sunday, which was made the Christian Sabbath, and the name changed by the Latin races from the day of the sun to the Lord's Day, "Dominica Dies," or "Dimanche." It has remained Saturday, however, with the Jews, and it is quite clear that it was on a Saturday, and not a Sunday, that Jesus walked through the fields with his disciples, plucking ears of corn, and saying, "The Sabbath was made for man, and not man for the Sabbath." It is equally clear that our modern

Sabbatarians are much nearer in spirit to the Pharisees whom Jesus rebuked, and to the old Accadian astrologers, than to the founder of Christianity.

It is encouraging, however, to those who believe in progress, to observe how in this, as in many other cases, the course of evolution makes for good. The absurd superstitions of Accadian astrologers led to the establishment of one day of rest out of every seven days—an institution which is in harmony with the requirements of human nature, and which has been attended by most beneficial results. The religious sanctions which attached themselves to this institution, first, as the Hebrew Sabbath, and, secondly, as transformed into the Christian Sunday, have been a powerful means of preserving this day of rest through so many social and political revolutions. Let us, therefore, not be too hasty in condemning everything which, on the face of it, appears to be antiquated and absurd. Millions will enjoy a holiday, get a breath of fresh air and glimpse of nature, or go to church or chapel cleanly and respectable in behaviour and attire, because there were Accadian Zadkiels 6000 years ago, who believed in the maleficent influence of the planet Saturn.

When we find that these highly intricate and artificial calculations of advanced astrological and astronomical lore existed at the dawn of Chaldæan history, and are found in so many and such widely separated races and regions, it is impossible to avoid two conclusions.

1st. That an immense time must have elapsed since the rude Accadian Highlanders first settled in and reclaimed the alluvial valleys and marshy deltas of the Tigris and Euphrates.

2nd. That the intercourse between remote regions, whether by land or sea, and by commerce or otherwise, must have been much closer in prehistoric times than has been generally supposed.

As in the days of the week, so in the festivals of the year, we trace their first origin to astronomical observations. When nations passed from the condition of savages, hunters, or nomads, into the agricultural stage, and developed dense populations, cities, temples, priests, and an organized society, we find the oldest traces of it everywhere in the science of astronomy. They watched the phases of the moon, counted the planets, followed the sun in its annual course, marking it first by seasons, and, as science advanced, by its progress through groups of fixed stars fancifully defined as constellations. Everywhere the moon seems to have been taken as the first standard for measuring time beyond the primary unit of day and night. Its name very generally denotes the "Measurer" in primitive languages, and it appears as the male, and the sun as female, in the oldest mythologies—a distinction of sex which is still maintained in modern German. This is natural, for the monthly changes of the moon come much more frequently, and are more easily measured from day to day, than the annual courses of the sun. But, as observations accumulate and become more accurate, it is found that the sun, and not the moon, regulates the seasons, and that the year repeats on a larger scale the phenomenon presented by the day and night, of a birth, growth, maturity, decay, and death of the sun, followed by a resurrection or new birth, when the same cycle begins anew. Hence the oldest civilized nations have taken from the two phenomena of the day and year the same

fundamental ideas and festivals. The ideas are those of a miraculous birth, death, and resurrection, and of an upper and lower world, the one of light and life, the other of darkness and death, through which the sun-god and human souls have to pass to emerge again into life. The festivals are those of the four great divisions of the year: the winter solstice, when the aged sun sinks into the tomb and rises again with a new birth; the spring equinox, when he passes definitively out of the domain of winter into that of summer; the summer solstice, when he is in full manhood, "rejoicing like a giant to run his course," and withering up vegetation as with the hot breath of a raging lion; and, finally, the autumnal equinox, when he sinks once more into the wintry half of the year and fades daily amidst storms and deluges to the tomb from which he started. Of these festivals Christmas and Easter have survived to the present day, and the last traces of the feast of the summer solstice are still lingering in the remote parts of Scotland and Ireland in the Bel fires, which, when I was young, were lighted on Midsummer night on the highest hills of Orkney and Shetland. As a boy, I have rushed, with my playmates, through the smoke of those bonfires without a suspicion that we were repeating the homage paid to Baal in the Valley of Hinnom.

When we turn from science to art and industry, the same conclusion of immense antiquity is forcibly impressed on us. In Egypt the reign of Menes, 5000 B.C., was signalized by a great engineering work, which would have been a considerable achievement at the present day. He built a great embankment, which still remains, by which the old course of the Nile close

to the Libyan hills was diverted, and a site obtained for the new capital of Memphis on the west side of the river, placing it between the city and any enemy from the east. At the same time this dyke assisted in regulating the flow of the inundation, and it may be compared for magnitude and utility to the modern *barrage* attempted by Linant Bey and carried out by Sir Colin Moncrieff. Evidently such a work implies great engineering skill, and great resources, and it prepares us for what we have seen a few centuries later in the construction of the Great Pyramids.

Many of the most famous cities and temples also of Egypt date back for their original foundation to a period prior to that of Menes. There is indeed every reason to suppose that one of the most colossal and remarkable monuments, the Sphynx, with the little temple of granite and alabaster between its paws, is older than the accession of Menes. A tablet discovered by Mariette informs us that Khufu, the builder of the Great Pyramid, discovered this temple, which had been buried in the sand, and restored it. If a building of such simplicity and solidity of structure required repairs, it must have existed for a long time and been lost sight of. It is almost certain also that if such a colossal and celebrated monument as the Sphynx had been constructed by any of the historical kings, it would have been mentioned by Manetho, as for instance is that of the step-pyramid of Sakkarah by the fourth king of the first dynasty, and of a temple of Pthah at Memphis, and a treatise on medicine, by the king who succeeded Menes. The name of the Sphynx also, "the great Hor," points to the period of the Horsheshu, or ruler priests of Horus, prior to the

foundation of the empire by Menes, and to the time before Osiris superseded Horus, as the favourite personification of the Solar God.

Be this as it may, there is abundant proof that at the dawn of Egyptian history, some 7000 years ago, the arts of architecture, engineering, irrigation, and agriculture had reached a high level corresponding to that shown by the state of religion, science, and letters. A little later the paintings on the tombs of the Old Empire show that all the industrial arts, such as spinning, weaving, working in wood and metals, rearing cattle, and a thousand others, which are the furniture of an old civilized country, were just as well understood and practised in Egypt 6000 or 7000 years ago as they are at the present day.

This being the case, I must refer those who wish to pursue this branch of the subject to professed works on Egyptology. For my present purpose, if the oldest records of monuments prove the existence of a long antecedent civilization, it is superfluous to trace the proofs in detail through the course of later ages.

When we turn to the Fine Arts we find the same evidence. The difficulty is not to trace a golden age up to rude beginnings, but to explain the seeming paradox that the oldest art is the best. A visit to the Museum of Boulak, where Mariette's collection of works of the first six dynasties is deposited, will convince any one that the statues, statuettes, wall-pictures, and other works of art of the Ancient Empire from Memphis and its cemetery of Sakkarah, are in point of conception and execution superior to those of a later period. None of the later statues equal the *tour de force* by which the majestic portrait statue of Chephren, the builder of the

second great pyramid, has been chiselled out from a block of diorite, one of the hardest stones known, and hardly assailable by the best modern tools. Nor has portraiture in wood or stone ever surpassed the ease,



THE VILLAGE SHEIK, A WOODEN STATUETTE
Boulak Museum, from Gizeh.—According to the chronological table of Mariette this statue is over 6000 years old. From a photograph by Brugsch Bey

grace, and life-like expression of such statues as that known as the Village Sheik, from its resemblance to the functionary who filled that office 6000 years later in the village where the statue was discovered; or those of the

kneeling scribes, one handing in his accounts, the other writing from dictation. And the pictures on the walls of tombs, of houses, gardens, fishing and musical parties, and animals and birds of all kinds, tame and wild, are equally remarkable for their colouring and drawing, and for the vivacity and accuracy with which attitudes and expressions are rendered. In short Egypt begins where most modern countries seem to be ending, with a very perfect school of realistic art.

For it is remarkable that this first school of art of the Old Empire is thoroughly naturalistic, and knows very little of the ideal or supernatural. And the tombs tell the same story. The statues and paintings represent natural objects and not theological conventions; the tombs are fac-simile representations of the house in which the deceased lived, with his mummy and those of his family, and pictures of his oxen, geese, and other belongings, but no gods, and few of those quotations from the Todtenbuch which are so universal in later ages. It would seem that at this early period of Egyptian history life was simple and cheerful, and both art and religion less fettered by superstitions and conventions than they were when despotism and priestcraft had been for centuries stereotyped institutions, and originality of any sort was little better than heresy. War also and warlike arms hardly appear on these earliest representations of Egyptian life, and wars were probably confined to frontier skirmishes with Bedouins and Libyans, such as we see commemorated on the tablet of Snefura at Wady Magerah.

In Chaldæa the evidence for great antiquity is derived less from architectural monuments and arts, and more from books, than in Egypt, for the obvious

reason that stone was wanting and clay abundant in Mesopotamia. Where temples and palaces were built of sun-dried bricks, they rapidly crumbled into mounds of rubbish, and nothing was preserved but the baked clay tablets with cuneiform inscriptions. In like manner sculpture and wall-painting never flourished in a country devoid of stone, and the religious ideas of Chaldæa never took the Egyptian form of the continuance of ordinary life after death by the Ka or ghost requiring a house, a mummy, and representations of belongings. The bas-relief and fringes sculptured on slabs of alabaster brought home by Layard and others, belong mostly to the later period of the Assyrian Empire.

Accordingly, the oldest works of art from Chaldæa consist mainly of books and documents in the form of clay cylinders, and of gems, amulets, and other small articles of precious stones or metals. But the recent discovery of De Sarzec at Sirgalla shows that in the very earliest period of Chaldæan history the arts stood at a level which is fairly comparable to that of the Old Empire in Egypt. He found in the ruins of the very ancient Temple of the Sun nine statues of Patesi or priest-kings of Accadian race, who had ruled there prior to the consolidation of Sumir and Accad into one empire by Sargon I., somewhere about 3800 B.C. The remarkable thing about these statues is that they are of diorite, similar to that of the statue of Chephren, which is believed to be only found in the peninsula of Sinai, and is so hard that it must have taken excellent tools and great technical skill to carve it. The statues are much of the same size and in the same seated attitude as that of Chephren, and have the appearance of belonging to the same epoch and school of art. This

is confirmed by the discovery along with the statues of a number of statuettes and small objects of art which are also in an excellent style, very similar to that of the Old Egyptian dynasty, and show great proficiency both in taste and in technical execution.

The discovery of these diorite statues at such a very early date both in Egypt and Chaldæa, raises a very interesting question as to the tools by which such an intractable material could be so finely wrought. Evidently these tools must have been of the very hardest bronze, and the construction of such works as the dyke of Menes and the Pyramids, shows that the art of masonry must have been long known and extensively practised. But this again implies a large stock of metals and long acquaintance with them since the close of the latest stone period.

Perhaps there is no test which is more conclusive of the state of prehistoric civilization and commerce than that which is afforded by the general knowledge and use of metals. It is true that a knowledge of some of the metals which are found in a native state, or in easily fusible ores, may co-exist with very primitive barbarism. Some even of the cannibal tribes of Africa are well acquainted with iron, and know how to smelt its ores and manufacture tools and weapons. Gold also, which is so extensively found in the native state, could not fail to be known from the earliest times; and in certain districts pure copper presents itself as only a peculiar and malleable sort of stone. But when we come to metals which require great knowledge of mining to detect them in their ores, and to produce them in large quantities; and to alloys, which require a long practice of metallurgy to discover, and to mix in the proper

proportions, the case is different, and the stone period must be already far behind. Still more is this the case when tools and weapons of such artificial alloys are found in universal use in countries where Nature has provided no metals, and where their presence can only be accounted for by the existence of an international commerce with distant metal-producing countries. Iron was no doubt known at a very early period, but it was extremely scarce, and even as late as Homer's time was so valuable that a lump of it constituted one of the principal prizes at the funeral games of Patroclus. Nor is there any reason to suppose that the art of making from it the best steel, which alone could have competed with bronze in cutting granite and diorite, had been discovered. It may be assumed, therefore, that bronze was the material universally used for the finer tools and weapons by the great civilized empires of Egypt and Chaldæa during the long interval between the neolithic stone age and the later adoption of iron.

Evidently then, both the Egyptians and the Chaldæans must have been well provided with bronze tools capable of hewing and polishing the hardest rocks. Now bronze is an alloy of copper and tin. Copper is a common metal, easily reduced from its ores, and not infrequently occurring in a metallic state, as in the mines of Lake Superior, where the North American Indians hammered out blocks of it from the native metal. And we have proofs that the ancient Egyptians obtained copper at a very early date from the mines of Wady Magerah in the peninsula of Sinai, and probably also from Cyprus. But where did they get their tin, without which there is no bronze? Tin is a metal

which is only found in a few localities, and in the form of a black oxide which requires a considerable knowledge of metallurgy to detect and to reduce. The only considerable sources of tin now known are those of Cornwall, Malacca, Banca, and Australia. Of these, the last was of course unknown to the ancient world, and it is hardly probable that its supplies were obtained from such remote sources as those of the extreme East. Not that it is at all impossible that it might have been brought from Malacca by prehistoric sea-routes to India, and thence to Egypt by the Red Sea and to Chaldæa by the Persian Gulf, and this is the conjecture of one of the latest authorities in a very interesting work just published on the *Dawn of Ancient Art*. But it seems highly improbable that, if such routes had been established, they should have been so completely abandoned as they certainly were when the supply of tin for the Eastern world was brought from the West. In fact, when we get the first authoritative information as to the commerce in tin, about 1000 B.C., we find that it was supplied mainly by Tyre, and came from the West beyond the Straits of Gibraltar; and in the Greek Periplus, written in the first century, it is distinctly stated that India was supplied with tin from Britain by way of Alexandria and the Red Sea, which is hardly consistent with the supposition that the tin of Malacca had been long known and worked.

In the celebrated 27th chapter of Ezekiel, which describes the commerce of Tyre when in the height of its glory, tin is only mentioned once as being imported along with silver, iron, and lead from Tarshish, *i. e.* from the emporium of Gades or Cadiz, to which it had doubtless been brought from Cornwall. The only other

reference to tin is, that Javan, Tubal, and Meshech, *i. e.* the Ionians, and tribes of Asia Minor in the mountainous districts to the south of the Black Sea, traded with slaves and vessels of brass, and if brass meant bronze, this would imply a knowledge of tin. The only other considerable supply of tin which is certainly known came from the Etruscans, who worked extensive tin mines in Northern Italy. But the evidence of these does not go back farther than from 1000 to 1500 B.C., and it leaves untouched the question how Egypt and Chaldæa had obtained large stocks of bronze, certainly long before 5000 B.C.; and how they kept up these stocks for certainly more than 2000 years before the Phœnicians appeared on the scene to supply tin by maritime commerce. It is in some other direction that we must look, for it is certain that neither Egypt nor Chaldæa had any native sources of this metal. They must have imported, and that from a distance, either the manufactured bronze, or the tin with which to manufacture it themselves by alloying copper. The latter seems most probable, for the Egyptians worked the copper mines of Sinai from a very early date, and drew supplies of copper from Cyprus, which could only have been made useful by alloying it with tin, while if they imported all the immense quantity of bronze which they must have used, in the manufactured state, the pure copper would have been useless to them.

A remarkable fact is that the bronze found from the earliest monuments downwards, throughout most of the ancient world, including the dolmens, lake villages, and other prehistoric monuments in which metal begins to appear, is almost entirely of uniform composition, consisting of an alloy of 10 to 15 per

cent. of tin to 85 or 90 per cent. of copper. That is for tools and weapons where great hardness was required, for objects of art and statuettes were often made of pure copper, or with a smaller alloy of tin, showing that the latter metal was too scarce and valuable to be wasted.[1] Evidently this alloy must have been discovered in some locality where tin and copper were both found, and trials could be made of the proportions which gave the best result, and the secret must have been communicated to other nations along with the tin which was necessary for the manufacture. Where could the sources have been which supplied this tin and this knowledge how to use it, to the two great civilized nations of Egypt and Chaldæa, where we can say with certainty that bronze was in common use prior to 5000 B.C.? If we exclude Britain and the extreme East, there are only two localities in which extensive remains of ancient workings for tin have been discovered; one in Georgia on the slopes of the Caucasus, and the other on the northern slope of the Hindoo-Kush in the neighbourhood of Bamian. And the knowledge both of bronze and of other metals, such as iron and gold, seems to have been universally diffused among the Turanian races who were the primitive inhabitants of Northern Asia. How could Egypt have got its tin even from the nearest known source? Consider the length of the caravan route; the number of beasts of burden required; the

[1] This normal alloy does not seem to have been in general use in Egypt before the eighteenth dynasty, and the bronze of earlier periods contains less tin. But evidently a very hard alloy of copper must have been used from the earliest times, to chisel out statues of granite and diorite, and although tin was too scarce for common use, the tools for such purposes must have contained a considerable percentage of it.

necessity for roads, depôts, and stations; the mountain ranges, rivers, and deserts to be traversed; such a journey is scarcely conceivable either through districts sparsely peopled and without resources, or infested by savage tribes and robbers. And yet if the tin did not come by land, it must have come for the greater part of the way by water, floating down the Euphrates or Tigris, and being shipped from Ur or Eridhu by way of the Persian Gulf and Red Sea.

It is difficult to conceive that such an international commerce can have existed at such a remote period, and the difficulty is increased by the fact that in Europe, where we can pretty well trace the passage from the neolithic into the bronze period, bronze does not seem to have been known until some 2000 or 3000 years later, when the Phœnicians had migrated to the eastern shore of the Mediterranean, and extended their commerce and navigation far and wide over its northern coasts and islands; and at a still later period, when the Etruscans had established themselves in Italy and exported the products of the Tuscan tin mines by trade routes over the Rhætian Alps. It is even doubtful whether there was any knowledge of metals in Europe prior to the Phœnician period, as the Aryan names for gold, silver, copper, tin, and iron are borrowed from foreign sources, and have no common origin in any ancestral language of the Aryan races before they were differentiated into Greek, Latin, Teutonic, Celtic, and Slavic. Copper seems to have been the first metal known, and there are traces of a copper age prior to that of bronze in some of the older neolithic lake villages of Switzerland and Italy, and in very old tombs and dolmens in Hungary, France, and the south-west

of Spain. But these copper implements are very few and far between, they are evidently modelled in the prior forms of polished stone, and must have been superseded after a very short time by the invention or importation of bronze, which, as already stated, implies a supply of tin, and a common knowledge of the art of alloying copper with it in the same uniform proportion which gives the best result.

But in the historic records and remains of Egypt and Chaldæa, which go so much further back, bronze had evidently been long known when history commences. The Accadian name for tin, *Id-Kasdaru*, is the oldest known, and reappears in the Sanscrit *Kastira*, the Assyrian *Kasugeteira*, and the Greek *Kassiteros*. The oldest known name for copper is the Accadian *urud* or *urudu*, which singularly enough is preserved in the Basque *urraida*, while as *rauta* it reappears as the name for iron in Finnish, and as *ruda* for metal generally in Old Slavonic. In Semitic Babylonian, copper is *eru*, which confirms the induction that the metal was unknown to the primitive Semites, and adopted by them from the previously existing Accadian civilization. We are thus driven back by every line of evidence to the conclusion that Egypt and Chaldæa were in the full bronze age, and had left the stone period far behind them, long before the primitive stocks of the more modern Aryan and Semitic populations of Europe and Western Asia had emerged from the neolithic stage, and for an unknown period before the definite date when their history commences, certainly not less than 7000 years ago.

We are also driven to the conclusion that other nations, capable of conducting extensive mining opera-

tions, must have been in existence in the Caucasus, the Hindoo-Kush, the Altai, or other remote regions; and that routes of international commerce must have been established by which the scarce but indispensable tin could be transported from these regions to the dense and civilized communities which had grown up in the alluvial valleys and deltas of the Nile and the Euphrates.

It is very singular, however, that if such an intercourse existed, the knowledge of other objects of what may be called the first necessity, should have been so long limited to certain areas and races. For instance, in the case of the domestic animals, the horse was unknown in Egypt and Arabia till after the Hyksos conquest, when in a short time it became common, and these countries supplied the finest breeds and the greatest number of horses for exportation. On the other hand, the horse must have been known at a very early period in Chaldæa, for the tablet of Sargon I., B.C. 3800, talks of riding in brazen chariots over rugged mountains. This makes it the more singular that the horse should have remained so long unknown in Egypt and Arabia, for it is such an eminently useful animal, both for peace and war, that one would think it must have been introduced almost from the very first moment when trading caravans arrived. And yet tin must have arrived from regions where in all probability the horse had been long domesticated before the time of Menes. The only explanation I can see is, that the tin must have come by sea, but by what maritime route could it have come prior to the rise of Phœnician commerce, which was certainly not earlier than about 2000 B.C., or some 3000 years after the date of Menes? Could it have come down the Euphrates or Tigris and been

exported from the great sea-ports of Eridhu or Ur by way of the Persian Gulf and Red Sea?

This seems the more probable, as Eridhu was certainly an important maritime port at the early period of Chaldæan civilization. The diorite statues found at Tell-loh by M. de Sarzec are stated by an inscription on them to have come from Sinai, and indeed they could have come from no other locality, as this is the only known site of the peculiar greenish-black basalt or diorite of which those statues and the similar one of the Egyptian Chephren of the second pyramid are made. And in this case the transport of such heavy blocks for such a distance could only have been effected by sea. There are traces also of the maritime commerce of Eridhu having extended as far as India. Teak wood, which could only have come from the Malabar coast, has been found in the ruins of Ur; and "Sindhu," which is Indian cloth or muslin, was known from the earliest times. It seems not improbable, therefore, that Eridhu and Ur may have played the part which was subsequently taken by Sidon and Tyre, in the prehistoric stages of the civilizations both of Egypt and of Chaldæa, and this is confirmed by the earliest traditions of the primitive Accadians, which represent these cities on the Persian Gulf as maritime ports, whose people were well acquainted with ships, as we see in their version of the Deluge, which, instead of the Hebrew ark of Noah, has a well-equipped ship with sails and a pilot, in the legend of Xisuthros.

The instance of the horse is the more remarkable, as throughout a great part of the stone period the wild horse was the commonest of animals, and afforded the staple food of the savages whose remains are found in all

parts of Europe. At one station alone, at Solutre in Burgundy, it is computed that the remains of more than 40,000 horses are found in the vast heap of *débris* of a village of the stone period. What became of these innumerable horses, and how is it that the existence of the animal seems to have been so long unknown to the great civilized races? It is singular that a similar problem presents itself in America, where the ancestral tree of the horse is most clearly traced through the Eocene and Miocene periods, and where the animal existed in vast numbers both in the Northern and Southern Continent, under conditions eminently favourable for its existence, and yet it became so completely extinct that there was not even a tradition of it remaining at the time of the Spanish conquest. On the other hand, the ass seems to have been known from the earliest times, both to the Egyptians and the Semites of Arabia and Syria, and unknown to the Aryans, whose names for it are all borrowed from the Semitic. Large herds of asses are enumerated among the possessions of great Egyptian landowners as far back as the fifth and sixth dynasties, and no doubt it had been the beast of burden in Egypt for time immemorial.

It is in this respect only, viz. the introduction of the horse, that we can discern any foreign importation calculated to materially affect the native civilization of Egypt, during the immensely long period of its existence. It had no doubt a great deal to do with launching Egypt on a career of foreign wars and conquests under the eighteenth dynasty, and so bringing it into closer contact with other nations, and subjecting it to the vicissitudes of alternate triumphs and disasters, now carrying the Egyptian arms to the Euphrates and Tigris,

and now bringing Assyrian and Persian conquerors to Thebes and Memphis. But in the older ages of the First and Middle Empire, the ox, the ass, the sheep, ducks and geese, and the dog, seem to have been the principal domestic animals. Gazelles also were tamed and fed in herds during the Old Empire, and the cat was domesticated from an African species during the Middle Empire.

Agriculture was conducted both in Egypt and Chaldæa much as it is in China at the present day, by a very perfect system of irrigation depending on embankments and canals, and by a sort of garden cultivation enabling a large population to live in a limited area. The people also, both in Egypt and Chaldæa, seem to have been singularly like the modern Chinese, patient, industrious, submissive to authority, unwarlike, practical, and prosaic. Everything, therefore, conspires to prove that an enormous time must have elapsed before the dawn of history 7000 years ago, to convert the aborigines who left their rude stone implements in the sands and gravels of these localities, into the civilized and populous communities which we find existing there long before the reigns of Menes and of Sargon.

CHAPTER VI.

PREHISTORIC TRADITIONS.

Short Duration of Tradition—No Recollection of Stone Age—Celts taken for Thunderbolts—Stone Age in Egypt—Palæolithic Implements—Earliest Egyptian Traditions—Extinct Animals forgotten—Their Bones attributed to Giants—Chinese and American Traditions—Traditions of Origin of Man—Philosophical Myths—Cruder Myths from Stones, Trees, and Animals—Totems—Recent Events soon forgotten—Autochthonous Nations—Wide Diffusion of Prehistoric Myths—The Deluge—Importance of, as Test of Inspiration—More Definite than Legend of Creation—What the Account of the Deluge in Genesis really says—Date—Extent—Duration—All Life destroyed except Pairs preserved in the Ark—Such a Deluge impossible—Contradicted by Physical Science—By Geology—By Zoology—By Ethnology—By History—How Deluge Myths arise—Local Floods—Sea Shells on Mountains—Solar Myths—Deluge of Hasisadra—Noah's Deluge copied from it—Revised in a Monotheistic Sense at a comparatively Late Period—Conclusion—Rational View of Inspiration.

In passing from the historical period, in which we can appeal to written records and monuments, into that of palæontology and geology, where we have to rely on scientific facts and reasons, we have to traverse an intermediate stage in which legends and traditions still cast a dim and glimmering twilight. The first point to notice is that this, like the twilight of tropical evenings, is extremely brief, and fades almost at once into the darkness of night.

It is singular in how short a time all memory is lost of events which are not recorded in some form of writing

or inscription, and depend solely on oral tradition. Thus it may be safely affirmed that no nation which has passed into the metal age retains any distinct recollection of that of polished stone, and *à fortiori* none of the palæolithic period, or of the origins of their own race or of mankind. The proof of this is found in the fact that the stone axes and arrow-heads which are found so abundantly in many countries are everywhere taken for thunderbolts or fairy arrows shot down from the skies. This belief was well-nigh universal throughout the world; we find it in all the classical nations, in modern Europe, in China, Japan, and India. Its antiquity is attested by the fact that neolithic arrow-heads have been found attached as amulets in necklaces from Egyptian and Etruscan tombs, and palæolithic celts in the foundations of Chaldæan temples. In India many of the best specimens of palæolithic implements were obtained from the gardens of ryots, where they had been placed on posts, and offerings of ghee duly made to them. Like so many old superstitions, this still lingers in popular belief, and the common name for the finely-chipped arrow-heads which are so plentifully scattered over the soil from Scotland to Japan, is that of elf-bolts, supposed to have been shot down from the skies by fairies or spirits.

Until the discoveries of Boucher-de-Perthes were confirmed only half a century ago, this belief was not only that of simple peasants, but of the learned men of all countries, and the volumes are innumerable that have been written to explain how the "cerauni," or stone-celts, taken to be thunderbolts, were formed in the air during storms. They are already described by Pliny, and a Chinese Encyclopædia says that "some of these lightning stones have the shape of a hatchet, others of a

knife, some are made like mallets. They are metals, stones, and pebbles, which the fire of the thunder has metamorphosed by splitting them suddenly and uniting inseparably different substances. On some of them a kind of vitrification is distinctly to be observed."

The Chinese philosopher was evidently acquainted with real meteorites and with the stone implements which were mistaken for them, and his account is comparatively sober and rational. But the explanations of the Christian fathers and mediæval philosophers, and even of scientific writers down to a very recent period, are vastly more mystical. A single specimen may suffice which is quoted by Tylor in his *Early History of Mankind*. Tollius in 1649 figures some ordinary palæolithic stone axes and hammers, and tells us that "the naturalists say they are generated in the sky by a fulgurous exhalation conglobed in a cloud by the circumfused humour, and are as it were baked hard by intense heat, and the weapon becomes pointed by the damp mixed with it flying from the dry part, and leaving the other end denser, but the exhalations press it so hard that it breaks out through the cloud and makes thunder and lightning."

But these attempts at scientific explanations were looked upon with disfavour by theologians, the orthodox belief being that the "cerauni" were the bolts by which Satan and his angels had been driven from heaven into the fiery abyss. These speculations, however, of later ages are of less importance for our present purpose than the fact that in no single instance can anything like a real historical tradition be found connecting the stone age with that of metals, and giving a true account of even the latest forms of neolithic implements.

This is the more remarkable in the case of Egypt, where historical records go back so very far, for here, as we have seen in a previous chapter, the relics of a stone age exist in considerable numbers. There is every probability, therefore, that Egyptian civilization had been developed, mainly on the spot, from the rude beginnings of a palæolithic age, through the incipient civilization of the neolithic, into the age of metals, and the advanced civilization which preceded the consolidation of the empire under Menes and the commencement of history.[1] And yet no tradition, with a pretence to be historical, goes back farther than with a very dim and flickering light for a few centuries before Menes, when the Horsheshu, or priests of Horus, ruled independent cities, and small districts attached to the temples. There are accounts of some passages of the Todtenbuch being taken from old hymns written on goatskin in the time of these Horsheshu, and of historical temples built on plans taken from older temples and attributed to Thoth; and it seems probable also that the Sphynx and its temple may date from the same period. But beyond these few and vague instances, there is nothing to confirm the statement attributed to Manetho, that, prior to Menes, historical kings had reigned in Thebes for 1817 years, in Memphis for 1790 years, and in

[1] Stone implements were used for common purposes, especially for sickles to cut heads of corn, down to a comparatively late period, but as Spurrell observes in Petrie's, *Illahun Kahun and Gurob*, "these implements do not represent work of the stone age properly considered." They are not so much survivals of neolithic forms, as imitations, in the cheaper material of flint, of metallic forms for rough work and common use. The use of a flint knife for making the first incision on the corpse in preparing it for a mummy, is the only fact which looks like a survival from neolithic into historical times.

This for 350 years; before whom came heroes and kings for 5813 years, heroes for 1255 years, and gods for 13,900 years.

The disappearance of all historical recollections of a stone age is paralleled by the oblivion of the origin of the remains of the great extinct quaternary animals which were contemporary with man. Everywhere we find the fossil bones of the elephant and rhinoceros attributed to monsters and giants, both in the ancient and modern worlds. St. Augustine denounces infidels who do not believe that "men's bodies were formerly much greater than now," and quotes, in proof of the assertion, that he had seen himself "so huge a molar tooth of a man, that it would cut up into a hundred teeth of ordinary men,"—doubtless the molar of a fossil elephant. Marcus Scaurus brought to Rome from Joppa the bones of the monster who was to have devoured Andromeda. The Chinese Encyclopædia, already referred to, describes the "Fon-shu, an animal which dwells in the extreme cold on the coast of the Northern Sea, which resembles a rat in shape, but is as big as an elephant, and lives in dark caverns, ever shunning the light. There is got from it an ivory as white as that of an elephant;" evidently referring to the frozen mammoths found in Siberia. Similar circumstances gave rise to the same myth in South America, and the natives told Darwin that the skeletons of the mastodon on the banks of the Parana were those of a huge burrowing animal, like the bizchaca or prairie-rat.

Numerous similar instances are given by Tyler in his *Early History of Mankind*, and among the whole multitude of this class of myths, there is only one which has the least semblance of being derived from

actual tradition, viz. the bas-relief of the sacrifice of a human victim by a Mexican priest, who wears a mask of an animal with a trunk resembling an elephant or mastodon; and certain vague traditions among some of the Red Indian tribes speak of an animal with an arm protruding from its shoulder. It is more probable, however, that these may have been derived from traditions brought over from Asia like the Mexican Calendar, or be creations of the fancy, like dragons and griffins, inspired by some idea of an exaggerated tapir, than that, in this solitary instance, a Mexican priest should have been actually a contemporary of the mammoth or mastodon.

If fossil animals have thus given rise everywhere to legends of giants, fossil shells have played the same part as regards legends of a deluge These are in many cases so abundant at high levels that they could not fail to be observed, and, if observed, to be attributed to the sea having once covered these levels, and inundated all the earth except the highest peaks. The tradition of an universal deluge is however so important that I reserve it for separate consideration at the end of the present chapter.

If then all memory of a period so comparatively recent as that of the neolithic stone age and of the latest extinct animals was completely lost when the first dawn of history commences, it follows as a matter of course that nothing like an historical tradition survives anywhere of the immensely longer palæolithic period and of the origin of man. Man in all ages has asked himself how he came here, and has indulged in speculations as to his origin. These speculations have taken a form corresponding very much to the stage of culture

and civilization to which he had attained. They are of almost infinite variety, but may be classed generally under three heads. Those nations which had attained a sufficient degree of culture to personify first causes and the phenomena of Nature as gods, attribute the creation of the world and of man to some one or more of these gods; and as they advance further in philosophical reasonings, embellish the myth with allegories embodying the problems of human existence. Thus if Bel makes man out of clay, and moulds him with his own blood; or Jehovah fashions him from dust, and breathes into his nostrils the breath of life; in each case it is an obvious allegory to explain the fact that man has a dual nature, animal and spiritual.

So the myth of the Garden of Eden, the Temptation by the Serpent, the Trees of Knowledge and of Life, and the Fall of Adam, which we see represented on a Babylonian cylinder as well as in the second chapter of Genesis, is obviously an allegorical attempt to explain what remains to this day the perplexing problem of the origin of evil. These philosophical myths are, however, very various among different nations. Thus the orthodox belief of 200,000,000 of Hindoos is that mankind were created in castes, the Brahmins by an emanation from Brahma's head, the warriors from his chest, the traders and artisans from his legs, and the sudras or lowest caste from his feet; obviously an *ex post facto* myth to account for the institution of castes, and to stamp it with divine authority.

But before reflection had risen to this level, and among the savage and semi-barbarous people of the present day, we find much more crude speculations, which, in the main, correspond with the kindred creeds

of Animism and Totemism. When life and magical powers were attributed to inanimate objects, nothing was more natural than to suppose that stones and trees might be converted into men and women, and conversely men and women into trees and stones. Thus we find the stone theory very widely diffused. Even with a people so far advanced as the early Greeks, it meets us in the celebrated fable of Deucalion and Pyrrha peopling the earth by throwing stones behind them, which turned into men and women; and the same myth, of stones turning into the first men, meets us at the present day in almost every reliable myth of creation, brought home by missionaries and anthropologists from Africa, America, and Polynesia. In some cases trees take the place of stones, and transformations of men into both are among the commonest occurrences. From Daphne into a laurel, and Lot's wife into a pillar of salt, down to the Cornish maidens transformed into a circle of stones for dancing on Sunday, we find everywhere that wherever natural objects present any resemblance to the human figure, such myths sprung up spontaneously in all ages and countries.

Another great school of creation-myths originates in the widespread institution of the totem. It is a step in advance of the pure fetich-worship of stocks and stones, to conceive of animals as having thought and language, and being in fact men under a different form. From this it is a short step to endowing them with magical attributes and supernatural powers, adopting them as patrons of tribes and families, and finally considering them as ancestors. Myths of this kind are common among the lower races, especially in America, where many of the tribes considered themselves as

descendants of some great bear or elk, or of some extremely wise fox or beaver, and held this belief so firmly, that intermarriage among members of the same totem was considered to be incestuous. The same system prevails among most races at an equally low or lower stage of civilization, as in Australia; and there are traces of its having existed among old civilized nations at remote periods. Thus the animal-worship of Egypt was probably a survival of the old faith in totems, differing among different clans, which was so firmly rooted in the popular traditions, that the priests had to accommodate their religious conceptions to it, as the Christian fathers did with so many pagan superstitions. The division of the twelve tribes of Israel seems also to have been originally totemic, judging from the old saga in which Jacob gives them his blessing, identifying Judah with a lion, Dan with an adder, and so on. And even at the present day, the crest of the Duke of Sutherland carries us back to the time when the wild-cat was the badge, and very probably some great and fierce wild-cat the ancestor, in popular belief, of the fighting clan Chattan.

But in all these various and discordant myths of the creation of man, it is evident there is nothing which comes within a hundred miles of being a possible historical reminiscence of anything that actually occurred; and they must be relegated to the same place as the corresponding myths of the creation of the animal world and of the universe. They are neither more or less credible than the theories that the earth is a great tortoise floating on the water, or the sky a crystal dome with windows in it to let down the rain, and stars hung from it like lamps to illuminate a tea-garden.

Even when we come to comparatively recent periods, and have to deal with traditions, not of how races originated, but how they came into the abodes where we find them, it is astonishing how little we can depend on anything prior to written records. Most ancient nations fancied themselves autochthonous, and took a pride in believing that they sprang from the soil on which they lived. And this is also the case with ruder races, unless where the migrations and conquests recorded are of very recent date. Thus Ancient Egypt believed itself to be autochthonous, and traced the origin of arts and sciences to native gods. Chaldæa, according to Berosus, was inhabited from time immemorial by a mixed multitude, and though Oannes brought letters and arts from the shores of the Persian Gulf, he taught them to a previously existing population. This is the more remarkable as the name of Accad and the form of the oldest Accadian hieroglyphics make it almost certain that they had migrated into Mesopotamia from the highlands of Kurdistan or of Central Asia. The Athenians also and other Greek tribes all claimed to be autochthonous, and their legends of men springing from the stones of Deucalion, and from the dragon's teeth of Cadmus, all point in the same direction. The great Aryan races also have no trustworthy traditions of any ancient migrations from Asia into Europe, or *vice versâ*, and their languages seem to denote a common residence during the formation of the different dialects in those regions of Northern Europe and Southern Russia in which we find them living when we first catch sight of them. The only exception to this is in the record in the Zendavesta of successive migrations from the Pamer or Altai, down the Oxus and Jaxartes into

Bactria, and from thence into Persia. But this is not found in the original portion of the Zendavesta, and only in later commentaries on it, and is very probably a legend introduced to exemplify the constant warfare between Ormuzd and Ahriman. The Hindoo Vedas contain no history, and the inference that the Aryans lived in the Punjaub when the Rig-Veda was composed, and conquered Hindostan later, is derived from the references contained in the oldest hymns which point to that conclusion, rather than from any definite historical record. Rome again had no tradition of Umbrian pile-dwellers descending from neolithic Switzerland, expelling Iberians, and being themselves expelled by Etruscans.

It is singular, considering the almost total absence of genuine historical traditions, how certain myths and usages have been universally diffused, and come down to the present day from a very remote antiquity. The identity of the days of the week, based on a highly artificial and complicated calculation of Chaldæan astrology, has been already referred to as a striking instance of the wide diffusion of astronomical myths in very early times. Many of the most popular nursery tales also, such as Jack the Giant-killer, Jack and the Beanstalk, and Cinderella, are found almost in the same form in the most remote regions and among the most various races, both civilized and uncivilized, and many of them are obviously derived from the oldest and simplest forms of solar myths.

I come now to the tradition of a Deluge, which is most important both on account of its prevalence among a number of different races and nations, often remote from one another, and because it affords the most im-

mediate and crucial test of the claim of the Bible to be taken as a literally true and inspired account, not only of matters of moral and religious import, but of all the historical and scientific facts recorded in its pages. The Confession of Faith of an able and excellent man, the late Mr. Spurgeon, and adopted by fifteen or twenty other Nonconformist ministers, says—

"We avow our firmest belief in the verbal inspiration of all Holy Scripture as originally given. To us the Bible does not merely *contain* the Word of God, but *is* the Word of God."

Following this example, thirty-eight clergymen of the Church of England have put forward a similar Declaration. They say—

"We solemnly profess and declare our unfeigned belief in all the Canonical Scriptures of the Old and New Testaments, as handed down to us by the undivided Church in the original languages. We believe that they are inspired by the Holy Ghost; that they are what they profess to be; that they mean what they say; and that they declare incontrovertibly the actual historical truth in all records, both of past events, and of the delivery of predictions to be thereafter fulfilled."

It is perfectly obvious that for those who accept these Confessions of Faith, not only the so-called "higher Biblical Criticism," but all the discoveries of modern science, from Galileo and Newton down to Lyall and Darwin, are simple delusions. There can be no question that if the words of the Old Testament are "literally inspired," and "mean what they say," they oppose an inflexible *non possumus* to all the most certain discoveries of Astronomy, Geology, Zoology, Biology, Egyptology, Assyriology, and other modern sciences.

Now the account of the Deluge in Genesis affords the readiest means of bringing this theory to the test, and proving or disproving it, by the process which Euclid calls the *reductio ad absurdum.*

Not that other narratives, such as those of the Creation in Genesis, do not contain as startling contradictions, if we keep in mind the assertion of the orthodox thirty-eight, that the inspired words of the Old Testament "mean what they say," *i. e.* that they mean what they were necessarily taken to mean by contemporaries and long subsequent generations; for instance, that if the inspired writer says days defined by a morning and an evening, he means natural days, and not indefinitely long periods. But this is just what the defenders of orthodoxy always ignore, and all the attempts at reconciling the accounts of Creation in Genesis with the conclusions of science turn on the assumption that the inspired writers do *not* "mean what they say," but something entirely different. If they say "days," they mean geological periods of which no reader had the remotest conception until the present century. If they say that light was made before the sun, and the earth before the sun, moon, and stars, they really mean, in some unexplained way, to indicate Newton's law of gravity, Laplace's nebular theory, and the discoveries of the spectroscope. By using words therefore in a non-natural sense, and surrounding them with a halo of mystical and misty eloquence, they evade bringing the pleadings to a distinct and definite issue such as the popular mind can at once understand. But in the case of the Deluge no such evasion is possible. The narrative is a specific statement of facts alleged to have occurred at a com-

paratively recent date, not nearly so remote as the historical records of Egypt and Chaldæa, and which beyond all question must be either true or false. But if false, there is an end of any attempt to consider the whole scientific and historical portions of the Bible as written by Divine inspiration; for the narrative is not one of trivial importance, but of what is really a second creation of all life, including man, from a single or very few pairs miraculously preserved and radiating from a single centre.[1]

Consider then what the narrative of the Deluge really tells us. First, as to date. The Hebrew Bible, from which our own is translated, gives the names of the ten generations from Noah to Abraham, with the precise dates of each birth and death, making the total number of years 297 from the Flood to Abraham. For Abraham, assuming him to be historical, we have a synchronism which fixes the date within narrow limits. He was a contemporary of Chedorlaomer, or Khuder-Lagomar, known to us from Chaldæan inscriptions as one of the last of the Elamite dynasty, who subverted the old dynasty in the year 2280 B.C., and who reigned for 160 years. Abraham's date is, therefore, approximately about 2200 B.C., and that of the Deluge about 2500 B.C. The Septuagint version assigns 700 years more than that of the Hebrew Bible for the interval between Abraham and Noah; but this is only done by increasing

[1] The following arguments so closely resemble those of Professor Huxley in a recent Article in the *Nineteenth Century*, that it may be well to state that they were written before I had seen that article. I insert them not as attempting to vie with the greatest living master of English prose, but as showing that the same conclusions inevitably force themselves on all who understand the first rudiments of Modern Science

the already fabulous age of the patriarchs. Accepting, however, this Septuagint version, though it has been constantly repudiated by the Jews themselves, and by nearly all Christian authorities from St. Jerome down to Archbishop Usher, the date of the Deluge cannot be carried further back than to about 3000 B.C., a date at least 1000, and more probably 2000, years later than that shown by the records and monuments of Egypt and Chaldæa, when great empires, populous cities, and a high degree of civilization already existed in those countries. The statement of the Bible, therefore, is that, at a date not earlier than 2200 B.C., or at the very earliest 3000 B.C., a deluge occurred which "covered all the high hills that were under the whole heaven," and prevailed upon the earth for 150 days before it began to subside; that seven months and sixteen days elapsed before the tops of the mountains were first seen; and that only after twelve months and ten days from the commencement of the flood was the earth sufficiently dried to allow Noah and the inmates of the Ark to leave it.

Naturally all life was destroyed, with the exception of Noah and those who were with him in the Ark, consisting of his wife, his three sons and their wives, and pairs, male and female, of all beasts, fowls, and creeping things; or, as another account has it, seven pairs of clean beasts and of birds, and single pairs of unclean beasts and creeping things. The statement is absolutely specific: "All flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of every creeping thing that creepeth upon earth, and every man." And again: "Every living substance was destroyed which was upon the face of the ground, both

men and cattle, and the creeping things, and the fowl of the heaven, and they were destroyed from the earth; and Noah only remained alive, and they that were with him in the Ark." And finally, when the Ark was opened, "God spake unto Noah and said, Go forth of the Ark, thou and thy wife, and thy sons and sons' wives with thee. Bring forth with thee every living thing that is with thee, of all flesh, both of fowl and of cattle, and of every creeping thing that creepeth upon the earth, that they may breed abundantly on the earth, and be fruitful and multiply upon the earth."

It is evident that such a narrative cannot be tortured into any reminiscence of a partial and local inundation. It might possibly be taken for a poetical exaggeration of some vague myth or tradition of a local flood, if it were found in the legends of some early races, or semi-civilized tribes. But such an interpretation is impossible when the narrative is taken, as orthodox believers take it, as a Divinely-inspired and literally true account contained in one of the most important chapters in the history of the relations of man to God. In this view it is a still more signal instance than the fall of Adam, of God's displeasure with sin and its disastrous consequences, of his justice and mercy in sparing the innocent and rewarding righteousness; it establishes a new departure for the human race, a new distinction between the chosen people of Israel and the accursed Canaanites, based not on Cain's murder of Abel, but on Ham's irreverence towards his father; and it introduces a covenant between God and Noah, which continued through Abraham and David, and became the basis of Jewish nationality and of the Christian dispensation. If in such a narrative there are manifest errors, the

theory of Divine inspiration obviously breaks down, and the book which contains it must be amenable to the ordinary rules of historical criticism.

Now, that no such Deluge as that described in Genesis ever took place is as certain as that the earth moves about the sun. Physical science tells us that it never *could* have occurred; geology, zoology, ethnology, and history all tell us alike that it never *did* occur. Physical science tells us two things about water: that it cannot be made out of nothing, and that it always finds its level. In order to cover the highest mountains on the earth and remain stationary at that level for months, we must suppose an uniform shell of water of six miles in depth to be added to the existing water of the earth. Even if we take Ararat as the highest mountain covered, the shell must have been three miles in thickness over the whole globe. Where did this water come from, and where did it go to? Rain is simply water raised from the seas by evaporation, and is returned to them by rivers. It does not add a single drop of water to that already existing on the earth and in its atmosphere. The heaviest rains do nothing but swell rivers and inundate the adjacent flat lands to a depth of a few feet, which rapidly subsides. The only escape from this law of nature is to suppose some sudden convulsion, such as a change in the position of the earth's axis of rotation, by which the existing waters of the earth were drained in some latitudes and heaped up in others. But any such local accumulation of water implies a sudden and violent rush to heap it up in forty days, and an equally violent rush to run it down to its old level when the disturbing cause ceased, as it must have done in 150 days. Such a disturbance in recent times is not only

inconsistent with all known facts, but with the positive statement of the narrative that the whole earth was covered, and that the Ark floated quietly on the waters, drifting slowly northwards, until it grounded on Ararat. The only other alternative is to suppose a subsidence of the land below the level of the sea. But a subsidence which carried a whole continent 15,000, or even 1500 feet down, followed by an elevation which brought it back to the old level, both accomplished within the space of twelve months, is even more impossible than a cataclysmal deluge of water. Such movements are now, and have been throughout all the geological periods, excessively slow, and certainly not exceeding, at the very outside, a few feet in a century.

And, if physical science shows that no such Deluge as that described in Genesis could have occurred, geology is equally positive that it never did occur. The drift and boulders which cover a great part of Europe and North America are beyond all doubt glacial, and not diluvial. They are strictly limited by the extension of glaciers and ice-sheets, and of the streams flowing from them. The high-level gravels in which human remains are found in conjunction with those of extinct animals, are the result of the erosion of valleys by rivers. They are not marine, they are interstratified with beds of sand and silt, containing often delicate fluviatile shells, which were deposited when the stream ran tranquilly, as the coarser gravels were when it ran with a stronger torrent. And the gravels of adjacent valleys, even when separated by a low water-shed, are not intermixed, but each composed of the *débris* of its own system of drainage, by which small rivers like the

Somme and the Avon have, in the course of ages, scooped out their present valleys to an extent of more than 100 feet in depth and two miles in width. Masses of loose sand, volcanic ashes, and other incoherent materials of tertiary formation remain on the surface, which must have been swept away by anything resembling a diluvial wave. And, above all, Egypt and other flat countries adjoining the sea, such as the deltas of the Euphrates, the Ganges, and the Mississippi, which must have been submerged by a slight elevation of the sea or subsidence of the land, show by borings, carried in some cases to the depth of 100 feet and upwards, nothing but an accumulation of such tranquil deposits as are now going on, continued for hundreds of centuries, and uninterrupted by anything like a marine or diluvial deposit.

Zoology is even more emphatic than geology in showing the impossibility of accepting the narrative of the Deluge as a true representation of actual events. Whoever wrote it must have had ideas of science as infantile as those of the children who are amused by a toy ark in the nursery. His range of vision could hardly have extended beyond the confines of his own country. And, if a *reductio ad absurdum* were needed of the fallacies to which reconcilers are driven, it would be afforded by Sir J. Dawson's comparison of the Ark to an American cattle-steamer. Recollect that the date assigned to the Deluge affords no time for the development of new species and races, since every "living substance was destroyed that was upon the face of the ground," except the pairs preserved in the Ark. It is a question, therefore, not of one pair of bears, but of many—polar, grizzly, brown, and

all the varieties, down to the pigmy bear of Sumatra. So of cattle: there must have been not only pairs of the wild and domestic species of Europe, but of the gaur of India, the Brahmin bull, the yak, the musk-ox, and of all the many species of buffaloes and bisons. If we take the larger animals only, there must have been several pairs of elephants, rhinoceroses, camels, horses, oxen, buffaloes, elk, deer and antelopes, apes, zebras, and innumerable others of the herbivora, to say nothing of lions, tigers, and other carnivora. Let any one calculate the cubic space which such a collection would require for a year's voyage under hatches, and he will see at once the absurdity of supposing that they could have been stowed away in the Ark. And this is only the beginning of the difficulty, for all the smaller animals, all birds, and all creeping things have also to be accommodated, and to live together for a year under conditions of temperature and otherwise which, if suited for some, must inevitably have been fatal for others. How did polar bears, lemmings, and snowy owls live in a temperature suited for monkeys and humming-birds?

Then there is the crowning difficulty of the food. Go to the Zoological Gardens, and inquire as to the quantity and bulk of a year's rations for elephants, giraffes, and lions, or multiply by 365 the daily allowance of hay and oats for horses, and of grass or green food for bullocks, and he will soon find that the bulk required for food is far greater than that of the animals. And what did the birds and creeping things feed upon? Were there rats and mice for the owls, gnats for the swallows, worms and butterflies for the thrushes, and generally a supply of insects for the lizards, toads, and

other insectivora, whether birds, reptiles, or mammals? And of the humbler forms which live on microscopic animals and on each other, were they also included in the destruction of "every living substance," and was the earth repeopled with them from the single centre of Ararat?

Here also zoology has a decisive word to say. The earth could not have been repeopled, within any recent geological time, from any single centre, for in point of fact it is divided into distinct zoological provinces. The fauna of Australia, for instance, is totally different from that of Europe, Asia, and America. How did the kangaroo get there, if he is descended from a pair preserved in the Ark? Did he perchance jump at one bound from Ararat to the Antipodes?

Ethnology again takes up a limited branch of the same subject, but one which is more immediately interesting to us—that of the variety of human races. The narrative of Genesis states positively that "every man in whose nostrils was the breath of life" was destroyed by the Flood, except those who were saved in the Ark, and that "the whole earth was overspread" of the three sons of Noah—Shem, Ham, and Japheth. That is, it asserts distinctly that all the varieties of the human race have descended from one common ancestor, Noah, who lived not more than 5000 years ago. Consider the vast variety and diversity of human races existing now, and in some of the most typical instances shown by Egyptian and Chaldæan monuments to have existed before Noah was born—the black and woolly-haired Negroes, the yellow Mongolians, the Australians, the Negritos, the Hottentots, the pygmies of Stanley's African forest, the Esquimaux, the American

Red Indians, and an immense number of others, differing fundamentally from one another in colour, stature, language, and almost every trait, physical and moral. To suppose these to have all descended from a single pair, Noah and his wife, and to have "spread over the whole earth" from Ararat, since 3000 years B.C., is simply absurd. No man of good faith can honestly say that he believes it to be true; and, if not true, what becomes of inspiration?

If anything were wanting to complete the demonstration, it would be furnished by history. We have perfectly authentic historical records, confirmed by monuments, extending in Egypt to a date certainly 2000 years older than that assigned for Noah's Deluge; and similar records in Chaldæa probably going back as far.

In none of these is there any mention of an universal deluge as an historical event actually occurring within the period of time embraced by those records. The only reference to such a deluge is contained in one chapter of a Chaldæan epic poem based on a solar myth, and placed in an immense and fabulous antiquity. In Egypt the case is, if possible, even stronger, for here the configuration of the Nile valley is such that anything approaching an universal deluge must have destroyed all traces of civilization, and buried the country thousands of feet under a deep ocean. Even a very great local inundation must have spread devastation far and wide and been a memorable event in all subsequent annals. When remarkable natural events, such as earthquakes, did occur, they are mentioned in the annals of the reigning king, but no mention is made of any deluge. On the contrary, all the records and monuments confirm the statement made by the priests of Heliopolis

to Herodotus when they showed him the statues of the 360 successive high priests who had all been "mortal men, sons of mortal men," that during this long period there had been no change in the average duration of human life, and no departure from the ordinary course of nature.

When this historical evidence is added to that of geology, which shows that nothing resembling a deluge could have occurred in the valleys of the Nile or Euphrates without leaving unmistakable traces of its passage which are totally absent, the demonstration seems as conclusive as that of any of the propositions of Euclid.

It remains to consider how so many traditions of a deluge should be found among so many different races often so widely separated. There are three ways in which deluge-myths must have been inevitably originated.

1. From tradition of destructive local floods.

2. From the presence of marine shells on what is now dry land.

3. From the diffusion of solar myths like that of Izdubar.

There can be no doubt that destructive local floods must have frequently occurred in ancient and prehistoric times as they do at the present day. Such an inundation as that of the Yang-tse-Kiang, which only the other year was said to have destroyed half a million of people, or the hurricane wave which swept over the Sunderbunds, must have left an impression which, among isolated and illiterate people, might readily take the form of an universal deluge. And such catastrophes must have been specially frequent in the early post-glacial period, when the ice-dams, which converted many valleys into lakes, were melting.

But I am inclined to doubt whether the tradition of such local floods was ever preserved long enough to account for deluge-myths. All experience shows that the memory of historical events fades away with surprising rapidity when it is not preserved by written records. If, as Xenophon records, all memory of the great city of Nineveh had disappeared in 200 years after its destruction, how can it be expected that oral tradition shall preserve a recollection of prehistoric local floods magnified into universal deluges?

And when the deluge-myths of different nations are examined closely, it generally appears that they have had an origin rather in solar myths or cosmogonical speculations, than in actual facts. For instance, the tradition of a deluge in Mexico has often been referred to as a confirmation of the Noachian flood. But when looked into, it appears that this Mexican deluge was only a part of their mythical cosmogony which told of four successive destructions and renovations of the world by the four elements of earth, air, fire, and water. The first period being closed by earthquakes, the second by hurricanes, the third by volcanoes, it did not require any local tradition to ensure the fourth being closed by a flood.

Again, deluge-myths must have inevitably arisen from the presence of marine shells, fossil and recent, in many localities where they were too numerous to escape notice. If palæolithic stone implements and bones of fossil elephants gave rise to myths of thunderbolts and giants, sea-shells on mountain-tops must have given rise to speculations as to deluges. At the very beginning of history, Egyptian and Chaldæan astronomers were sufficiently advanced in science to wish to account for

such phenomena, and to argue that where sea-shells were found the sea must once have been. Many of the deluge-myths of antiquity, such as that of Deucalion and Pyrrha, look very much as if this had been their origin. They are too different from the Chaldæan and Biblical Deluge, as for instance in repeopling the world by stones, to have been copied from the same original, and they fit in with the very general belief of ancient nations that they were autochthonous.

In a majority of cases, however, I believe it will be found that deluge-myths have originated from some transmission, more or less distorted, of the very ancient Chaldæan astronomical myths of the passage of the sun through the signs of the zodiac. This is clearly the case in the Hindoo mythology, where the fish-god Ea-han, or Oannes, is introduced as a divine fish who swims up to the Ark and guides it to a place of refuge.

The legend in Genesis is much closer to the original myth, and in fact almost identical with that of the deluge of Hasisadra in the Chaldæan epic, discovered by Mr. George Smith among the clay tablets in the British Museum. This poem was obviously based on an astronomical myth. It was in twelve chapters, dedicated to the sun's passage through the twelve signs of the zodiac. The adventures of Izdubar, like those of Heracles, have obvious reference to these signs, and to the sun's birth, growth, summer splendour, decline to the tomb when smitten with the sickness of approaching winter by the incensed Nature-goddess, and final new birth and resurrection from the nether world.

The Deluge is introduced as an episode told to Izdubar during his descent to the lower regions by his ancestor Hasisadra, one of the God-kings, who are said

to have reigned for periods of tens of thousands of years in a fabulous antiquity. It has every appearance of being a myth to commemorate the sun's passage through the rainy sign of Aquarius, just as the contests of Izdubar and Heracles with Leo, Taurus, Draco, Sagittarius, etc., symbolize his passage through other zodiacal constellations. It forms the eleventh chapter of the Epic of Izdubar, corresponding to the eleventh month of the Chaldæan year, which was the time of heavy rains and floods.

Now, this deluge of Hasisadra, as related by Berosus, and still more distinctly by Smith's Izdubar tablets, corresponds so closely with that of Noah that no doubt can remain that one is taken from the other. All the principal incidents and the order of events are the same, and even particular expressions, such as the dove finding no rest for the sole of her foot, are so identical as to show that they must have been taken from the same written record. Even the name Noah is that of Nouah, the Semitic translation of the Accadian god who presided over the realm of water, and navigated the bark or ark of the sun across it, when returning from its setting in the west to its rising in the east. The chief difference is the same as in the Chaldæan and Biblical cosmogonies of the creation of the universe—viz. that the former is Polytheistic, and the latter Monotheistic. Where the former talks of Bel, Ea, and Istar, the latter attributes everything to Jehovah or Elohim. Thus the warning to Hasisadra is given in a dream sent by Ea, who is a sort of Chaldæan Prometheus, or kindly god, who wishes to save mankind from the total destruction contemplated by the wrathful superior god, Bel; while in Genesis it is "Elohim said unto Noah." In Genesis

the altar is built to the Lord, who smells the sweet savour of the sacrifice, while in the Chaldæan legend the altar is built to the seven gods, who "smelt the sweet savour of sacrifice, and swarmed like bees about it."

The Chaldæan narrative is more prolix, more realistic, and, on the whole, more scientific. That is, it mitigates some of the more obvious impossibilities of the Noachian narrative. Instead of an ark, there is a ship with a steersman, which was certainly more likely to survive the perils of a long voyage on the stormy waters of an universal ocean. The duration of the Deluge and of the voyage is shortened from a year to a little more than a month; more human beings are saved, as Hasisadra takes on board not his own family only, but several of his friends and relations; and the difficulty of re-peopling the earth from a single centre is diminished by throwing the date of the Deluge back to an immense and mythical antiquity. On the other hand, the moral and religious significance of the legend is accentuated in the Hebrew narrative. It is no longer the capricious anger of an offended Bel which decrees the destruction of mankind, but the righteous indignation of the one Supreme God against sin, tempered by justice and mercy towards the upright man who was "perfect in his generations."

If we had to decide on internal evidence only, there could be little doubt that the Hebrew narrative is of much later date than the Chaldæan. It is, in fact, very much what might be expected from a revised edition of it, made at the date which is assigned by all competent critics for the first collection of the legends and traditions of the Hebrew people into a sacred book—viz. at or about the date when the first mention is made of

such a book as being discovered in the Temple in the reign of Josiah. Kuenen, Wellhausen, and other leading authorities place the date of the Elohistic and Jehovistic narratives, which include the Creation and Deluge, even later; and, if not compiled during or after the Babylonian Captivity, they were certainly revised, and have come down to us in their present form after that event. Even the most orthodox critics, such as Dillman and Canon Driver, admit that they were written in the golden age of Hebrew literature, and in the spirit of the later prophets, such as Isaiah and Jeremiah, and do not think it possible to assign to them an earlier date than 800 or 900 B.C., while many parts may be much later.

But the question is not one of internal evidence only, but of the positive fact that, even if these chapters of Genesis were written by Moses, or about 1350 B.C., and even accepting the Septuagint addition of 700 years to the already mythical duration of the lives of the patriarchs, the date of the Biblical Deluge cannot be carried back beyond 3100 or 3200 B.C., while a practically identical account of the same event is given, as a legendary episode of fabulous antiquity, in an epic poem, based on a solar myth, which was certainly reduced to writing many centuries before the earliest possible date of the Scriptural Deluge. It is absolutely certain also that the Egyptian records and traditions, which extend in an uninterrupted succession of dynasties and kings for at least 2000 years before this alleged universal Deluge, know nothing whatever of such an event; and, on the contrary, assume an unvarying continuance of the ordinary laws of Nature.

I have dwelt at such length on the Deluge because

it affords a crucial test of the dogma of Divine inspiration for the whole of the Bible. The account of the Creation may be obscured by forced interpretations and misty eloquence; but there can be no mistake as to the specific and precise statements respecting the second creation of man and of animal life. Either they are true or untrue; and the issue is one upon which any unprejudiced mind of ordinary intelligence and information can arrive at a conclusive verdict. If there never was an universal Deluge within historical times; if the highest mountains were never covered; if all life was never destroyed, except the contents of the Ark; if the whole animal creation, including beasts, birds, and creeping things, never lived together for twelve months cooped up in it; and if the earth was not re-peopled with all the varieties of the human race, and all the orders, genera, and species of animal life, from a single centre at Ararat, then the Bible is not inspired as regards its scientific and historical statements. This, however, in no way affects the question of the inspiration of the religious and moral portions of the Bible.

I have sometimes thought how, if I were an advocate stating the case for the inspiration of the Bible, I should be inclined to put it. I should start with Bishop Temple's definition of the First Cause, a personal God, with faculties like ours, but so transcendentally greater that he had no occasion to be perpetually patching and mending his work, but did everything by an original impress, which included all subsequent evolution, as the nucleolus in the primitive ovum includes the whole evolution and subsequent life of the chicken, mammal, or man. I should go on to say that the Bible has clearly been an important factor in this evolution of

the human race; that it consists of two portions—one of moral and religious import, the other of scientific statements and theories, relating to such matters of purely human reason as astronomy, geology, literary criticism, and ancient history; and that these two parts are essentially different. It is quite conceivable that, on the hypothesis of a Divine Creator, one step in the majestic evolution from the original impress should have been that men of genius and devout nature should write books containing juster notions of man's relations to his Maker than prevailed in the polytheisms of early civilizations, and thus gradually educating a peculiar people who accepted these writings as sacred, and preparing the ground for a still higher and purer religion. But it is not conceivable that this, which may be called inspiration, of the religious and moral teaching, should have been extended to closing the record of all human discovery and progress, by teaching, as it were by rote, all that subsequent generations have, after long and painful effort, found out for themselves.

In point of fact, the Bible does not teach such truths, for in the domain of science it is full of the most obvious errors, and teaches nothing but what were the primitive myths, legends, and traditions of the early races. It is to be observed also that, on the theory of "original impress," those errors are just as much a part of the evolution of the Divine idea as the moral and religious truths. Those who insist that all of the Bible must be inspired or none, remind me of the king who said that, if God had only consulted him in his scheme of creation, he could have saved him from a good many mistakes. It is not difficult to

understand how, even if we assume the theory of inspiration, or of original impress, for the religious portion of the Bible, the other or scientific portion should have been purposely left open to all the errors and contradictions of the human intellect in its early strivings to arrive at some sort of conception of the origin of things, and of the laws of the universe. And also that a collection of narratives of different dates and doubtful authorship should bear on the face of them evidence of the writers sharing in the errors and prejudices, and generally adopting points of view of successive generations of contemporaries.

Assuming this theory, I can only say for myself that the removal of the wet blanket of literal inspiration makes me turn to the Bible with increased interest. It is a most valuable record of the ways of thinking, and of the early conceptions of religion and science in the ancient world, and a most instructive chapter in the history of the evolution of the human mind from lower to higher things. Above all, it is a record of the preparation of the soil, in a peculiar race, for Christianity, which has been and is such an important factor in the history of the foremost races and highest civilizations. With all the errors and absurdities, all the crimes and cruelties which have attached themselves to it, but which in the light of science and free thought are rapidly being sloughed off, it cannot be denied that the European, and especially our English-speaking races, stand on a higher platform than if Gibbon's suggestion had been realized, the Arabs had been victorious at Tours, and Moslem Ulemas had been expounding the Koran at the University of Oxford.

CHAPTER VII.

THE HISTORICAL ELEMENT IN THE OLD TESTAMENT.

Moral and Religious distinct from Historical Inspiration—Myth and Allegory—The Higher Criticism—All Ancient History unconfirmed by Monuments untrustworthy- Cyrus—Old Testament and Monuments—Jerusalem—Tablet of Tell-el-Amarna—Flinders Petrie's Exploration of Pre Hebrew Cities—Ramses and Pi-thom—First certain Synchronism Rehoboam—Composite Structure of Old Testament—Elohist and Jehovist—Priests' Code—Canon Driver—Results—Book of Chronicles—Methods of Jewish Historians—Post-Exilic References - Tradition of Esdras—Nehemiah and Ezra—Foundation of Modern Judaism—Different from Pre-Exilic—Discovery of Book of the Law under Josiah—Deuteronomy—Earliest Sacred Writings—Conclusions—Aristocratic and Prophetic Schools—Triumph of Pietism with Exile—Both compiled partly from Old Materials—Crudeness and Barbarism of Parts—Pre-Abrahamic Period clearly mythical—Derived from Chaldæa—Abraham- Unhistoric Character—His Age—Lot's Wife—His double Adventure with Sarah—Abraham to Moses—Sojourn in Egypt—Discordant Chronology—Josephus' Quotation from Manetho - Small Traces of Egyptian Influence—Future Life—Legend of Joseph—Moses—Osarsiph—Life of Moses full of Fabulous Legends—His Birth—Plagues of Egypt—The Exodus—Colenso—Contradictions and Impossibilities—Immoralities—Massacres—Joshua and the Judges—Barbarisms and Absurdities—Only safe Conclusion no History before the Monarchy—David and Solomon—Comparatively Modern Date.

In dealing with the historical portion of the Old Testament, it is important to keep clearly in view the distinction between the historical and the religious and moral elements which are contained in the collection of works comprised in it. It is quite open to any one to

hold that a certain moral and religious idea runs through the whole of these writings, which is gradually developed from rude beginnings into pure and lofty views of an Almighty God who created all things, and who loves justice and mercy better than the blood of bulls and rams. It is open to him to call this inspiration, and to see it also in the series of influences and events by which the Jews were moulded into a peculiar people, through whose instrumentality the three great Monotheistic religions of the world, Judaism, Christianity, and Mahometanism, superseded the older forms of polytheism.

With inspiration in this sense I have no quarrel, any more than I have with Bishop Temple's definition of "original impress," though possibly I might think "Evolution" a more modest term to apply, with our limited faculties and knowledge, to that "unceasing purpose" which the poet tells us

"Through the ages runs,
And the thoughts of men are widened with the process of the suns."

But admitting this, I do not see how any candid man, who is at all acquainted with the results of modern science and of historical criticism, can doubt that the materials with which this edifice was gradually built up, consist, to a great extent, of myths, legends, and traditions of rude and unscientific ages which have no pretension to be true statements, or real history.

After all this is only applying to the Old, the same principles of interpretation as are applied to the New Testament. If the theory of literal inspiration requires us to accept the manifest impossibilities of Noah's Deluge, why does it not equally compel us to believe

that there really was a certain rich man who fared sumptuously every day, a beggar named Lazarus, and definite localities of a Heaven and Hell within speaking distance of one another, though separated by an impassable gulf. The assertion is made positively and without any reservation. There *was* a rich man; Lazarus *died, and was carried to Abraham's bosom;* and Dives *cried* to Abraham, who *answered him in a detailed colloquy.* But common sense steps in and says, all this never actually occurred, but was invented to illustrate by a parable the moral truth that it is wrong for the selfish rich to neglect the suffering poor.

Why should not common sense equally step in, and say of the narrative of the Garden of Eden with its trees of Knowledge and of Life, that here is an obvious allegory, stating the problem which has perplexed so many generations of men, of the origin of evil, man's dual nature, and how to reconcile the *fact* of the existence of sin and suffering with the *theory* of a benevolent and omnipotent Creator? Or again, why hesitate to admit that the story of the Deluge is not literal history, but a version of a chapter of an old Chaldæan solar epic, revised in a monotheistic sense, and used for the purpose of impressing the lesson that the ways of sin are ways of destruction, and that righteousness is the true path of safety? This is in effect what continental critics have long recognized, and what the most liberal and learned Anglican Divines of the present day are beginning to recognize; and we find men like Canon Driver, Professor of Hebrew at Oxford, and Canon Cheyne, insisting on "the fundamental importance of disengaging the religious from the critical and historical problems of the Old Testament." We hear a great deal

about the "higher criticism," and those who dislike its conclusions try to represent it as something very obscure and unintelligible, spun from the inner consciousness of German pedants. But really there is nothing obscure about it. It is simply the criticism of common sense applied from a higher point of view, which embraces, not the immediate subject only, but all branches of human knowledge which are related to it. This new criticism bears the same relation to the old, as Mommsen's *History of Rome* does to the school-boy manuals which used to assume Romulus and Remus, Numa and Tarquin, as real men who lived and reigned just as certainly as Julius Cæsar and Augustus, and who found nothing to stagger them in Livy's speaking oxen.

This criticism has now been carried so far by the labours of a number of earnest and learned men in all the principal countries of Europe for the last century, that it has become to a great extent one of the modern sciences, and although there are still differences as to details, the leading outlines are no more in dispute than those of Geology or Biology. The conclusions of enlightened English divines like Canons Driver and Cheyne are practically very nearly the same as those of foreign professors, like Kuenen, Wellhausen, Dillman, and Renan, and any one who wishes to have any intelligent understanding of the Hebrew Bible must take them into consideration.

Although the Old Testament does not carry history back nearly as far as the records of Egypt and Chaldæa, still, when freed from the incubus of literal inspiration, it affords a very interesting picture of the ways of thinking of ancient races, of their manners and customs, their first attempts to solve problems of science

and philosophy, and of their popular legends and traditions.

It is with these historical results only that I propose to deal, and this not in the way of minute criticism, but of the broad, common-sense aspects of the question, and in view of the salient facts which rise up like guiding pillars in the vast mass of literature on the subject, of which it may be said, in the words of St. John's Gospel, that if all that has been written were collected, "I suppose that even the world itself could not contain the books."

I may begin by referring to the extreme uncertainty that attaches to all ancient history unless it is confirmed by monuments, or by comparison with annals of other nations which have been so confirmed. The instance of Cyrus is a most instructive one. Here is one of the greatest conquerors the world has seen, and the founder of a mighty Empire; who flourished at a comparatively recent period, and whose life and exploits are related by well-known historians, such as Herodotus, who wrote within a few generations after his death; confirmed also to a great extent by almost contemporary records of Hebrew writers who were in close relations with him. The picture given of him is that of the son of a Median princess by an obscure Persian; in common with so many of the gods and heroes of antiquity, he is said to have been exposed in infancy and saved miraculously or marvellously; he incites the poor and hardy people of Persia to revolt; defeats the Medes, consolidates Media and Persia, conquers Lydia and all Asia Minor; and finally, as the "servant of the most High God," and instrument of his vengeance on Babylon, takes and destroys the cruel city of Nebuchadnezzar, and allows

the Jews to return from exile out of sympathy with their religion.

Unexpectedly a tablet of Cyrus himself turns up, and plays havoc alike with prophets and historians Instead of being the son of an obscure Persian father, he proves to be the legitimate descendant of a long line of Elamite kings; instead of being a servant of the most High God, or even a Zoroastrian, he appears as a devoted worshipper of the Chaldæan gods, Assur, Merodach, and Nebo; so far from being an instrument of divine vengeance for the destruction of Babylon, he enters it without a battle, and is welcomed by its priests and people as an orthodox deliverer from the heretical tendencies of the last native king Nabonidus. It is apparent from this and other records, that Darius and not Cyrus was the real founder of the Persian Empire. Cyrus indeed founded a great Empire, but it fell to pieces after the death of his son Cambyses and the usurpation of the Magi, and it was Darius who, after years of hard fighting, suppressed revolts, really besieged and took Babylon, and reconstituted the Empire, which now for the first time became Persian and Zoroastrian.

Such an example teaches us to regard with considerable doubt all history prior to the fifth or sixth century B.C. which is not confirmed by contemporary monuments. Of such nations, Egypt and Chaldæa (including in the latter term Assyria) alone give us a series of annals, proved by monuments confirming native historians, which extend for some 4000 years back, from the commencement of what may be called the modern and scientific history of the Greek period.

The historical portion of the Old Testament is singularly deficient in this essential point of confirmation

by monumental evidence. Of Hebrew inscriptions there are none except that of the time of Hezekiah in the tunnel which brought water from the Pool of Siloam into the city; and the Moabite stone, which confirms the narrative in 2 Kings of the siege of Rabbah by Jehoshaphat and Jehoram, and their repulse after the sacrifice of his eldest son in sight of the armies by the King of Moab. Both of these inscriptions are of comparatively modern date, and close to or within the period when contact with the Assyrian Empire removes all uncertainty as to the history of Judæa and Israel under their later kings. The capture of Jerusalem by David and the building of the Temple there by Solomon are doubtless historical facts, but they cannot be said to receive any additional confirmation from monuments. There have been so many destructions and rebuildings of temples on this site, that it is difficult to say to what era the lower strata belong. It is apparent, moreover, from the Egyptian tablets of Tel-el-Amarna, the city founded by the heretic king, Amenophis IV., about 1500 B.C., that Jerusalem was a well-known city and sacred shrine prior to the Hebrew conquest, and even to the date of the Exodus. Professor Sayce tells us that on one of these tablets is written, "The city of the mountain of Jerusalem (or Urasalim), the City of the temple of the God Uras, whose name there is Marra, the City of the King, which adjoins the locality of the men of Keilah." Uras was a Babylonian deity, and Marra is probably the Aramaic Mare, "lord," from which it may be conjectured that Mount Moriah received its name from the Temple of Uras which stood there.

Some of the other tablets show that in the century before the Exodus, Jerusalem was occupied by a semi-

independent king, who claimed to have derived his authority from "the oracle of the mighty King," which is explained to mean a deity, though he acknowledged the superiority of Egypt, which still retained the conquests of the eighteenth dynasty in Palestine. This, however, relates not to the Hebrews, but to the state of things prior to their invasion, when Palestine was occupied by comparatively civilized races of Amorites and Canaanites, and studded with numerous fenced cities.

A glimpse at the later state of things, when those earlier nations and cities were overwhelmed by an invasion of a rude nomad race, as described in the Books of Joshua and Judges, has been afforded quite recently by the exploration by Mr. Flinders Petrie of a mound on the plain of Southern Judæa, which he is disposed to identify with the ancient Lachish. A section of this mound has been exposed by the action of a brook, and it shows, as in Dr. Schliemann's excavations on the supposed site of Troy at Hissarlik, several successive occupations. The lowest and earliest city was fortified by a wall of sun-burnt bricks, 28 feet 8 inches thick, and which still stands to a height of 21 feet. It shows signs of great antiquity, having been twice repaired, and a large accumulation of broken pottery was found both outside and within it.

This city, which Petrie identifies with one of those Amorite cities which were "walled up to heaven," had been taken and destroyed, and the wall had fallen into ruins. Then, to use Professor Sayce's words, "came a period when the site was occupied by rude herdsmen, unskilled in the arts either of making bricks or of fortifying towns. Their huts were built of mud and

rolled stones from the Wady below, and resembled the wretched shanties of the half-savage Bedouins, which we may still see on the outskirts of the Holy Land. They must have been inhabited by the invading Israelitish tribes, who had overthrown the civilization which had long existed in the cities of Canaan, and were still in a state of nomadic barbarism."

Above this come newer walls, which had been built and repaired three or four times over by the Jewish kings, one of the later rebuildings being a massive brick wall 25 feet thick, with a glacis of large blocks of polished stone traced to a height of 40 feet, which Petrie refers to the reign of Manasseh. Then comes a destruction, probably by the Assyrians under Sennacherib, and then other buildings of minor importance, the latest being those of a colony of Greeks, who were swept away before the age of Alexander the Great.

This discovery is of first-rate importance as regards the early history of the Hebrews, and especially as to their relations with Egypt, their sojourn there, and the Exodus. If Abraham really came from Ur of Chaldæa, the seat of a very old civilization; and if his descendants really lived for 400 years or longer in Egypt, mixed up a good deal with the native population, and for a great part of the time treated with favour, and occupying, if the legend of Joseph be true, the highest posts in the land; and if they really left Egypt, as described in the Exodus, laden with the spoils of the Egyptians, and led by Moses, a priest of Heliopolis skilled in all the lore of that ancient temple, it is inconceivable that in a single generation they should have sunk to such a level as that of the half-savage Bedouins, as indicated by Petrie's

researches. And yet who else could have been the barbarians whose inroad destroyed the walled city of the Amorites; and how well does this condition of rude savagery correspond with the bloodthirsty massacres, and the crude superstitions, which meet us at every turn in the traditions of the period between the departure from Egypt and the establishment of a monarchy, which have been used by the compilers of the Books of Exodus, Joshua, and Judges?

If we are ever to know anything beyond legend and conjecture as to this obscure period, it is to the pick and the spade that we must look for certain information, and the exploration of mounds of ruined cities must either confirm or modify Petrie's inference as to the extreme rudeness of the nomad tribes who broke in upon the civilized inhabitants of older races.

Another exploration by Mr. Flinders Petrie, that of the ruins of Pi-thom and Ramses, gives a certain amount of monumental confirmation to the statement in Exodus i. 2, that during the captivity of the Israelites in Egypt they were employed as slaves by Ramses II. in building two treasure cities, Ramses and Pi-thom. Some wall-paintings show slaves or forced labourers, of a Jewish cast of countenance, working at the brick walls under the sticks of taskmasters.

The first certain synchronism, however, between the Egyptian monuments and Jewish history is afforded by the capture of Jerusalem by Shishak in the reign of Rehoboam in the year 974 B.C. Among the wall-paintings in the temple at Thebes commemorating the triumphs of this campaign of Shishak, is a portrait of a captive with Jewish features, inscribed Yuten-Malek. This has been read "King of the Jews," and taken to

be a portrait of Rehoboam, but it is more probable that it means "Kingdom of the Jews," and that the portrait is one representative of the country conquered. In any case this gives us the first absolutely certain date in Old Testament history. From this time downwards there is no reason to doubt that annals substantially correct, of successive kings of Judah and Israel, were kept, and after the reign of Ahaz, when the great Assyrian Empire appeared on the scene, we have a full confirmation, from the Assyrian monuments, of the principal events recorded in the Book of Kings. In fact, we may say that from the foundation of the Jewish Monarchy by Saul and David, we are fairly in the stream of history, but that for everything prior to about 1000 B.C. we have to grope our way almost entirely by the light of the internal evidence afforded by the Old Testament itself.

The first point evidently is to have some clear idea of what this Old Testament really consists of. Until the recent era of scientific criticism, it was assumed to constitute, in effect, one volume, the earlier chapters of which were written by Moses, and the later ones by a continuance of the same Divine inspiration, which made the Bible from Genesis to Chronicles one consistent and infallible whole, in which it was impossible that there should be any error or contradiction. Such a theory could not stand a moment's investigation in the free light of reason. It is only necessary to read the two first chapters of Genesis to see that the book is of a composite structure, made up of different and inconsistent elements. We have only to include in the first chapter the two first verses printed in the second chapter, and to write the original Hebrew word "Elohim" for "God,"

and "Yahve" or Jehovah for "Lord God," to see this at a glance.

The two accounts of the creation of the heaven and earth, of animal and vegetable life, and of man, are quite different. In the first Man is created last, male and female, in the image of God, with dominion over all the previous forms of matter and of life, which have been created for his benefit. In the second Man is formed from the dust of the earth immediately after the creation of the heavens and earth and of the vegetable world, and subsequently all the beasts of the field and fowls of the air are formed out of the ground, and brought to Adam to name, while, last of all, woman is made from a rib taken from Adam to be an helpmeet for him.

The two narratives, Elohistic and Jehovistic, distinguished both by the different names of God, and by a number of other peculiarities, run almost side by side through a great part of the earlier portion of the Old Testament, presenting often flagrant contradictions.

Thus Lamech, the father of Noah, is represented in one as a descendant of Cain, in the other of Seth. Canaan is in one the grandson of Adam, in the other the grandson of Noah. The Elohist says that Noah took two of each sort of living things, a male and a female, into the ark; the Jehovist that he took seven pairs of clean, and single pairs of unclean animals.

The difference betweeen these narratives, the Elohistic and Jehovistic, is, however, only the first and most obvious instance of the composite character of the Pentateuch. These narratives are distinguished from one another by a number of minute peculiarities of language and expressions, and they are both embedded

in a much larger mass of matter which relates mainly to the sacrificial and ceremonial system of the Israelites, and to the position, privileges, and functions of the priests and priestly caste of Levites. This is commonly known as the "Priests' Code," and a great deal of it is obviously of late date, having relation to practices and ceremonies which had gradually grown up after the foundation of the Temple at Jerusalem. A vast amount of erudition has been expended in the minute analysis of these different documents by learned scholars who have devoted their lives to the subject. I shall not attempt to enter upon it, but content myself with taking the main results from Canon Driver, both because he is thoroughly competent from his knowledge of the latest foreign criticism and from his position as Professor of Hebrew, and because he cannot be suspected of any adverse leaning to the old orthodox views. In fact he is a strenuous advocate of the inspiration of the Bible, taken in the larger sense of a religious and moral purpose underlying the often mistaken and conflicting statements of fallible writers.

The conclusions at which he arrives, in common with a great majority of competent critics in all countries, are—

1. That the old orthodox belief that the Pentateuch is one work written by Moses is quite untenable.

2. That the Pentateuch and Book of Joshua have been formed by the combination of different *layers* of narrative, each marked by characteristic features of its own.

3. That the Elohistic and Jehovistic narratives, which are the oldest portion of the collection, have nothing archaic in their style, but belong to the golden

period of Hebrew literature, the date assigned to them by most critics being not earlier than the eighth or ninth century B.C., though of course they may be founded partly on older legends and traditions; and, on the other hand, they contain many passages which could only have been introduced by some post-exilic editor.

4. That Deuteronomy, which is placed almost unanimously by critics in the reign of either Josiah or Manasseh, is absolutely inconsistent in many respects with the Priests' Code, and apparently of earlier date, before the priestly system had crystallized into such a definite code of minute regulations, as we find it in the later days of Jewish history after the Exile.

5. There is a difference of opinion, however, in respect to the date of the Priests' Code, Kuenen, Wellhausen, and Graf holding it to be post-Deuteronomic, and probably committed to writing during the period from the beginning of the exile to the time of Nehemiah, while Dillman assigns the main body to about 800 B.C., though admitting that additions may have been made as late as the time of Ezra.

Being concerned mainly with the historical question, I shall not attempt to pursue this higher criticism further, but content myself with referring to the principal points which, judged by the broad conclusions of common-sense, stand out as guiding pillars in the mass of details. Taking these in ascending order of time, they seem to me to be—

1. The Book of Chronicles.

2. The foundation of modern Judaism as described in the Books of Ezra and Nehemiah.

3. The discovery of the Book of the Law or Deuteronomy in the reign of Josiah.

The Book of Chronicles is important because we know its date, viz. about 300 B.C., and to a great extent the materials from which it was compiled, viz. the Books of Samuel and Kings. We have thus an object-lesson as to the way in which a Hebrew writer, as late as 300 B.C., or nearly 300 years after the exile, composed history and treated the earlier records. It is totally different from the method of a classical or modern historian, and may be aptly described as a "scissors and paste" method. That is to say, he makes excerpts from the sources at his disposal; sometimes inserts them consecutively and without alteration; at other times makes additions and changes of his own; and, in Canon Driver's words, "does not scruple to omit what is not required for his purpose, and in fact treats his authorities with considerable freedom." He also does not scruple to put in the mouth of David and other historical characters of the olden time, speeches which, from their spirit, grammar, and vocabulary, are evidently of his own age and composition.

If this was the method of a writer as late as 300 B.C., whose work was afterwards received as canonical, two things are evident. First, that the canon of the earlier Books of the Old Testament could not have been then fixed and invested with the same sacred authority as we find to be the case two or three centuries later, when the Thora, or Book of Moses and the Prophets, was regarded very much as the Moslems regard the Koran, as an inspired volume which it was impious to alter by a single jot or tittle. This late date for fixing the canon of the Books of the Old Testament is confirmed by Canon Cheyne's learned and exhaustive work on the Psalter, in which he shows that a great majority of the

Psalms, attributed to David, were written in the time of the Maccabees, and that there are only one or two doubtful cases in which it can be plausibly contended that any of the Psalms are pre-exilic.

Secondly, that if a writer, as late as 300 B.C., could employ this method, and get his work accepted as a part of the Sacred Canon, a writer who lived earlier, say any time between the Chronicler and the foundation of the Jewish Monarchy, might probably adopt the same methods. If the Chronicler put a speech of his own composition into the mouth of David, the Deuteronomist might well do so in the case of Moses. According to the ideas of the age and country, this would not be considered to be what we moderns would call literary forgery, but rather a legitimate and praiseworthy means of giving authority to good precepts and sentiments.

A perfect illustration of this which I have called the "scissors and paste" method, is afforded by the first two chapters of Genesis, and the way in which the Elohistic and Jehovistic narratives are so strangely interblended throughout the Pentateuch. No attempt is made to blend the two narratives into one harmonious and consistent whole, but excerpts, sometimes from one and sometimes from the other, are placed together without any attempt to explain away the evident contradictions. Clearly the same hand could not have written both narratives, and the compilation must have been made by some subsequent editor, or editors, for there is conclusive proof that the final edition, as it has come down to us, could not have been made until after the Exile. Thus in Leviticus xxvi. we find, "I will scatter you among the heathen, and your land shall be desolate, and your cities waste," and "they

that are left of you shall pine away in their iniquity in your enemies' land." And in Deuteronomy xxix., "And the Lord rooted them out of their land in anger, and in wrath, and in great indignation, and cast them into another land, as it is to this day." Even in Genesis, which professes to be the earliest Book, we find (xii. 6), "and the Canaanite was then in the land." This could not have been written until the memory of the Canaanite had become a tradition of a remote past, and this could not have been until after the return of the Jews from the Babylonian Captivity, for we find from the Books of Ezra and Nehemiah that the Canaanites were then still in the land, and the Jewish leaders, and even priests and Levites, were intermarrying freely with Canaanite wives.

The Apocryphal Book of Esdras contains a legend that the sacred books of the Law having been lost or destroyed when Jerusalem was taken by Nebuchadnezzar, they were re-written miraculously by Ezra dictating to five ready writers at once in a wonderfully short time. This is a counterpart of the legend of the Septuagint being a translation of the Hebrew text into Greek, made by seventy different translators, whose separate versions agreed down to the minutest particular. This legend, in the case of the Septuagint, is based on an historical fact that there really was a Greek translation of the Hebrew Sacred Books made by order of Ptolemy *Philadelphus;* and it may well be that the legend of Esdras contains some reminiscence of an actual fact, that a new and complete edition of the old writings was made and stamped with a sacred character among the other reforms introduced by Ezra.

These reforms, and the condition of the Jewish

people after the return from the Captivity, as disclosed by the Books of Nehemiah and Ezra, afford what I call the second guiding pillar, in our attempt to trace backwards the course of Jewish history. These books were indeed not written in their present form until a later period, and, as most critics think, by the same hand as Chronicles; but there is no reason to doubt the substantial accuracy of the historical facts recorded, which relate, not to a remote antiquity, but to a comparatively recent period after the use of writing had become general. They constitute in fact the dividing line between ancient and modern Judaism, and show us the origin of the latter.

Modern Judaism, that is, the religious and social life of the Jewish people, since they fairly entered into the current of modern history, has been marked by many strong and characteristic peculiarities. They have been zealously and almost fanatically attached to the idea of one Supreme God, Jehovah, with whom they had a special covenant inherited from Abraham, and whose will, in regard to all religious rites and ceremonies and social usages, was conveyed to them in a sacred book containing the inspired writings of Moses and the Prophets. This led them to consider themselves a peculiar people, and to regard all other nations with aversion, as being idolaters and unclean, feelings which were returned by the rest of the world, so that they stood alone, hating and being hated. No force or persuasion were required in order to prevent them from lapsing into idolatry or intermarrying with heathen women. On the contrary, they were inspired to the most heroic efforts, and ready to endure the severest sufferings and martyrdom for the pure faith. The

belief in the sacred character of their ancient writings gradually crystallized into a faith as absolute as that of the Moslems in the Koran; a canon was formed, and although, as we have seen in the case of the Chronicles and Psalms, some time must have elapsed before this sacred character was fully recognized, it ended in a theory of the literal inspiration of every word of the Old Testament down even to the commas and vowel points, and the establishment of learned schools of Scribes and Pharisees, whose literary labours were concentrated on expounding the text in synagogues, and writing volumes of Talmudic commentaries.

Now during the period preceding the Exile all this was very different. So far from being zealous for one Supreme God, Jehovah was long recognized only as a tribal or national god, one among the many gods of surrounding nations. When the idea of a Supreme Deity, who loved justice and mercy better than the blood of bullocks and rams, was at length elaborated by the later prophets, it received but scant acceptance. The great majority of the kings and people, both of Judah and Israel, were always ready to lapse into idolatry, worship strange gods, golden calves, and brazen serpents, and flock to the alluring rites of Baal and Astarte, in groves and high places. They were also always ready to intermarry freely with heathen wives, and to form political alliances with heathen nations. There is no trace of the religious and social repulsion towards other races which forms such a marked trait in modern Judaism. Nor, as we shall see presently, is there any evidence, prior to the reign of Josiah, of anything like a sacred book or code of divine laws, universally known and accepted. The Books of Nehemiah and Ezra

afford invaluable evidence of the time and manner in which this modern Judaism was stamped upon the character of the people after the return from exile. We are told that when Ezra came to Jerusalem from Babylon, armed with a decree of Artaxerxes, he was scandalized at finding that nearly all the Jews, including the principal nobles and many priests and Levites, had intermarried with the daughters of the people of the land, "of the Canaanites, Hittites, Perizzites, Jebusites, Ammonites, Moabites, Egyptians, and Amorites." Backed by Nehemiah, the cup-bearer and favourite of Artaxerxes, who had been appointed governor of Jerusalem, he persuaded or compelled the Jews to put away these wives and their children, and to separate themselves as a peculiar and exclusive people from other nations.

It was a cruel act, characteristic of the fanatical spirit of priestly domination, which never hesitates to trample on the natural affections and the laws of charity and mercy, but it was the means of crystallizing the Jewish race into a mould so rigid, that it defied wars, persecutions, and all dissolving influences, and preserved the idea of Monotheism to grow up into the world-wide religions of Christianity and Mahometanism. So true is it that evolution works out its results by unexpected means often opposed to what seem like the best instincts of human nature.

What is important, however, for the present object is, to observe that clearly at this date the population of the Holy Land must have consisted mainly of the descendants of the old races, who had been conquered but not exterminated by the Israelites. Such a sentence as, "for the Canaanites were then in the land," could

not have been written till long after the time when the Jews were intermarrying freely with Canaanite wives. Nor does it seem possible that codes, such as those of Leviticus, Numbers, and the Priests' Code, could have been generally known and accepted as sacred books written by Moses under Divine inspiration, when the rulers, nobles, and even priests and Levites acted in such apparent ignorance of them. In fact we are told in Nehemiah that Ezra read and explained the Book of the Law, whatever that may have included, to the people, who apparently had no previous knowledge of it.

By far the most important landmark, however, in the history of the Old Testament, is afforded by the account in 2 Kings xxii. and xxiii. of the discovery of the Book of the Law in the Temple in the eighteenth year of the reign of Josiah. It says that Shaphan the scribe, having been sent by the king to Hilkiah the high priest, to obtain an account of the silver collected from the people for the repairs of the Temple, Hilkiah told him that he had "found the Book of the Law in the house of the Lord." Shaphan brought it to the king and read it to him; whereupon Josiah, in great consternation at finding that so many of its injunctions had been violated, and that such dreadful penalties were threatened, rent his clothes, and being confirmed in his fears by Huldah the prophetess, proceeded to take stringent measures to stamp out idolatry, which, from the account given in 2 Kings xxiii., seems to have been almost universal. We read of vessels consecrated to Baal and to the host of heaven in the Temple itself, and of horses and chariots of the Sun at its entrance; of idolatrous priests who had been ordained by the kings of Judah to burn incense "unto Baal, to the Sun, and

to the Moon, and to the planets, and to all the host of heaven"; and of high places close to Jerusalem, with groves, images, and altars, which had been built by Solomon to Ashtaroth, the goddess of the Sidonians, Chemosh the god of the Moabites, and Milcom the god of the Ammonites, and had apparently remained undisturbed and places of popular worship ever since the time of Solomon.

On any ordinary principles of criticism it is impossible to doubt that, if this narrative is correct, there could have been no previous Book of the Law in existence, and generally recognized as a sacred volume written by Divine inspiration. When even such a great and wise king as Solomon could establish such a system of idolatry, and pious kings like Hezekiah, and Josiah during the first eighteen years of his reign, could allow it to continue, there could have been no knowledge that it was in direct contravention of the most essential precepts of a sacred law dictated by Jehovah to Moses. It is generally admitted by critics that the Book of the Law discovered by Hilkiah was Deuteronomy, or rather perhaps an earlier or shorter original of the Deuteronomy which has come down to us, and which had already been re-edited with additions after the Exile. The title "Deuteronomy," which might seem to imply that it was a supplement to an earlier law, is taken, like the other headings of the books of the Old Testament in our Bible, from the Septuagint version, and in the original Hebrew the heading is "the Book of the Law." The internal evidence points also to Deuteronomy, as placing the threats of punishment and promises of reward mainly on moral grounds, and in the spirit of the later prophets, such as Isaiah, who lived shortly

before the discovery of the book by Hilkiah. And it is apparent that when Deuteronomy was written, the Priests' Code, which forms such an important part of the other books of the Pentateuch, could not have been known, as so many of the ceremonial rites and usages are clearly inconsistent with it.

It is not to be inferred that there were no writings in existence before the reign of Josiah. Doubtless annals had been kept of the principal events of each reign from the foundation of the monarchy, and many of the old legends and traditions of the race had been collected and reduced to writing during the period from Solomon to the later kings.

The Priests' Code also, though of later date in its complete form, was doubtless not an invention of any single priest, but a compilation of usages, some of which had long existed, while others had grown up in connection with the Second Temple after the return from exile. So also the civil and social legislation was not a code promulgated, like the Code Napoleon, by any one monarch or high priest, but a compilation from usages and precedents which had come to be received as having an established authority. But what is plainly inconsistent with the account of the discovery of the Book of the Law in the reign of Josiah, is the supposition that there had been, in long previous existence, a collection of sacred books, recognized as a Bible or work of Divine inspiration, as the Old Testament came to be among the Jews of the first or second century B.C.

It is to be observed that among early nations, such historical annals and legislative enactments never form the first stratum of a sacred literature, which consists invariably of hymns, prayers, ceremonial rites, and

astronomical or astrological myths. Thus the Rig Veda of the Hindoos, the early portions of the Vendedad of the Iranians, the Book of the Dead of the Egyptians, and the penitential psalms and invocations of the Chaldæans formed the oldest sacred books, about which codes and commentaries, and in some cases historical allusions and biographies, gradually accumulated, though never attaining to quite an equal authority.

There is abundant internal evidence in the books of the Old Testament which profess to be older than the reign of Josiah, to show that they are in great part, at any rate, of later compilation, and could not have been recognized as the sacred Thora or Bible of the nation. To take a single instance, that of Solomon. Is it conceivable that this greatest and wisest of kings, who had held personal commune with Jehovah, and who knew everything down to the hyssop on the wall, could have been ignorant of such a sacred book if it had been in existence? And if he had known it, or even the Decalogue, is it conceivable that he should have totally ignored its first and fundamental precepts, "Thou shalt have no other gods but me," and "thou shalt not make unto thyself any graven image"? Could uxoriousness, divided among 700 wives, have turned the heart of such a monarch so completely as to make him worship Ashtaroth and Milcom, and build high places for Chemosh and Moloch? And could he have done this without the opposition, and apparently with the approval, of the priests and the people? And again, could these high places and altars and vessels dedicated to Baal and the host of heaven have been allowed to remain in the Temple, down to the eighteenth year of Josiah, under a succession of kings several of whom

were reputed to be pious servants of Jehovah? And the idolatrous tendencies of the ten tribes of Israel, who formed the majority of the Hebrew race, and had a common history and traditions, are even more apparent.

In the speeches put into the mouth of Solomon in 1 Kings, in which reference is made to "statutes and commandments spoken by Jehovah by the hand of Moses," there is abundant evidence that their composition must be assigned to a much later date. They are full of references to the captivity in a foreign land and return from exile (1 Kings viii. 46—53, and ix. 6—9). Similar references to the Exile are found throughout the Book of Kings, and even in Books of the Pentateuch which profess to be written by Moses. If such a code of sacred writings had been in existence in the time of Josiah, instead of rending his clothes in dismay when Shaphan brought him the Book of the Law found by Hilkiah, he would have said, "Why this is only a different version of what we know already."

On the whole the evidence points to this conclusion. The idea of a one Supreme God who was a Spirit, while all other gods were mere idols made by men's hands; who created and ruled all things in heaven and earth; and who loved justice and mercy rather than the blood of rams and bullocks, was slowly evolved from the crude conceptions of a jealous, vindictive, and cruel anthropomorphic local god, by the prophets and best minds of Israel after it had settled down under the Monarchy into a civilized and cultured state. It appears for the first time distinctly in Isaiah and Amos, and was never popular with the majority of the kings and upper classes, or with the mass of the nation until the Exile,

but it gradually gained ground during the calamities of the later days, when Assyrian armies were threatening destruction. A strong opposition arose in the later reigns between the aristocracy, who looked on the situation from a political point of view and trusted to armies and alliances, and what may be called the pietist or evangelical party of the prophets, who took a purely religious view of matters, and considered the misfortunes of the country as a consequence of its sins, to be averted only by repentance and Divine interposition.

It was a natural, and under the circumstances of the age and country quite a justifiable proceeding on the part of the prophetic school to endeavour to stamp their views with Divine authority, and recommend them for acceptance as coming from Moses, the traditional deliverer of Israel from Egypt. For this purpose no doubt numerous materials existed in the form of legends, traditions, customs, and old records, and very probably some of those had been collected and reduced to writing, like the Sagas of the old Norsemen, though without any idea of collecting them into a sacred volume.

The first attempt in this direction was made in the reign of Josiah, and it had only a partial success, as we find the nation "doing evil in the sight of the Lord," that is, relapsing into the old idolatrous practices, in the reigns of his three next successors, Jehoiachin, Jehoiachim, and Zedechiah. But the crowning calamity of the capture of Jerusalem by Nebuchadnezzar, and the seventy years' exile, seems to have crushed out the old aristocratic and national party, and converted all the leading minds among the Jews of the Captivity, including the priests, to the prophetical view that the essence

of the question was the religious one, and that the only hope for the future lay in repentance for sins and drawing closer to the worship of Jehovah and the Covenant between him and his chosen people. Prophets disappear from this period because priests, scribes, and rulers had adopted their views, and there was no longer room for itinerant and unofficial missionaries. Under such circumstances the religion, after the return from the Exile, crystallized rapidly into definite forms. Creeds, rituals, and sacred books were multiplied down to the third century B.C. or later, when the canon was closed with the Books of Chronicles and Daniel and the later Psalms, and the era began of commentaries on the text of a Koran or Bible, every word of which was held to be infallibly inspired.

The different crystals in solution have now united into one large crystal of fixed form, and henceforward we are in the full age of Talmudism and Pharisaism.

It is not to be supposed, however, that the books which thus came to be considered sacred were the inventions of priests and scribes of this later age. Doubtless they were based to a great extent on old traditions, legends, and written annals and records, compiled perhaps in the reigns of Solomon and his successors, but based themselves on still older materials. The very crudeness of many of the representations, and the barbarism of manners, point to an early origin. It is impossible to conceive any contemporary of Isaiah, or of the cultured court of Solomon, describing the Almighty ruler of the universe as showing his hinder part to Moses, or sewing skins to clothe Adam and Eve; and the conception of a jealous and vindictive Jehovah who commanded the indiscriminate massacre of prisoners of

war, women and children, must be far removed from that of a God who loved justice and mercy. These crude, impossible, and immoral representations must have existed in the form of Sagas during the early and semi-barbarous stage of the people of Israel, and become so rooted in the popular mind that they could not be neglected when authors of later ages came to fix the old traditions in writing, and religious reformers to use them in endeavouring to enforce higher views and a purer morality. It is from this jungle of old legends and traditions, written and re-written, edited and re-edited, many times over, to suit the ideas of various stages of advancing civilization, that we have to pick out as we best can what is really historical, prior to the foundation of the Monarchy, from which time downwards we doubtless have more or less authentic annals, and meet with confirmations from Egyptian and Assyrian history.

The first figure which arrests our attention in the Old Testament as possibly historical, is that of Abraham. Prior to him everything is plainly myth and legend. We have two accounts of the creation of the universe and of man in Genesis, contradictory with one another, and each hopelessly inconsistent with the best established conclusions of astronomy, geology, ethnology, and other sciences. Then follow ten antediluvian patriarchs, who live on the average 847 years each, and correspond manifestly with the ten reigns of gods or demi-gods in the Chaldæan mythology; while side by side with this genealogy is a fragment of one which is entirely different, mentioning seven only of the ten patriarchs, and tracing the descent of Enoch and Noah from Adam through Cain instead of through Seth.

Then comes the Deluge with all the flagrant impossibilities which have been pointed out in a preceding chapter; the building of the Tower of Babel, with the dispersion of mankind and confusion of languages, equally opposed to the most certain conclusions of history, ethnology, and philology. The descent from Noah to Abraham is then traced through ten other patriarchs, whose ages average 394 years each, and similar genealogies are given for the descendants of the other two sons of Noah, Ham and Japheth. It is evident that these genealogies are not history but ethnology, and that of a very rude and primitive description, by a writer with imperfect knowledge and a limited range of vision. A great majority of the primitive races of the world, such as the Negroes and the Mongolians, are omitted altogether, and Semitic Canaan is coupled with Turanian Hittite as a descendant not of Shem but of Ham. It is unnecessary to go into details, for when we find such an instance as that Canaan begat Sidon his first-born, it is evident that this does not mean that two such men really lived, but is an Oriental way of stating that the Phœnicians were of the same race as the Canaanites, and that Sidon was their earliest sea-port on the shore of the Mediterranean.

The whole of this Biblical literature prior to Abraham is clearly myth and legend, and not history; and whoever will compare it dispassionately with the much older Chaldæan myths and legends known to us from Berosus and the tablets, can hardly doubt that it is taken mainly from this source, revised at a later date, in a monotheistic sense. Whole passages are simply altered by writing "God" for "gods," and pruning off or toning down grotesque and revolting incidents. To

give a single instance, where the Chaldæan solar epic of Izdubar, in the chapter on the passage of the sun through the rainy sign of Aquarius, which describes the Deluge, says that "the gods smelt the sweet savour of the sacrifice offered by Hasisadra on emerging from the ark, and flocked like flies about the altar," Genesis says simply that "the Lord smelled a sweet savour"; and where the mixture of a divine and animal nature in man is symbolized in the Chaldæan legend by Bel cutting off his own head and kneading the clay with the blood into the first man, the Jehovist narrative in Genesis ii. says, that "the Lord God formed man from the dust of the ground, and breathed into his nostrils the breath of life." But when we arrive at Abraham we feel as if we might be treading on really historical ground. There is the universal tradition of the Hebrew race that he was their ancestor, and his figure is very like what in the unchanging East may be met with to the present day. We seem to see the dignified sheik sitting at the door of his tent dispensing hospitality, raiding with his retainers on the rear of a retreating army and capturing booty, and much exercised by domestic difficulties between the women of his household. Surely this is an historical figure. But when we look closer, doubts and difficulties appear. In the first place the name "Abram" suggests that of an eponymous ancestor, like Shem for the Semites, or Canaan for the Canaanites. Abram, Sayce tells us, is the Babylonian Abu-ramer or "exalted father," a name much more likely to be given to a mythical ancestor than to an actual man. This is rendered more probable by the fact that, as we have already seen, the genealogy of Abraham traced upwards consists mainly of eponyms:

while those which radiate from him downwards are of the same character. Thus two of his sons by Keturah are Jokshan and Midian; and Sheba, Dedan, and Assurim are among his descendants. Again, Abraham is said to have lived for 175 years, and to have had a son by Sarah when she was ninety-nine and he one hundred; and a large family by Keturah, whom he married after Sarah's death. Figures such as these are a sure test that legend has taken the place of authentic history.

Another circumstance which tells strongly against the historical character of Abraham is his connection with Lot, and the legend of Lot's wife. The history of this legend is a curious one. For many centuries, in fact down to quite modern times, the volcanic phenomena of the Dead Sea were appealed to as convincing confirmations of the account in Genesis of the destruction of Sodom and Gomorrha, and hundreds of pious pilgrims saw, touched, and tasted the identical pillar of salt into which Lot's wife was changed. It is now certain that the volcanic eruptions were of an earlier geological age, and that the story of Lot's wife is owing to the disintegration of a stratum of salt marl, which weathers away under the action of wind and rain into columnar masses, like those described by Lyell in a similar formation in Catalonia. Innumerable travellers and pilgrims from early Christian times down to the seventeenth century returned from Palestine testifying that they had seen Lot's wife, and this was appealed to by theologians as a convincing proof of the truth of the Scripture narrative. Some saw her big, some little, some upright, and some prostrate, according to the state of disintegration of the pillars pointed out by the

guides, which change their form rapidly under the influence of the weather, but no doubt was entertained as to the attestation of the miracle. It turns out, however, to be one of those geological myths of precisely the same nature as that which attributed the Devil's Dyke near Brighton to an arrested attempt of the Evil One to cut a trench through the South Downs, so as to let in the sea and drown the Weald. The episode of Lot and his daughters is also clearly a myth to account for the aversion of the Hebrews to races so closely akin to them as the Moabites and Ammonites, and it could hardly have originated until after the date of the Book of Ruth, which shows no trace of such a racial aversion.

Many of the events recorded of Abraham's life, though not so wildly extravagant as those attributed to Noah, are still clearly unhistorical. That a woman getting on towards one hundred years old should be so beautiful that her husband passes her off for his sister, fearing that, if known to be his wife, the king would kill him in order to take her into his harem, does not seem to be very probable. But when precisely the same thing is said to have occurred twice over to the same man, once at the court of Pharaoh and again at that of Abimelech; and a third time to his son Isaac, at the same place, Gerar, and to the same king Abimelech, the improbability becomes impossibility, and the legend is obviously mythical. Nor is it very consistent with the character of the pious patriarch, the father of the chosen people, to have told such lies, and apparently connived at his wife's prostitution, so that he could save his own skin, and grow rich on the "sheep and oxen, asses, manservants, maidservants, and camels" given him by the king on the supposition that he was Sarah's brother.

Nor can we take as authentic history, Abraham talking with the Lord, and holding a sort of Dutch auction with him, in which he beats down from fifty to ten the number of righteous men who, if found in Sodom, are to save it from destruction.

On the whole, I do not see that there is anything in the account of Abraham and his times which we can safely assume to be historical, except the general fact that the Hebrews were descended from a Semitic family or clan, who migrated from the district of Ur in Lower Chaldæa probably about the time, and possibly in consequence, of the Elamite conquest, about 2200 B.C., which set in motion so many wars, revolutions, and migrations in Western Asia.

The chronology from Abraham to Moses is hopelessly confused. If Abraham is really an historical character, his synchronism with Chedorlaomer or Kudur-lagomer, the Elamite King of Chaldæa, must be admitted, which fixes his date at about 2200 B.C. Again, if the narrative of the Exodus is historical, it is generally agreed that it took place in the reign of Menepthah, or about 1320 B.C. The interval between Abraham and Moses therefore must have been about 900 years. But if we take the genealogies as authentic history, Jacob, in whose time the Hebrews went into Egypt, was Abraham's grandson, and Moses, under whom they left it, was the son of Jochebed, who was the granddaughter of Levi, the son of Jacob, who was a man advanced in life when he came to Egypt. The genealogies therefore do not allow of more than five generations, or, at a high average for each, about 200 years for this interval between Abraham and Moses.

The tradition respecting this seems to have been

already very confused when Genesis was compiled, for we find in chap. xv. vers. 15, 16, the Lord saying to Abraham, that his descendants shall come back to Palestine and possess the whole country from the river of Egypt to the river Euphrates, "in the fourth generation" after Abraham had "gone to his fathers in peace, and been buried in a good old age"; while only one verse before it is said, "thy seed shall be a stranger in a land that is not theirs, and shall serve them; and they shall afflict them for four hundred years."

Even if 400 years were allowed for the sojourn of the Hebrews in Egypt, it would not extend the interval between Moses and Abraham to more than 500 years, or 400 years less than is required by the synchronism with Chedorlaomer. It is needless to say that neither in the fourth nor in any other generation did the descendants of Abraham "possess the whole country from the river of Egypt to the river Euphrates."

There is no period of Jewish history so obscure as that of the sojourn in Egypt. The long date is based entirely on the distinct statement in Genesis xii., that the sojourning of the children of Israel was 430 years, and other statements that it was 400 years, both of which are hopelessly inconsistent with the genealogies. Genealogies are perhaps more likely to be preserved accurately by oral tradition than dates and figures, which Oriental races generally deal with in a very arbitrary way. But there are serious difficulties in the way of accepting either date as historical. There is no mention of any specific event during the sojourn of the Israelites in Egypt between their advent in the time of Joseph and the Exodus, except their oppression by

a new king who knew not Joseph, and the building of the treasure cities, Pi-thom and Ramses, by their forced labour. The latter fact may be taken as probably true from the monuments discovered by Mr. Flinders Petrie; and if so, it occurred in the reign of Ramses II. But there is no other confirmation, from Egyptian records or monuments, of any of the events related in the Pentateuch, until we come to the passage quoted from Manetho by Josephus, which describes how the unclean people and lepers were oppressed; how they revolted under the leadership of a priest of Hieropolis, who changed his name from Osarphis to Moyses; how they fortified Avaris and called in help from the expelled Hyksos settled at Jerusalem; how the Egyptian king and his army retreated before them into Ethiopia without striking a blow; and the revolters ruled Egypt for thirteen years, killing the sacred animals and desecrating the temples; and how, at the end of this period, the king and his son returned with a great army, defeated the rebels and shepherds with great slaughter, and pursued them to the bounds of Syria.

This account is evidently very different from that of Exodus, and does not itself read very like real history, nor is there anything in the Egyptian monuments to confirm it, but rather the reverse. Menepthah certainly reigned many years after he was said to have been drowned in the Red Sea, and his power and that of his immediate successors, though greatly diminished, still extended with a sort of suzerainty over Palestine and Southern Syria. It is said that the Egyptians purposely omitted all mention of disasters and defeats, but this is distinctly untrue, for Manetho records events such as the conquest of Egypt by the Hyksos without a battle,

and the retreat of Menepthah into Ethiopia for thirteen years before the impure rebels, which were much more disgraceful than would have been the destruction of a pursuing force of chariots by the returning tide of the Red Sea.

The question therefore of the sojourn of the Israelites in Egypt and the Exodus has to be considered solely by the light of the internal evidence afforded by the books of the Old Testament. The long period of 430 years is open to grave objections. It is inconceivable that a people who had lived for four centuries in an old and highly-civilized empire, for part of the time at any rate on equal or superior terms under the king who "knew Joseph"; and who appear to have been so much intermixed with the native Egyptians as to have been borrowing from them as neighbours before their flight, should have carried away with them so little of Egyptian manners and relics. Beyond a few rites and ceremonies, and a certain tendency to revert to the animal worship of the golden calf, there is nothing to show that the Hebrews had ever been in contact with Egyptian civilization. This is most remarkable in the absence of all belief in a resurrection of the body, future life, and day of judgment, which were the cardinal axioms of the practical daily life of the Egyptian people. Temporal rewards and punishments to the individual and his posterity in the present life, are the sole inducements held out to practise virtue and abstain from vice, from the Decalogue down to the comparatively late period of Ecclesiastes, where Solomon the wise king is represented as saying, "there is no work, nor device, nor knowledge in the grave whither thou goest." Even down to the

Christian era the Sadducees, who were the conservative aristocracy who stood on the old ways and on the law of Moses, and from whose ranks most of the high priests were taken, were opposed to the newfangled Pharisaic doctrine of a resurrection. How completely foreign the idea was to the Jewish mind is apparent from the writings of the Prophets and the Book of Job, where the obvious solution of the problem why goodness was not always rewarded and wickedness punished, afforded by the theory of a judgment after death and future life, was never even hinted at by Job or his friends, however hardly they might be pressed in argument.

If the sojourn in Egypt really lasted for 430 years, it must have embraced many of the greatest events in Egyptian history. The descendants of Jacob must have witnessed a long period of the rule of the Hyksos, and lived through the desolating thirty years' war by which these foreign conquerors were gradually driven back by the native armies of Upper Egypt. They must have been close to the scene of the final campaigns, the siege of Avaris, and the expulsion of the Hyksos. They must have been subjects of Ahmes, Thotmes, and the conquering kings of the eighteenth dynasty, who followed up the fugitive Hyksos, and carried the conquering arms of Egypt not only over Palestine and Syria, but up to the Euphrates and Tigris, and over nearly the whole of Western Asia. They must have witnessed the decline of this empire, the growth of the Hittites, and the half-century of wars waged between them and the Egyptians in Palestine and Syria.

The victory of Ramses II. at Kadesh and the epic poem of Pentaur must have been known to the

generation before the Exodus as signal events. And if there is any truth in the account quoted by Josephus, they must have been aware that they did not fly from Egypt as a body of fugitive slaves, but as retreating warriors who for thirteen years had held Egypt up to Ethiopia in subjection. And yet of all these memorable events there is not the slightest trace in the Hebrew annals which have come down to us.

An even greater difficulty is to understand how, if the children of Israel had lived for anything like 400 years in such a civilized empire as Egypt, they could have emerged from it in such a plane of low civilization, or rather of ferocious savagery and crude superstitions as are shown by the books of the Old Testament, where they burst like a host of Red Indians on the settlements and cities of the Amorites, and other more advanced nations of Palestine. The discoveries at Lachish already referred to show that their civilization could not have exceeded that of the rudest Bedouins, and their myths and legends are so similar to those of the North American Indians as to show that they must have originated in a very similar stage of mental development.

If we adopt the short date of the genealogies we are equally confronted by difficulties. If the Exodus occurred in the reign of Menepthah, 180 years back from that date would take us, not to the Hyksos dynasty where alone it would have been possible for Joseph to be a vizier, and for a Semitic tribe of shepherds to be welcomed in Egypt, but into the midst of the great and glorious eighteenth dynasty who had expelled the Hyksos, and carried the dominion of Egypt to the Euphrates. Nor would there have been time for

the seventy souls, who we are told were all of the family of Jacob who migrated into Egypt, to have increased in three generations into a nation numerous enough to alarm the Egyptians, and conquer the Canaanites.

The legend of Joseph is very touching and beautiful, but it may just as well be a novel as history, and this suspicion is strengthened by the fact that the episode of Potiphar's wife is almost verbatim the same as one of the chapters of the Egyptian novel of the *Two Brothers*. Nor does it seem likely that such a seven years' famine and such a momentous change as the conversion of all the land of Egypt from freehold into a tenure held from the king subject to payment of a rent of one-fifth of the gross produce, should have left no trace in the records. Again, the age of 110 years assigned to Joseph, and 147 to his father, are a sufficient proof that we are not upon strictly historical ground; and on the whole this narrative does not go far, in the absence of any confirmation from monuments, to assist us in fixing dates, or enabling us to form any consistent idea of the real conditions of the sojourn of the people of Israel in Egypt. It places them on far too high a level of civilization at first, to have fallen to such a low one as we find depicted in the Books of Exodus, Joshua, and Judges. Further excavations in the mounds of ruined cities in Judæa and Palestine, like those of Schliemann on the sites of Troy and Mycenæ, can alone give us anything like certain facts as to the real condition of the Hebrew tribes who destroyed the older walled cities of the comparatively civilized Amorites and Canaanites. If the conclusion of Mr. Flinders Petrie from the section of the mound

of Lachish, as to the extremely rude condition of the tribes who built the second town of mud-huts on the ruins of the Amorite city, should be confirmed, it would go far to negative the idea that the accounts of their having been trained in an advanced code of Mosaic legislation, can have any historical foundation.

We come next to Moses. It is difficult to refuse an historical character to a personage who has been accepted by uniform tradition as the chief who led the Israelites out of Egypt, and as the great legislator who laid the foundations of the religious and civil institutions of the peculiar people. And if the passage from Manetho is correctly quoted by Josephus, and was really taken from contemporary Egyptian annals, and is not a later version of the account in the Pentateuch modified to suit Egyptian prejudices, Moses is clearly identified with Osarsiph the priest of Hieropolis, who abandoned the worship of the old gods, and headed the revolt of the unclean people, which probably meant the heretics. It may be conjectured that this may have had some connection with the great religious revolution of the heretic king of Tel-el-Amarna, which for a time displaced the national gods, worshipped in the form of sacred animals and symbolic statues, by an approach to Monotheism under the image of the winged solar disc. Such a reform must have had many adherents to have survived as the State religion for two or three reigns, and must have left a large number of so-called heretics when the nation returned to its ancient faith; and it is quite intelligible that some of the more enlightened priests should have assimilated to it the doctrine of one Supreme God, which was always at the bottom of the

religious metaphysics of the earliest ages in Egypt, and was probably preserved as an esoteric doctrine in the priestly colleges. This, however, must remain purely a conjecture, and we must look for anything specific in regard to Moses exclusively to the Old Testament.

And here we are at once assailed by formidable difficulties. As long as we confine ourselves to general views it may be accepted as historical that the Israelites really came out of Egypt under a great leader and legislator; but when we come to details, and to the events connected with Moses, and to a great extent supposed to have been written by him or taken from his journals, they are for the most part more wildly and hopelessly impossible than anything related of the earlier patriarchs, Abraham and Joseph. The story of his preservation in infancy is a variation of the myth common to so many nations, of an infant hero or god, whose life is sought by a wicked king, and who is miraculously saved. We find it in the myths of Khrishna, Buddha, Cyrus, Romulus, and others, and in the inscription by Sargon I. of Accade on his own tablet; he states himself to have been saved in an ark floated on the river Euphrates, just as Moses was on the Nile. When grown up he is represented first as the adopted son of Pharaoh's daughter, and then as a shepherd in the wilderness of Midian talking with the Lord in a fiery bush, who for the first time communicates his real name of Jehovah, which he says was not known to Abraham, Isaac, or Jacob, although constantly used by them, and although men began to call him by that name in the time of Enos, Adam's grandson. At Jehovah's command

Moses throws his rod on the ground, when it becomes a serpent from which he flies, and when he takes it up by the tail it becomes a rod again; and as a farther sign his hand is changed from sound to leprous as white as snow, and back again to sound, in a minute or two of time.

On returning to Egypt Moses is represented as going ten times into the presence of Pharaoh demanding of him to let the Hebrews depart, and inflicting on Egypt a succession of plagues, each one more than sufficient to have convinced the king of the futility of opposing such supernatural powers, and to have made him only too anxious to get rid of the Hebrews from the land at any price. What could have been the condition of Egypt, if for seven days "the streams, the rivers, the ponds and pools, and even the water in the vessels of wood and of stone, through all the land of Egypt," had been really turned into blood? And what sort of magicians must they have been who could do the same with their enchantments?

The whole account of these plagues has distinctly the air of being an historical romance rather than real history. Those repeated interviews accompanied by taunts and reproaches of Moses, the representative of an oppressed race of slaves, in the august presence of a Pharaoh who, like the Inca of Peru or the Mikado of Japan, was half monarch and half deity, are totally inconsistent with all we know of Egyptian usage. The son and successor of the splendid Ramses II., who has been called the Louis XIV. of Egyptian history, would certainly, after the first interview and miracle, either have recognized the supernatural power which it was useless to resist, or ordered Moses to instant execution.

It is remarkable also how the series of plagues reproduce the natural features of the Egyptian seasons. Recent travellers tell us how at the end of the dry season when the Nile is at its lowest, and the adjacent plains are arid and lifeless, suddenly one morning at sunrise they see the river apparently turned into blood. It is the phenomenon of the red Nile, which is caused by the first flush of the Abyssinian flood, coming from banks of red marl. After a few days the real rise commences, the Nile resumes its usual colour, percolates through its banks, fills the tanks and ponds, and finally overflows and saturates the dusty plains. The first signal of the renewal of life is the croaking of innumerable frogs, and soon the plains are alive with flies, gnats, and all manner of creeping and hopping insects, as if the dust had been turned into lice. Then after the inundation subsides come the other plagues which in the summer and autumn seasons frequently afflict the young crops and the inhabitants—local hail-storms, locusts, murrain among the cattle, boils and other sicknesses while the stagnant waters are drying up. It reads like what some Rider Haggard of the Court of Solomon might have written in working up the tales of travellers and old popular traditions into an historical romance of the deliverance of Israel from Egypt.

When we come to the Exodus the impossibilities of the narrative are even more obvious. The robust common-sense of Bishop Colenso, sharpened by a mathematical education, has reduced many of these to the convincing test of arithmetic. The host of Israelites who left Egypt is said to have comprised 603,550 fighting men above the age of twenty; exclusive of the Levites and of a mixed multitude who followed. This

implies a total poulation of at least 2,500,000, who are said to have wandered about for forty years in the desert of Sinai, one of the most arid wildernesses in the world, destitute alike of water, arable soil, and pasture, and where a Bedouin tribe of even 600 souls would find it difficult to exist. They are said to have been miraculously fed during these forty years on manna, a sweetish, gummy exudation from the scanty foliage of certain prickly desert plants, which is described as being "as small as the hoar frost," and as being so imbued with Sabbatarian principles, as to keep fresh only for the day it is gathered during the week, but for two days if gathered on a Friday, so as to prevent the necessity of doing any work on the Sabbath.

Bishop Colenso points out with irresistible force the obvious impossibilities in regard to food, water, fuel, sanitation, transport, and other matters, which was involved in the supposition that a population, half as large as that of London, wandered about under tents from camp to camp for forty years in a desert. No attempt has ever been made to refute him, except by vague suppositions that the deserts of Sinai and Arabia may then have been in a very different condition, and capable of supporting a large population. But this is impossible in the present geological age and under existing geographical conditions. These deserts form part of the great rainless zone of the earth between the north tropical and south temperate zones, where cultivation is only possible when the means of irrigation are afforded by lakes, rivers, or melting snow. But there are none of these in the deserts of Sinai and Northern Arabia, and therefore no water and no vegetation sufficient to support any population. No army has ever

invaded Egypt from Asia, or Asia from Egypt, except by the short route adjoining the Mediterranean between Pelusium and Jaffa, and with the command of the sea and assistance of trains to carry supplies and water. And the account in Exodus itself confirms this, for both food and water are stated to have been supplied miraculously, and there is no mention made of anything but the present arid and uninhabited desert in the various encampments and marches. In fact, the Bible constantly dwells on the inhospitable character of the "howling wilderness," where there was neither grass nor water. Accordingly reconcilers have been reduced to the supposition that ciphers may have been added by copyists, and that the real number may have been 6000, or even, as some writers think, 600. But this is inconsistent with the detailed numeration by twelve separate tribes, which works out to the same figure of 603,550 fighting men for the total number. Nor is it consistent with the undoubted fact that the Hebrews did evacuate Egypt in sufficient numbers and sufficiently armed to burst through the frontiers, and capture the walled cities of considerable nations like the Amorites and Canaanites, who had been long settled in the country. The narrative of Manetho, quoted by Josephus, seems much more like real history; that the Hebrews formed part of an army, which, after having held Lower Egypt for thirteen years, was finally defeated, and retreated by the usual military route across the short part of the desert from Pelusium to Palestine, the Hebrews, for some reason, branching off, and taking to a Bedouin life on the outskirts of the desert and cultivated land, just as many Bedouin tribes live a semi-nomad life in the same regions at the present day.

Apart from statistics, however, the Books of the Pentateuch ascribed to Moses are full of the most flagrant contradictions and absurdities. It is evident that, instead of being the production of some one contemporary writer, they have been compiled and edited, probably many times over, by what I have called the "scissors and paste method," of clipping out extracts from old documents and traditions, and piecing them together in juxtaposition or succession, without regard to their being contradictory or repetitions.

Thus in Exodus xxxiii. 20, God says to Moses: "Thou canst not see my face and live; for there shall no man see me and live"; and accordingly he shows Moses only his "back parts"; while in ver. 11 in the very same chapter we read, "And the Lord spoke unto Moses face to face, as a man speaketh unto a friend." Again in Exodus xxiv. the Lord says to Moses, "that he alone shall come near the Lord" (ver. 2), while in vers. 9—11 of the same chapter, we are told that "Moses, Aaron, Nadab, and Abihu, and seventy of the elders of Israel went up; and they saw the God of Israel, and there was under his feet as it were a paved work of a sapphire stone," and although they saw God, were none the worse for it, but survived and "did eat and drink." Is it possible to believe that these excessively crude representations of the Deity, and these flagrant inconsistencies, were all written at the same time, by the same hand, and that the hand of a man who, if not a holy inspired prophet, was at any rate an educated and learned ex-priest of Hieropolis, skilled in all the knowledge of the Egyptians?

The contradictions in the ideas and precepts of morality and religion are even more startling. These

oscillate between the two extremes of the conception of the later prophets of a one Supreme God, who loves justice and mercy better than sacrifice, and that of a ferocious and vindictive tribal god, whose appetite for human blood is as insatiable as that of the war-god of the Mexicans. Thus we have, on the one hand, the commandment, "Thou shalt do no murder," and on the other, the injunction to commit indiscriminate massacres. A single instance may suffice. The "Book of the Law of Moses" is quoted in 2 Kings xiv. as saying, "The fathers shall not be put to death for the children, nor the children for the fathers; but every man shall be put to death for his own sin." In Numbers xxxi., Moses, the "meekest of mankind," is represented as extremely wroth with the captains who, having warred against Midian at the Lord's command, had only slaughtered the males, and taken the women of Midian and their little ones captives; and he commands them to "kill every male among the little ones, and every woman that hath known man by lying with him; but all the women children that have not known man by lying with him, keep alive for yourselves."

These Midianites, be it remembered, being the people whose high priest Jethro had hospitably received Moses when he fled for his life from Egypt, and gave him his daughter as a wife, by whom he had children who were half Midianites, so that if the zealous Phinehas was right in slaying the Hebrew who had married a Midianite woman, Moses himself deserved the same fate.

The same injunction of indiscriminate massacre in order to escape the jealous wrath of an offended Jehovah is repeated, over and over again, in Joshua and Judges, and even as late as after the foundation

of the Monarchy, we find Samuel telling Saul in the name of the Lord of Hosts, to "go and smite Amalek, and utterly destroy them, slaying both man and woman, infant and suckling, ox and sheep, camel and ass," and denouncing Saul, and hewing Agag in pieces before the Lord, because this savage injunction had not been literally obeyed. Even under David, the man after the Lord's own heart, we find him torturing to death the prisoners taken at the fall of Rabbah, and giving up seven of the sons of Saul to the Gibeonites to be sacrificed before the Lord as human victims. It is one of the strangest contradictions of human nature that such atrocious violations of the moral sense should have been received for so many centuries as a divine revelation, rather than as instances of what may be more appropriately called "devil worship."

Nor is it a less singular proof of the power of cherished prepossessions that such a medley of the sublime religious ideas and lofty poetry of the prophetic ages, with such a mass of puerile and absurd legends, such obvious contradictions, and such a number of passages obviously dating from a later period, should be received by many men of intelligence, even to the present day, as the work of a single contemporary writer, the inspired prophet Moses.

When we pass from the Pentateuch to the succeeding Books of Joshua and of Judges the same remarks apply. The falling of the walls of Jericho at the sound of the trumpet, and the defeat of an army of 135,000 men of Midian and Amalek with a slaughter of 120,000, by 300 men under Gideon, armed with pitchers and trumpets, are on a par with the wandering of 2,500,000 Israelites in the desert for forty years, fed with manna

of the size of hoar-frost. The moral atmosphere also continues to be that of Red Indians down to the time of David, for we read of nothing but murders and massacres, sometimes of other races, sometimes of one tribe by another; while the actions selected for special commendation are like those of Jael, who drove a nail into the head of the sleeping fugitive whom she had invited into her tent; or of Jephthah, who sacrificed his daughter as an offering to the Lord in obedience to a vow. This barbarous state of manners is confirmed by Flinders Petrie's discoveries at the supposed site of Lachish, which show the ruins of a walled city of the Amorites, built upon by the mud hovels of a race as rude as the rudest Bedouins who now wander on the edge of the Arabian desert.

The only safe conclusion seems to be that authentic annals of Jewish history only begin with the Monarchy, and that everything prior to David and Solomon, or possibly Saul and Samuel, consists of myth, legend, and oral tradition, so inextricably blended, and so mixed up with successive later additions, as to give no certain information as to events or dates.

All that it is safe to assume is, that in a general way the Hebrews were originally a Semitic tribe who migrated from Chaldæa into Palestine and thence into Egypt, where they remained for an uncertain time and were oppressed by the national dynasty which expelled the Hyksos; that they left Egypt probably in the reign of Menepthah, and as a consequence of the rebellion recorded by Manetho; that they then lived for an unknown time as wandering Bedouins on the frontier of Palestine in a state of very rude barbarism; and finally burst in like a horde of Aztecs on the older and more

civilized Toltecs of Mexico. For a long period after this, perhaps for 200 or 300 years, they lived in a state of chronic warfare with one another, and with their neighbours, massacring and being massacred with the alternate vicissitudes of war, but with the same rudeness and ferocity of superstitions and manners. Gradually, however, they advanced in civilization, and something of a national feeling arose, which led to a partial consolidation under priests, and a more complete one under kings.

The first king, Saul, was opposed by priestly influence and defeated and slain in battle, but a captain of condottieri, David, arose, a man of great energy and military genius, who gradually formed a standing army and conquered province after province, until at his death he left to his successor, Solomon, an empire extending from the frontier of Egypt to Damascus, and from the Red Sea almost to the Mediterranean.

This kingdom commanded two of the great commercial routes between the East and West, the caravan route between Tyre and Babylon, *viâ* Damascus and Tadmor, and the route from Tyre to the terminus at Ezion-Gebir, of the sea-routes to Arabia, Africa, and India. Solomon entered into close commercial relations with Tyre, and during his long and splendid reign, Jerusalem blossomed rapidly into a wealthy and a cultured city, and the surrounding cities and districts shared in the general prosperity. The greatness of the kingdom did not last long, for the revolt of the ten tribes and the growth of other powers soon reduced Judæa and Samaria to political insignificance; but Jerusalem, down to the time of its final destruction by Nebuchadnezzar, *i. e.* for a period of some 400 years

after Solomon, never seems to have lost its character of a considerable and civilized city. It is evident from the later prophets that it was the seat of a good deal of wealth and luxury, for their invectives are, to a great extent, what we should call at the present day, Socialist denunciations of the oppression of the poor by the rich, land-grabbing by the powerful, and extravagance of dress by the ladies of fashion. There were hereditary nobles, organized colleges of priests and scribes, and no doubt there was a certain amount of intellectual life and literary activity. But of a sacred book there is no trace until the discovery of one in the Temple in the reign of Josiah; and the peculiar tenets of modern Judaism had no real hold on the mass of the people until after the return from Exile and the reforms of Ezra and Nehemiah.

The history, therefore, contained in the Old Testament is comparatively modern. There is nothing which can be relied on as authentic in regard to events and dates prior to the establishment of the Monarchy, and even the wildest myths and the most impossible legends do not carry us back within 2000 years of the time when we have genuine historical annals attested by monuments both in Egypt and Chaldæa.

PART II.

EVIDENCE FROM SCIENCE.

CHAPTER VIII.

GEOLOGY AND PALÆONTOLOGY.

Proved by Contemporary Monuments—As in History—Summary of Historical Evidence—Geological Evidence of Human Periods—Neolithic Period—Palæolithic or Quaternary—Tertiary—Secondary and Older Periods—The Recent or Post-Glacial Period—Lake-Villages—Bronze Age—Kitchen-Middens—Scandinavian Peat-mosses—Neolithic Remains comparatively Modern—Definition of Post-Glacial Period—Its Duration—Mellard Read's Estimate—Submerged Forests—Changes in Physical Geography—Huxley—Objections from America—Niagara—Quaternary Period—Immense Antiquity—Presence of Man throughout—First Glacial Period—Scandinavian and Laurentian Ice-caps—Immense Extent—Mass of *Débris*—Elevation and Depression—In Britain—Inter-Glacial and Second Glacial Periods—Antiquity measured by Changes of Land—Lyell's Estimate—Glacial *Débris* and Loess—Recent Erosion—Bournemouth—Evans—Prestwich—Wealden Ridge and Southern Drift—Contain Human Implements—Evidence from New World—California.

We have now to take leave of historical records and fall back on the exact sciences for further traces of human origins. Our guides are still contemporary records, but these are no longer stately tombs and temples, massive pyramids and written inscriptions. Instead of these we have flint implements, incised bones, and a few rare specimens of human skulls and skeletons, the meaning of which has to be deciphered

by skilled experts in their respective departments of science.

Still these records tell their tale as conclusively as any hieroglyphic or cuneiform writings in Egyptian manuscripts or on Babylonian cylinders. The celt, the knife, the lance and arrow-heads, and other weapons and implements, can be traced in an uninterrupted progressive series from the oldest and rudest palæolithic specimens, up to the highly-finished ones of polished stone, and through these into the age of metals, and into historic times and the actual implements of existing savage races. It is impossible to doubt that one of the palæolithic celts from St. Acheul or St. Prest is as truly a work of the human hand, guided by human intelligence, as a modern axe; and that an arrow-head from Moustier or Kent's Cavern is no more an elf-bolt, or a *lusus naturæ*, than is a Winchester rifle.

Before entering on this new line of investigation, it may be well to sum up briefly the evidence as to the starting-point from history and tradition. The commencement of the strictly historical period takes us back certainly for 6000 and in all probability for 7000 years in Egypt, and certainly for 5000 and probably for 6000 or 7000 years in Chaldæa. In each case we find populous cities, important temples and public works, writing and other advanced arts and industries, and all the signs of an old civilization already existing. Other nations also evidently then existed with whom these ancient empires had relations of war and of commerce, though the annals of even the oldest of them, such as China, do not carry us back further than from 4000 to 5000 years.

Traditions do not add much to our information from monuments, and fade rapidly away into myths and

legends. The oldest and most authentic, those of Egypt, simply confirm the inference of great antiquity for its civilization prior to Menes, but give no clue as to its origin. They neither trace it up to the stone age, which we know existed in the valley of the Nile, nor refer it to any foreign source. The Egyptian people thought themselves autochthonous, and attributed their arts, industries, and sciences to the inventions of native gods, or demi-gods, who reigned like mortal kings, in a remote and fabulous antiquity. We can gather nothing therefore from tradition that would enable us to add even 1000 years with certainty to the date of Menes; while from the high state of civilization which had been evolved prior to his accession, from the primitive conditions of the stone period whose remains are found at Cairo and Thebes, we might fairly add 10,000 or 20,000 years to his date of 5004 years B.C., as a matter of probable conjecture for the first dawn of historical civilization. In any case we shall be well within the mark if we take 10,000 years as our first unit, or standard of chronological measurement, with which to start in our further researches, as we do with terrestrial standards in gauging the distances of suns and stars.

It may be well also to supplement this statement of the historical standard by a brief review of the previous geological periods through which evidences of man's existence can be traced. Immediately behind the historic age lies the recent period during which the existing fauna and flora, climate and configuration of seas and lands, have undergone no material change. It is characterized generally as the neolithic period, in which we find polished stone superseding the older and ruder forms of chipped stone, and passing itself into the

copper, bronze, and iron ages of early history. It may also be called the recent or post-glacial period, for it coincides with the final disappearance of the last great glaciation, and the establishment of conditions of climate resembling those of the present day.

Behind this again comes the quaternary or pleistocene period, so called from its fauna, which, although containing extinct species, shows along with them many existing forms, some of which have migrated and some remain. This also may be called the glacial period, for although the commencement, termination, and different phases of the two great glaciations and intermediate inter-glacial periods cannot be exactly defined, and hard-and-fast lines drawn between the later pliocene at one end and the post-glacial at the other, there is no doubt that in a general way the quaternary and glacial periods coincide, and that the changes of climate were to a considerable extent the cause of the changes of flora and fauna.

Behind the quaternary comes in the tertiary, with its three great divisions of Pliocene, Miocene, and Eocene, each containing numerous subdivisions, and all showing a progressive advance in forms of life, from older and more generalized types towards newer and more specialized ones, and a constant approach towards genera and species now existing. Behind the tertiary comes the secondary period, into which it is unnecessary to enter for the present purpose, for all is different, and even mammalian life is only known to be present in a few forms of small and feeble marsupials. Nor is it necessary to enter on any detailed consideration of the Eocene or earlier tertiary, for the types of mammalian life are so different from those of later periods, that it

cannot be supposed that any animal so highly organized as man had then come into existence. The utmost we can suppose is that, as in the case of the horse, some ancestral form from which the quadrumana and man may possibly have been developed may be found. But up to the present time nothing has been found in the Eocene more nearly approaching such a missing link than an ancient form of lemur; and it is not until we get into the Miocene that any evidence presents itself that man, or some near ancestor of man, may possibly have existed.[1]

My present object being not to write a book on geology, but on human origins, I shall not attempt to trace back the geological evidence beyond the Miocene, or to enter on any details of the later periods, except so far as they bear on what may be called geological chronology, *i. e.* on the probable dates which may be assigned to the first appearance and subsequent evolution of the human race going back from historical times.

Beginning with the recent or post-glacial period,

[1] Since this was written the scientific world has been startled by the discovery announced by Professor Ameghino in the lower tertiary, supposed to be Eocene, of Patagonia, of numerous small monkeys of the American type of cebidæ, affording evidence of the existence of anthropoid primates at this extremely early date.—Lydekker in *Natural Science* for April 1892. He adds, "Perhaps still more noteworthy are the signs of affinity exhibited by these early primates to the extinct South American protopytheridæ. The latter are clearly related to the aberrant ungulate typotherium of the South American tertiaries, which appears to be allied on the one hand to the extinct toxodon, and on the other to the rodents. If substantiated, such an unexpected relationship as that of the American primates to the toxodonts will materially modify some of our present views as to the mutual relationships of mammals." And I may add, throw a flood of light on the question of the "Missing Link," and the development of man and the quadrumana from a common ancestral type.

the Swiss and Italian lake-villages supply clear evidence of the progress of man in Western Europe through the neolithic into the historical period. They afford us an unbroken series of substantially the same state of society, existing down to the time of the Romans, for a great many centuries back of communities living in lake-villages built upon piles, like the villages in Thrace described by Herodotus, or those of the present day in New Guinea. Some of these have been occupied continuously, so that the *débris* of different ages are stored in consecutive order like geological strata, and afford an unerring test of their relative antiquity. It is clear that many of those lake-villages were founded in the age of stone, and passed through that of bronze into the age of iron. The oldest settlements belong to the neolithic age, and contain polished stone implements and pottery, but they show a state of civilization not yet very far advanced. The inhabitants were only just emerging from the hunting into the pastoral stage. They lived principally on the produce of the chase, the bones of the stag and wild boar being very plentiful, while those of ox and sheep are rare. Agriculture and the cereals seem to have been unknown, though stores of acorns and hazel nuts were found which had been roasted for food.

By degrees the bones of wild animals become scarce, and those of ox and sheep common, showing that the pastoral stage had been reached; and the goat, pig, and horse were added to the list of domestic animals—the dog being included from the first, and the horse only at a later period. Agriculture follows next in order, and considerable proficiency was attained, barley and wheat being staple articles of food, and apples, pears, and other fruit being stored for winter consumption. Flax also

was grown, and the arts of spinning and weaving were introduced, so that clothing, instead of being confined to skins, was made of coarse linen and woollen stuffs.

The most important advance, however, in the arts of civilization is afforded by the introduction of metals. These begin to appear about the middle of the neolithic period, at first very sparingly, and in a few districts such as Spain, Upper Italy, and Hungary, where native copper was found and was hammered into shapes modelled on the old stone implements; but as a general rule, and in all the later settlements, bronze, in new and improved shapes, supersedes stone and copper. For the most part these bronze implements seem to have been obtained by foreign commerce from the Phœnicians, Etruscans, and other nations bordering on the Mediterranean, though in some cases they were cast on the spot from native or imported ores. The existence of bronze, however, must go back to a far greater antiquity than the time when the neolithic people of Europe obtained their first supplies from Phœnician traders. Bronze, as we have seen in a former chapter, is an alloy of two metals, copper and tin, and the hardest and most serviceable alloy is only to be obtained by mixing the two in a certain definite proportion. Now it is to be noted, that nearly all the prehistoric bronze found in Europe is an alloy in this definite proportion. Clearly all this bronze, or the art of making it, must have originated from some common centre.

All this, however, is very conjectural, and all that can be concluded from it is, that any indications as to the antiquity of man derived from the bronze age as known to us in Europe, hardly carry us back to dates as remote as those furnished by the monuments of Egypt

and Chaldæa. Indeed, there are no facts certainly known to us from remains of the bronze age in Europe that imply a greater antiquity than 1500 or possibly 2000 years B.C., a date at which bronze had undoubtedly been already known in Egypt and the East for many centuries.

The neolithic period which preceded that of metals is of longer duration, but still comparatively recent. Attempts have been made to measure it by a sort of natural chronometer in the case of the lake-villages, by comparing the amount of silting up since the villages were built with the known rate of silting up since Roman times. The calculations vary very much, and can only be taken as approximative; but the oldest dates assigned do not exceed 5000 B.C., and most of them are not more than 2000 or 3000 B.C. It must be remembered however that the foundation of a lake-village on piles implies a long antecedent neolithic period, to have arrived at a stage of civilization which made the construction of such villages possible.

This civilization coincides wonderfully with that of the primitive Aryans as shown by linguistic palæontology. The discussion as to the origin of the Aryans has thrown a great deal of light on this question, and has gone far to dispel the old notion that they radiated from some centre in Asia, and overran Europe in successive waves. On the contrary, all the evidence and all the best authorities point to their having occupied, when we first get traces of them, pretty much the same districts of the great plain of Northern Europe and Southern Russia as we now find them in, and developed there their distinct dialects and nationalities; while the words common to all or nearly all the Aryan families point

to their having been pastoral nomads, in a state of civilization very like that of the earlier lake-villagers, before this separation took place.

The Scandinavian kitchen-middens, or shell-mounds, carry us further back into this early neolithic period. The shell-mounds which are found in great numbers along the Baltic shore of Denmark are often of great size. They are formed of an accumulation of shells of oysters, mussels, and other shell-fish, bones of wild animals, birds, and fish, all of existing species, with numerous implements of flint or bone, and occasional fragments of coarse pottery. They are decidedly more archaic than the lake-dwellings, showing a much ruder civilization of savages living like the Fuegians of the present day, in scanty tribes on the sea-shore, supported mainly by shell-fish, supplemented by the chase of wild animals.

The dog was their only domestic animal, and their only arts the fabrication of rude pottery and implements of stone and bone, unless it can be inferred from the occasional presence of bones of cod and other deep-sea fish, that they possessed some form of boat or canoe, and had hooks and lines or nets. These mounds must have taken an enormous time to accumulate, for they are very numerous, and often of great bulk, some of them being 1000 feet long, 200 feet wide, and ten feet thick. How long such masses must have taken to accumulate must be apparent when we consider that the state of civilization implies a very scanty population. It has been calculated that if the neolithic population of Denmark required as many square miles for its support as the similar existing populations of Greenland and Patagonia, their total number could not have

exceeded 1000, and each mound must have been the accumulation of perhaps two or three families. Ancient, however, as these mounds must be, they are clearly neolithic. They are sharply distinguished from the far older remains of the palæolithic period by the knowledge, however rude, of pottery and polished stone, and still more by the fauna, which is entirely recent, and from which the extinct animals of the quaternary period have disappeared; while the position of the mounds shows that only slight geological changes, such as are now going on, have occurred since they were accumulated. Similar mounds, on even a larger scale, occur on the sea-coasts of various districts in Europe and America, but they afford no indication of their date beyond that of great antiquity.

The peat-mosses of Denmark have been appealed to as affording something like a conjectural date for the early neolithic period in that country. These are formed in hollows of the glacial drift, which have been small lakes or ponds in the midst of forests, into which trees have fallen, and which have become gradually converted into peat by the growth of marsh plants. It is clearly established that there have been three successive ages of forest growth, the upper one of beech, below it one of oak, and lowest of all one of fir. The implements and relics found in the beech stratum are all modern, those in the oak stratum are of the later neolithic and bronze ages, and those in the lowest, or fir-horizon, are earlier and ruder neolithic, resembling those found in the older lake-villages and shell-mounds. Now beech has been the characteristic forest tree of Denmark certainly since the Roman period, or for 2000 years, and no one can say for how much longer. If the speculations

as to the origin of the Aryan race in Northern Europe are correct, it must have been for very much longer, as the word for beech is common to so many of the dialects into which the primitive Aryan language became divided. The stages of oaks and firs must equally have been of long duration, and the different stages could only have been brought about by slow secular variations of climate during the post-glacial period. Still this affords no reliable information as to specific dates, and we can only take Steenstrup's calculation of from 4000 to 16,000 years for the formation of some of these peat-bogs as a very vague estimate, and this only carries us back to a time when Egypt and Chaldæa must have been already densely peopled, and far advanced in civilization.

On the whole, it seems that the neolithic arrow-heads found in Egypt, and the fragments of pottery brought up by borings through the deposits of the Nile, are the oldest certain human relics of the neolithic age which have yet been discovered, and these do not carry us back further than a possible date of 15,000 or 20,000 years B.C.

Nor is there any certainty that any of the neolithic remains found in the newer deposits of rivers and the upper strata of caves go further, or even so far back as these relics of an Egyptian stone period. All that the evidence really shows is, that while the neolithic period must have lasted for a long time as compared with historical standards, its duration is almost infinitesimally small as compared with that of the preceding palæolithic period. Thus in Kent's Cavern neolithic remains are only found in a small surface layer of black earth from three to twelve inches thick; while below this, palæolithic

implements and a quaternary fauna occur in an upper stalagmite one to three feet thick, below it in red cave earth five to six feet thick; then in a lower stalagmite in places ten or twelve feet thick, and below it again in a breccia three or four feet thick. This is confirmed by the evidence of all the caves explored in all parts of the world, which uniformly show any neolithic remains confined to a superficial layer of a few inches with many feet of palæolithic strata below them. And river-drifts in the same manner show neolithic remains confined to the alluvia and peat-beds of existing streams, while palæolithic remains occur during the whole series of deposits while these rivers were excavating their present valleys. If we say feet for inches, or twelve for one, we shall be well within the mark in estimating the comparative duration of the palæolithic and neolithic periods, as measured by the thickness of their deposits in caves and river-drifts; and as we shall see hereafter, other geological evidence from elevations and depressions, denudations and depositions, point to even a higher figure.

In going back from the neolithic into the palæolithic period, we are confronted by the difficulty to which I have already referred, of there being no hard-and-fast lines by which geological eras are clearly separated from one another. Zoologically there seems to be a very decided break between the recent and the quaternary. The instances are rare and doubtful in which we can see any trace of the remains of palæolithic man, and of the fauna of extinct animals, passing gradually into those of neolithic and recent times. But geologically there is no such abrupt break. We cannot draw a line at the culmination of the last great glaciation and say, here the glacial period ends and the post-glacial begins.

Nor can we say of any definite period or horizon, this is glacial and this recent.

A great number of palæolithic remains and of quaternary fossils are undoubtedly post-glacial in the sense of being found in deposits which have accumulated since the last great glaciers and ice-caps began to retreat. Existing valleys have been excavated to a great extent since the present rivers, swollen by the melting snows and torrential rains of this period of the latest glacial retreat, superseded old lines of drainage, and began to wear down the surface of the earth into its present aspect. This phase is more properly included in the term glacial, for both the coming on and the disappearance of the periods of intense cold are as much part of the phenomenon as their *maximum* culmination, and very probably occupied much longer intervals of time. In like manner, we cannot positively say when this post-glacial period ended and the recent began. Not, I should say, until the exceptional effects of the last great glacial period had finally disappeared, and the climate, geographical conditions, and fauna had assumed nearly or entirely the modern conditions in which we find them at the commencement of history. And this may have been different in different countries, for local conditions might make the glacial period commence sooner and continue later in some districts than in others. Thus in North America, where the glaciation was more intense, and the ice-cap extended some ten degrees further south than in Europe, it might well be that it was later in retreating and disappearing. The elevation of the Laurentian highlands into the region of perpetual snow was evidently one main factor of the American ice-cap, just as that of Scandinavia was of that of Europe, and it by no

means follows that their depression was simultaneous. It would be unwise, for instance, to take the time occupied in cutting back the Niagara gorge by a river which only began to run at some stage of the post-glacial period, as an absolute test of the duration of that period all over the world. Indeed, the glacial period cannot be said to have ended and the post-glacial begun at the present day in Greenland, if the disappearance of the ice-cap over very extensive regions is to be taken as the test.

Any approximation to the duration of the post-glacial period in any given locality can only be obtained by defining its commencement with the first deposits which lie above the latest glacial drift, and measuring the amount of work done since.

This has been done very carefully by the officers of the Geological Survey and other eminent authorities in England and Scotland, and the result clearly shows that since the last glaciation left the country buried in a thick mantle of boulder-clay and drift, such an amount of denudation, and such movements of elevation and depression have taken place, as must have required a great lapse of time. The most complete attempt at an estimate of this time is that made by Mr. Mellard Read of the Geological Survey, from the changes proved to have occurred in the Mersey valley.

In this case it is shown that the valley, almost in its present dimensions, must have been first carved out of an uniform plain of glacial drift and upper boulder-clay by sub-aërial denudation; then that a depression let the sea into the valley and accumulated a series of estuarine clays and silts; then an elevation raised the whole into a plain on which grew an extensive forest of

oak rooted in the clays; this again must have subsided and let in the sea for a second time, which must have remained long enough to leave a large estuarine deposit, and finally the whole must have been raised to the present level before historical times. The phenomenon of the submerged forest is a very general one, being traced along almost all the sea-coasts of Western Europe, where shelving shores and sheltered bays favour the preservation of patches of this primæval forest. It testifies to a considerable amount of elevation and subsequent depression, for its remains can be traced below low-water mark, and are occasionally dredged up far out to sea, and stately oaks could not have flourished unless more or less continental conditions had prevailed.

It is evident that in this age of forests the German Ocean must have been dry land, and the continent of Europe must have extended beyond the Orkneys and Hebrides, probably to the hundred fathom line. Such movements of elevation and depression, so far as we know anything of them, are extremely slow. There has been no change in the fords of rivers in Britain since Roman times, and the spit connecting St. Michael's Mount with Cornwall was dry at ebb and covered at flood as at the present day, when the British carted their tin across it to trade with the Phœnicians 2500 years ago. Mr. Read goes into elaborate calculations based on the time required for these geological changes, and arrives at the conclusion that they point to a date of not less than 50,000 or 60,000 years ago for the commencement of the post-glacial period. These calculations are disputed, but it seems certain that several multiples of the historical standard of say 10,000 years, must be required to measure the period since the

glacial age finally disappeared, and the earth, with its existing fauna, climate, and geographical conditions, came fairly into view. This is confirmed by the great changes which have taken place in the distribution of land and water since the quaternary period. Huxley, in an article on the Aryan question, points out that in recent times four great separate bodies of water—the Black Sea, the Caspian, the Sea of Aral, and Lake Balkash—occupied the southern end of the vast plains which extend from the Arctic Sea to the highlands of the Balkan peninsula, of Asia Minor, of Persia and Afghanistan, and of the high plateaux of Central Asia, as far as the Altai. But he says, "This state of things is comparatively modern. At no very distant period the land of Asia Minor was continuous with that of Europe, across the present site of the Bosphorus, forming a barrier several hundred feet high, which dammed up the waters of the Black Sea. A vast extent of Eastern Europe and of west-central Asia thus became one vast Ponto-Aralian Mediterranean, into which the largest rivers of Europe and Asia, the Danube, Volga, Oxus, and Jaxartes, discharged their waters, and which sent its overflow northwards through the present basin of the Obi." The time necessary for such changes goes far to confirm Mellard Read's estimate for the long duration of the recent or post-glacial period.

In fact, all the evidence from the Old World goes to confirm the long duration of the post-glacial period, and the immensely greater antiquity of the glacial period taken as a whole. It is only from the New World that any serious arguments are forthcoming to abridge those periods, or rather the post-glacial period, for that alone is affected by the facts adduced. It is said that recent

measurements of the recession of the Falls of Niagara show, that instead of requiring 35,000 years, as estimated by Lyell, to cut back the gorge of seven miles from Lewiston to the Falls, 10,000 years at the outside would have been amply sufficient; and that this is confirmed by the gorges of other rivers, such as that of the Mississippi at St. Paul's. The evidence is not conclusive, for it depends on the rate of erosion going on for the last twenty or thirty years, which may obviously give a different result from the true average, and in fact older estimates, based on longer periods, gave the rate adopted by Lyell. But if we admit the accuracy of the modern estimates, it does not affect the total duration of the glacial period, but simply that of a late phase of the post-glacial, when the ice-cap which covered North America to a depth often of 2000 or 3000 feet, had melted away and shrunk back 400 miles from its original southern boundary, so as to admit of the waters of the great lakes finding an outlet to the north-east instead of by the old drainage to the south. Nothing is more likely than that, as the great Laurentian ice-cap of America was deeper and extended further than the Scandinavian ice-cap of Europe, it may have taken longer to melt the larger accumulation of ice, and thus postponed the establishment of post-glacial conditions and river-drainage to a later period than in the warmer and more insular climate of Europe. It is a matter of everyday observation, that the larger a snowball is the longer it takes to melt, and that when the mass is large it requires a long time to make it disappear even after mild weather has set in.

The only other argument for a short glacial period is drawn from the rate of advance of the glaciers in

Greenland, which is shown to be much more rapid than that of the glaciers of Switzerland, from which former calculations had been made. But obviously the rate at which the fronts of glaciers advance when forced by a mass of continental ice down fiords on a steep descending gradient, into a deep sea, where the front is floated off in icebergs, affords no clue as to that of an ice-cap spread, with a front of 1000 miles, over half a continent, retarded by friction, and surmounting mountain chains 3000 feet high. Nor does the rate of advance afford the slightest clue to the time during which the ice-cap may have remained stationary, alternately advanced and retreated, and finally disappeared.[1]

[1] The following is the latest pronouncement on the subject from a well-known American geologist :—

"Students of the Ice Age will read with interest a paper by Mr. N. S. Shaler on the antiquity of the last glacial period, submitted to the Boston Society of Natural History, and printed in the latest instalment of the Society's Proceedings. Mr. Shaler differs decidedly from those geologists who suppose that the end of the glacial period is probably not very remote from our own day. One of the strongest of his arguments is derived from the distribution of the vegetation, which in America has regained possession, by migration, of the glaciated district. We must conceive, he points out, that as the ice retreated and gradually disappeared from the surface, a considerable time elapsed before existing forests attained their organization. He assumes as certain that the black walnut and the pignut hickory, between Western Minnesota and the Atlantic coast, have advanced, on the average, a distance of 400 miles north of the ancient ice front to which their ancestors were driven by the presence of the glacial sheet. For several reasons he believes that the northward progress of these forms must have been due mainly, not to the action of streams or tornadoes, but to the natural spread of the seed from the extremities of boughs, and to the carriage of the seed by rodents. But allowing for every conceivable method of transportation, he argues that a period of ten or even twenty thousand years is wholly inadequate to account for the present distribution of these large-seeded trees. If they occurred only sporadically in the northernmost part of the field they occupy, their implantation might be regarded as due to chance action. The fact, however, that they extend from the Atlantic to

We have now to adjust our time-telescope to a wider range, and see what the Quaternary or glacial period teaches us as to the antiquity of man. The first remark is, that if the post-glacial period is much longer than that for which we have historical records, the glacial exceeds the post-glacial in a far higher proportion. The second, that throughout the whole of this glacial period, from its commencement to its close, we have conclusive evidence of the existence of man, and that not only in a few limited localities, but widely spread over nearly all the habitable regions of the earth.

The first point has been so conclusively established by all geologists of all countries, from the time of Lyell down to the present day, that it is unnecessary to enter on any detailed arguments, and the leading facts may be taken as established. It may be sufficient, therefore, if I give a short summary of those facts, and quote a few of the instances which show the enormous lapse of time which must have elapsed between the close of the tertiary and the commencement of the modern epoch.

The glacial period was not one and simple, but comprised several phases. During the Pliocene the climate was gradually becoming colder, and either towards its close or at the commencement of the Quaternary, this culminated in a first and most intense glaciation. Ice-caps radiating from Scandinavia crept outwards, filling up the North Sea, crossing valleys and mountains, and covering with their boulders and moraines a wide circle, embracing Britain down to the Thames valley, Germany to the Hartz mountains, and Russia almost as far east as the Urals. In North

Minnesota indicates that the advance was accomplished by causes of a general and continuous nature."

America a still more massive ice-cap overflowed mountain ranges 3000 feet high, and covered the whole eastern half of the continent with an unbroken mantle of ice as far south as New York and Washington.

At the same time every great mountain chain and high plateau sent out enormous glaciers, which, in the case of the Alps, filled up the valley of the Rhone and the Lake of Geneva, buried the whole of the lower country of Switzerland under 3000 feet of ice, and left the boulders of its terminal moraine, carried from the Mont Blanc range, at that height on the opposite range of the Jura. Nor is this a solitary instance. We find everywhere traces of enormous glaciers in the Pyrences and Carpathians, the Atlas and Lebanon, the Taurus and Caucasus, the highlands of Scotland, Ireland, and Wales; in the Rocky Mountains and Sierra Nevada; the Andes and Cordilleras of South America; in South Africa and in New Zealand. These may not have all been simultaneous, but they certainly all belong to the same period of the great glaciation, and show that it must have been affected by some general cause, and not been entirely due to mere local accidents.

How this first great glacial period came on, or how long it lasted, we do not know, unless Croll's astronomical theory, which will be considered later, affords a clue. But we know generally that it must have lasted for an immense time from the amount of work done and the changes which took place. The ice, which covered so great a portion of the northern hemisphere, was not a polar ice-cap, but spread outwards in all directions from great masses of elevated land, as is proved conclusively from the direction of the striæ which were engraved by it on the subjacent rocks. This land must have been

more elevated than at present, so as to rise, like Greenland, far into the region of perpetual snow, where all rain falls and accumulates in the solid form; and also to supply the enormous mass of *débris* which the ice-caps and glaciers left behind them. It is not too much to say that a million of square miles in Europe, and more in North America, were covered by the *débris* of rocks ground down by these glaciers, and often to great depths. Most of the *débris* of the first glaciation have been removed by denudation, or ploughed out by the second great advance of the ice, leaving only the larger and harder boulders to testify to their extent; but enough remains to show that the first series of boulder-clays and drifts must have been on a scale larger than those of the second and subsequent glaciations, which now form the superficial stratum of so much of the earth's surface, and often attain a depth of several hundred feet. Wright, in his *Ice Age in North America*, estimates that "not less than 1,000,000 square miles of territory in North America is still covered with an average depth of fifty feet of glacial *débris*."

However, this first period of elevation and of intense glaciation passed away, and was succeeded by one of depression and of milder climate. Whether or no the depression was due, as some think, to the weight of the enormous mass of ice weighing down the yielding crust of the earth, and whether or no the milder climate was partly occasioned by this depression letting in the sea, the fact is certain that the two coincided, and were general and not merely local phenomena. Marine shells at the top of what are now high hills, and which during the preceding glaciation were probably higher, attest the fact that a large amount of land must have sunk

below the sea towards the close of this first glacial period. It is equally clear that a long inter-glacial period ensued, during which many changes took place in the geographical conditions and in the fauna and flora, requiring a very long time. Thus Britain, which had been reduced to an Arctic Archipelago, in which only a few of the highest mountain peaks emerged as frozen islands, became united to the continent, and the abode of a fauna consisting in great part of African animals. At one time boreal shells were deposited, at the bottom of an Arctic ocean, on what is now the top of Moel-Tryfen in Wales, a hill 1300 feet above the present sea-level; while at another the hippopotamus found its way, in some great river flowing from the south, as far north as Yorkshire, and the remains of African animals such as the hyena accumulated in our caves. In Southern France we had at one time a vegetation of the Arctic willow and reindeer moss, at another that of the fig-tree and canary-laurel. When we consider that little if any change has occurred either in geographical conditions or in fauna or flora, within the historical period of some 10,000 years, it is difficult to assign the time which would be sufficient to bring about such changes by any known natural causes. And yet it comprises only a portion of the glacial period, for after this inter-glacial period had lasted for an indefinite time the climate again became cold, and culminated in a second glaciation, which, if not equal to the first, was still of extreme severity, and brought back ice-caps and glaciers almost to their former limits, passing away slowly and with several vicissitudes and alternate retreats and advances.

It is not always easy to determine the position of each individual phase of the two glacial and the inter-

glacial periods, for they must often be intermixed, and the results of the last glaciation and of subsequent denudation have to a great extent obscured those of the earlier periods. But taking a general view of the glacial period as a whole, there are a few leading facts which testify conclusively to its immense antiquity. First, there is the amount of elevation and depression. We have seen that marine Arctic shells have been found on the top of Moel-Tryfen, 1300 feet above the present sea-level. Nor is this an isolated instance, for marine drifts apparently of the same character have been traced on the mountains of Scotland, Wales, and Ireland to a height of between 2000 and 3000 feet. In Norway, also, old sea beaches are found up to a height of 800 feet. Nor are these great movements confined to the Old World or to limited localities. According to Professor Le Conte, at the last meeting of the Geological Congress at Washington, a great continental movement, commencing in the later tertiary and terminating in the beginning of the quaternary, caused changes of level amounting to 2500 or 3000 feet on both sides of the continent of North America.

Now elevation and depression of large masses of land are, as far as we know anything certain about them, very slow processes, especially in countries unaffected by recent volcanic action, which is the case with nearly all the regions in North America and Europe which were covered by the great ice-sheets. There has been little or no perceptible change anywhere since the commencement of history, and the only accurate measurements of changes now going on are those made in Sweden, where it appears that in some cases elevation, and in others depression, is taking place at the rate of about two and

a half feet in a century. In volcanic regions earthquakes have occasionally caused movements of greater amount in limited areas, but there is no trace of anything of the sort in these movements of the glacial period which have apparently gone on by slight secular changes in the earth's crust as they are now doing in Scandinavia.

But in this case a depression of 2000 feet, followed by an elevation of equal amount, at Lyell's rate of two and a half feet per century, would require 160,000 years, without allowing for any pauses during the process. And this only embraces part of the whole glacial period, for the depression did not begin until after the climax of the first great glaciation, when the land probably stood higher than at present. Of course the actual movements may have been more rapid, but unless we resort to the exploded theories of cataclysms and catastrophes, the time for such movements must have been very great.

An equally conclusive proof of the immense antiquity of the glacial period is afforded by the formation known as the loess, which fills up so many of the valley systems of Europe, Asia, and America to great depths, and spreads over the adjacent table-lands. It is a tranquil land deposit of fine glacial mud, from sheets of water which inundated the country when great rivers from glaciated districts ran at higher levels, and began to excavate their present valleys. Lyell estimates the thickness of this deposit in the Rhine valley at 800 feet, and it is found at much higher levels on upland plains. Now this loess is not a marine or lacustrine deposit, as is proved by the shells it contains, which are all of land species; nor is it a deposit of running water, for there are no sands or gravels, but distinctly such a deposit

from tranquil sheets of muddy water as is now accumulated in Egypt by the inundations of the Nile. When the Rhine brought down such volumes of muddy water from the glaciers of the Alps as to overflow the upland plains, it must have flowed at a level many hundred feet higher than its present valley, which must have been since scooped out by sub-aërial denudation. The rate of deposition of the Nile mud is about three inches per century, and there seems no reason why that of the fine glacial mud should have been more rapid, charged as the Nile is every year with mud from the torrential rains of the Abyssinian highlands. At this rate it would have required 320,000 years to accumulate the 800 feet of loess of the Rhine valley. Here again the rate may have been faster, but it is sufficient to show that an immense time must have elapsed, and the loess is a distinctly glacial deposit, containing palæolithic human remains and a pleistocene fauna, and embracing only a portion of the quaternary period. Nor is it an isolated phenomenon confined to Europe, but is found over the whole world wherever rivers have flowed from regions which were formerly buried under ice and snow. It is found in great force in the valleys of the Yang-tse-Kang and the Mississippi, and Sir Charles Lyell, referring to the fossil human bone found in it at Natchez, says—"My reluctance in 1846 to regard the fossil human bone as of post-pliocene date arose, in part, from the reflection that the ancient loess of Natchez is anterior in time to the whole modern delta of the Mississippi. The table-land was, I believe, once a part of the original alluvial plain or delta of the great river before it was upraised. It has now risen more than 200 feet above its pristine level. After the upheaval, or during it, the Mississippi

cut through the whole fluviatile formation, of which its bluffs are now formed, just as the Rhine has in many parts of its valley excavated a passage through its ancient loess. If I was right in calculating that the present delta of the Mississippi has acquired, as a minimum of time, more than 100,000 years for its growth, it would follow, if the claims of the Natchez man to have co-existed with the mastodon are admitted, that North America was peopled more than a thousand centuries ago by the human race. But, even were that true, we could not presume, reasoning from ascertained geological data, the Natchez bone was anterior in date to the antique flint *haches* of St. Acheul."

Human remains have since been found in the United States, both in the loess and in drifts, which are presumably older; but even if this were doubtful, the evidence would remain the same for the immense time required for such a deposit, and there is abundant proof in Europe, that human implements, and even skulls and skeletons, have been found at considerable depths in the loess, along with remains of the mammoth and other extinct animals.

It must be remembered also, that the loess is only one part of the work due to glacial erosion. It is, in fact, only the deposit of the fine mud ground from the rocks by glaciers, and carried down further by rivers issuing from them than the coarser *débris*, which, as we have seen, cover 1,000,000 square miles to an average depth of fifty feet in North America alone. The volumes, therefore, of the loess and of the *débris* correspond, and tell the same story of enormous erosion requiring immense periods of time.

Even in comparatively recent times striking proofs

of immense antiquity are afforded by the amounts of denudation and erosion which have taken place since the ice disappeared and the lands and seas assumed substantially their present contours and levels. I will give one instance which, although comparatively modern, will come home readily to most British readers. Dr. Evans in his *Ancient Stone Implements*, referring to those found at Bournemouth 100 feet above the present sea-level in the gravels of the old Solent river, which then ran at that height, says—

"Who, standing on the edge of the lofty cliff at Bournemouth, and gazing over the wide expanse of waters between the present shore and a line connecting the Needles on the one hand and the Ballard-Down Foreland on the other, can fully comprehend how immensely remote was the epoch when what is now that vast bay was high and dry land, and a long range of chalk downs, 600 feet above the sea, bounded the horizon on the south? And yet this must have been the sight that met the eyes of those primæval men who frequented that ancient river, which buried their handiworks in gravels that now cap the cliffs, and of the course of which so strange but indubitable a memorial subsists, in what has now become the Solent Sea."

And the same may be said of the still wider strait which separates England from France. No geologist could look either at the Needles and Ballard Foreland, or at Shakespear's Cliff and Cape Grisnez, without a conviction that the chalk ridge was once continuous, and has been worn away, inch by inch, by the very same process as is now going on. Nor can the action of ice or river floods be evoked to accelerate the process, for

evidently it has throughout been a case of marine erosion. The only question is whether this dates back even into the later phases of the glacial period, for the opposite cliffs show no sign of having been either depressed beneath the sea or elevated above it, but rather appear to have stood at their present level since the erosion began. In any case it can only have occupied a comparatively short and recent phase of the glacial period, for there is abundant evidence that the British islands have been connected with the Continent in comparatively recent times.

Great, however, as is the antiquity shown by these comparatively modern instances, they sink into insignificance compared with that shown by a recent discovery, which I quote the more readily because it rests on the high authority of Professor Prestwich, who has been foremost among modern geologists in reducing the time required for the glacial period and for the existence of man. This is afforded by the upland gravels in Kent and Surrey, which are scattered over wide areas of the chalk downs and green-sand, at elevations far above existing valleys and water-sheds, and which could only have been deposited before the present rivers began to run, and when the configuration of the country was altogether different. Quite recently Mr. Harrison, a shopkeeper at Ightham in Kent, who is an ardent field-geologist, discovered palæolithic implements, in considerable numbers and in various localities, up to an elevation of 750 feet above the sea level, in these gravels of the great southern drift. These discoveries, which have since been repeated by other observers, led Professor Prestwich to institute an exhaustive inquiry as to these upland drifts; and the

startling conclusion he arrives at is, that the oldest of them, or great southern drift, in which the implements are found, could only have come from a mountain range 2000 to 3000 feet high, which formerly ran from east to west in the line of the anticlinal axis which runs down the centre of the present Weald of Kent, between the north and south chalk-downs, and which has been since worn down to the present low forest-ridge by sub-aërial denudation. The reasoning by which this inference is supported seems irresistible. The drift could not have been deposited by the present rivers or with the present configuration of the country, for it is found at levels 300 or 400 feet higher than the highest watersheds between the existing valleys. It consists not only of chalk flints, but to a great extent of cherts and sandstones, such as are found at present in the forest-ridge of the Wealden and nowhere else. It must have been brought by water, for the gravels are to a considerable extent rounded and water-worn. This water must have run down-hill and with considerable velocity during floods, from the size of the rolled stones, and it must have come from the south, because the cherts and grits are only found there, and because the levels at which the gravels are found rise in that direction. By following these levels as far as the present surface extends, which is to the southern edge of the greensand, it is easy to plot out what must have been the continuation of this rising gradient to the south, and what the elevation of the southern range in which these northward-flowing streams took their origin. Prestwich has gone into the question in full detail, and his conclusion is, that the height of this Wealden ridge must have been at least 2800 feet, or in other words, that

about 2000 feet must have disappeared by denudation. This is the more conclusive as Prestwich is the highest authority, and he approached the subject with a bias for shortening rather than lengthening the periods commonly assigned for the glacial epoch and the antiquity of man.

The present average rate of denudation of continents has been approximately measured by calculating the amount of solid matter brought down by rivers. It varies a good deal according to the nature of the area drained, but the average is about one foot in 3000 years. At this rate the time required for the removal of 2000 feet of the Wealden ridge would be no less than 6,000,000 years; but of course this would be no fair test, as denudation would be vastly more rapid than the present average rate, on hilly ranges and under glacial conditions of climate. It is enough to say that the time required must have been extremely great, and quite ample to fit in with the most extended time required by Croll's theory of the varying eccentricity of the earth's orbit.

It is to be noted also, that Prestwich pronounces part of this high level or southern drift to be older than the Westleton pebble drift which forms part of the Upper Pliocene series in Suffolk and Norfolk, and which the Professor has traced over many of our southern counties. If this conclusion is correct, it solves the problem of tertiary man by showing numerous palæolithic implements in a stage older than an undoubted Pliocene bed. The implements found in these high-level southern drifts are all of a very rude type, and the discovery is confirmed by similar implements having been found at corresponding elevations on

the chalk downs of Hertfordshire and on the South Downs.[1]

I will mention only one other instance, which shows that the New World confirms the conclusion as to the antiquity of the quaternary age. The auriferous gravels of California consist of an enormous mass of *débris* washed down by pre-glacial or early glacial rivers from the western slopes of the great coast range. During their deposition they became interstratified with lavas and tuffs from eruptions of volcanoes long since extinct, and finally covered by an immense flow of basalts, which formed a gently inclined plane from the Sierra Nevada to the Pacific. This plane was attacked by the denudations of the existing river-courses, and cut down into a series of flat-topped hills, divided by steep cañons and by the valleys of the present great rivers. In one case, that of the Colombia river, this denudation has been carried down to a depth of over

[1] In a recent paper read to the Anthropological Society by Professor Prestwich, in Feb. 1892, he confirms the above statement, and says that 1452 specimens have now been found at heights of from 400 to 800 feet, and extending over an area of twenty miles in length; while similar implements have been found on the South Downs near Eastbourne 350 feet above the sea level; and at heights of 596 and 760 feet on the hills near Dunstable. He says, "Looking at the very distinctive features of those plateau implements, such as their rudeness of make, choice of material, depth of wear and staining, peculiarity of form—taken in conjunction with the extreme rarity of valley forms—they constitute characters so essentially different from those of the latter implements, that by these characters alone they might be attributed to a more primitive race of men; and as this view accords with the geological evidence, which shows that the drift-beds on the chalk plateau with implements are older than the valley drifts, I do not see how we are to avoid the conclusion, that not only was the plateau race not contemporary with the valley men, but also that the former belonged to a period considerably anterior to the latter—either an early glacial or a pre-glacial period."

2000 feet, and the river flows between precipitous cliffs of this height. The present gold-mining is carried on mainly by shafts and tunnels driven through superficial gravels and sheets of basalts and tuffs, to the gravels of the pre-glacial rivers, which are brought down in great masses by hydraulic jets. In a great number of these cases stone implements of undoubted human origin have been found at great depths under several successive sheets of basalts, tuffs, and gravels. Mr. Skertchly, an eminent English geologist, who recently visited the district, says of these gravels, "Whatever may be their absolute age from a geological stand-point, their immense antiquity historically is beyond question. The present great river system of the Sacramento, Joaquin, and other rivers has been established; cañons 2000 feet deep have been carried through lava, gravels, and into the bed rock; and the gravels, once the bed of large rivers, now cap hills 6000 feet high. There is ample ground for the belief that these gravels are of Pliocene age, but the presence of objects of human formation invests them with a higher interest to the anthropologist than even to the geologist."

I will return to this subject more fully in a later chapter, when dealing with the question of the human remains found in these Californian gravels.

Those who wish to pursue the subject further will find abundant evidence in the works of Lyell, Geikie, Evans, Boyd Dawkins, and other modern geologists, and a popular summary of it in my *Modern Science and Modern Thought*.

It is sufficient for my present purpose to have shown that even taking the quaternary period alone, geology shows that there is an abundant balance in the bank of

Time to meet any demands that may be made upon it by any of the kindred sciences. But it is to those we must look for any chance of even an approximate measurement in years or centuries, for geology and palæontology only show immense periods, but give no certain information as to definite durations. The clue, if any, must be sought in Croll's astronomical theory of the glacial period, which I now proceed to consider.

CHAPTER IX

THE GLACIAL PERIOD AND CROLL'S THEORY.

Causes of Glacial Periods—Actual Conditions of existing Glacial Regions—High Land in High Latitudes—Cold alone insufficient—Large Evaporation required—Formation of Glaciers—They flow like Rivers—Icebergs—Greenland and Antarctic Circle—Geographical and Cosmic Causes—Cooling of Earth and Sun, Cold Spaces in Space, and Change in Earth's Axis, reviewed and rejected—Precession alone insufficient—Unless with High Eccentricity—Geographical Causes, Elevation of Land—Aerial and Oceanic Currents—Gulf Stream and Trade Winds—Evidence for greater Elevation of Land in America, Europe, and Asia—Depression—Warmer Tertiary Climates—Alps and Himalayas—Wallace's *Island Life*—Lyell—Croll's Theory—Sir R. Ball—Former Glacial Periods—Correspondence with Croll's Theory—Length of the different Phases—Summary—Croll's Theory a Secondary Cause—Conclusions as to Man's Antiquity.

I TURN from the effects to the causes of that great glacial period which has been described in the last chapter. This line of investigation is peculiarly interesting in the search after human origins, for it affords the only chance of reducing the vague periods of immense duration shown by geology, to something like a definite chronology of years and centuries. If astronomical causes, the dates of which admit of mathematical calculation, can be shown to have been, if not the sole or principal, yet one of the causes which must have influenced the phenomena of the glacial epoch, we may assume these dates for the occurrence of the human remains which accompany these phenomena.

Otherwise we must fall back on immense antiquity, which may mean anything from 50,000 or 100,000, to 500,000 or 1,000,000 years, since the first authentic evidence for palæolithic man.

The first step towards an investigation of the cause of glacial periods, is to consider what are the conditions of the actual ones which are now prevailing. We have one such period in Greenland, another in the Antarctic region, a third in high mountain chains like those of Alaska, and of the Swiss and New Zealand Alps. In all these cases we find certain common conditions. High land in high latitudes, rising in great masses above the snow-line or temperature which condenses water in the solid form; and winds which are charged with great quantities of watery vapour raised by evaporation, to be so condensed.

Cold alone is insufficient to produce glaciers and ice-caps, as may be seen by the example of the coldest regions in the world, Siberia and the tundras of Northern Asia and of North America, where the earth is permanently frozen to a depth of many feet; but there are no glaciers. The reason obviously is, that there is no sufficient supply of moist air from warm oceans to furnish more snow in winter than is melted in summer. Heat is in a certain sense as necessary as cold to account for glacial periods, for snow and ice can no more than other things be made out of nothing, and every snowflake implies an equal amount of aqueous vapour raised somewhere else by evaporation. But if an abundant supply of liquid or gaseous water is combined with cold sufficient to condense it into the solid form, it becomes fixed, and if the summer heat is insufficient to melt the excess of snow, it necessarily

accumulates. The growth of glaciers follows as an inevitable consequence. The snow is converted into ice by pressure and by alternate freezing and melting, and this grows year by year, until an equilibrium is established by the ice pushing down glaciers into lower levels, where the melting is more rapid, or into the sea, where the front is floated off in icebergs, and drifts into lower latitudes. The process is the same as that by which the rainfall on high levels is drained off by rivers into the sea, so that an equilibrium is established between waste and supply. And it is to be remarked that the glacier, though composed of solid ice, behaves exactly like a river, or rather like a river of some viscous fluid like pitch or treacle. Its size depends on the magnitude of the reservoir or area drained by it; it conforms to the configuration of the valley by which it descends and the obstacles which it encounters; it flows rapidly, and with a broken current, through narrow gorges and down steep inclines; slowly and tranquilly over wide and level areas; its velocity is greatest at the surface and in the middle where friction is least, slowest at the bottom and sides where it is greatest. In short a glacier is simply a solid and slowly-flowing river, discharging an excess of solid ice to the lower level from which it came, just as a liquid river does with the rainfall of warmer regions. The cause of this tendency of solid and brittle ice to flow like a viscous fluid is not quite understood, though recent researches, especially those of Tyndall, have thrown a good deal of light upon it; but all glacialists are agreed on the *fact* that it does so, and we can argue from it with great confidence as to the conditions under which glaciation has acted in the past and is now acting.

Thus even if Namsen had never crossed Greenland, or Ross had never discovered Mounts Erebus and Terror, we might have inferred with certainty the existence of enormous ice-caps, implying continental masses of elevated land, in both the Arctic and Antarctic circles, from the number and size of the icebergs floated off into the Northern Atlantic and Southern Pacific Oceans. Icebergs are frequently met with in the latter down to 50° south latitude, or even lower, of a mile in length and 500 feet high above the sea; and in some instances icebergs three miles long and 1000 feet high have been recorded. As upwards of eight feet of ice must be under water for every foot that floats above it, some of these icebergs must be considerably over a mile in thickness, which implies that there must be land ice towards the south pole so thick that it is, in places, over 5000 feet in thickness at its outer margin. It has been estimated from the great size and abundance of these icebergs, that in the interior of the great Antarctic continent the ice may be twenty miles or more thick, and in Greenland the great interior ice-cap rises in a dome to at least 9000 or 10,000 feet above the sea-level, a great part of which is solid ice, while during the great glacial period it was certainly very much thicker.

As a first step therefore towards a solution of the problem of the glacial period we may start with the axiom that it requires abundant evaporation, combined with a temperature low enough to precipitate an excess of that evaporation in the solid form. This does not necessarily imply any great and permanent refrigeration of the whole earth, for although this would give the cold it would not give the evaporation, and would tend

rather to extend the conditions of Siberia than those of Greenland. Longer and colder winters with shorter and hotter summers would seem more adapted to the growth of glaciers.

But for a more exact investigation our next step must be to inquire what are the causes which may have produced these postulates of a glacial period, lower temperature with larger evaporation. They may be classed under two heads.

1st. Geographical causes, arising from latitude, aërial and oceanic currents, and a different distribution of sea and land.

2nd. Cosmic causes, such as variations of solar and terrestrial heat, passage through colder regions of space, the position of the poles, precession, and the eccentricity of the earth's orbit.

All these have had supporters in their time, but the result of the latest science has been to leave only two seriously in the field—Lyell's theory of a different distribution and elevation of sea and land, carrying with it changes in aërial and oceanic currents; and Croll's theory of the effects of precession combined with high eccentricity of the earth's orbit.

Thus, of the geographical causes, latitude is no doubt an important factor in determining temperature, but it cannot of itself be the cause of the glacial periods, for it has remained unchanged through all the vicissitudes of heat and cold in geological times. The latitude of Greenland and Spitzbergen is presumably the same now as it was in the Miocene period, when they were the seat of a luxuriant temperate vegetation; and at the present day we have only to follow the isothermal lines to see to what a great extent climate in the same

latitudes is modified by other influences, such as the Gulf Stream.

Of cosmic causes, the progressive cooling of the earth naturally presents itself, at the first blush, as sufficient to account for the glacial period. But although this has doubtless been an all-important factor in pre-geological times, in fashioning our planet from glowing vapour into a habitable earth, it is no longer operative as an immediate cause of vicissitudes of temperature. It is enough to say that if it were, the cooling ought to be progressive, and having once got into a glacial period we never ought to have got out of it. But we clearly have recovered from the paroxysms of cold, both of the first and second great glaciations of the recent period; and according to most geologists, from the immensely earlier ones of the Permian and Carboniferous, and perhaps of the Cambrian ages. As far as it acts at all on surface temperature, the secular cooling of the earth only acts indirectly by causing elevations and depressions of the outer crust, and crumpling it into wrinkles, which originate mountain chains, as the nucleus contracts, and thus affecting geographical conditions.

The same objection applies with equal force to the theory that the glacial period was caused by the sun giving out less heat owing to its cooling by radiation. Here also it is obvious that if a glacial period were once established from such a cause it ought never to recover, but progress from bad to worse. We ought also, in this case, to have had a uniform progressive refrigeration from the beginning of geological time down to the present day, which has certainly not been the case. On the contrary, geologists are generally agreed that there are unmistakable traces of at least two glacial periods in the

Carboniferous and Permian ages, and the earliest Eocene was certainly cooler than its later stages, as shown by their flora.

The conjecture that the sun is a variable star is also negatived by the consideration that in this case there ought to have been periodical variations in the earth's temperature, and hot and cold climates recurring at regular intervals throughout geological time, which has certainly not been the case.

Again, the passage of the solar system through cold regions of space has been suggested, but it is a mere conjecture, unsupported by a particle of evidence, and opposed to all we know of the laws of heat, and of the constitution of the universe. It is hard to conceive how hot regions can exist surrounded by cold ones, or *vice versâ*, without walls of a non-conducting medium to separate them, or that the faint heat from the fixed stars can ever have perceptibly affected the temperature of space. And such a theory, if it were possible, would fail to account for the frequent vicissitudes of hot and cold at short intervals within the glacial period, and for the great differences of temperature prevailing in the same latitudes.

An alteration in the position of the poles has also been suggested, but this also is clearly inadmissible. There is no evidence that the present position has ever materially varied, and there is no known law that could cause such a variation. On the contrary, all the elaborate mathematical calculations by which the motions of the sun, moon, and planets are deduced from Newton's law of gravity, tend to negative such a supposition.

And what is perhaps even more convincing to a non-

mathematical mind, the position of the poles implies the position of the equator, and cannot change without a corresponding change in the earth's shape. Now the earth is not a sphere, but an oblate spheroid, of almost the exact shape which a fluid mass would take revolving about the present axis. The centrifugal force arising from the greater velocity of rotation in going from the poles to the equator would pile up a protuberant belt where the velocity was greatest, and in point of fact the earth's equatorial diameter is longer than the polar diameter by about twenty-eight miles. Any displacement therefore of the poles, which carried them away from their present position, must displace the present equator to a corresponding extent. This mass of twenty-eight miles in thickness of earth and ocean must be thrown out of the old position, and driven to establish a new equilibrium in a position many degrees north or south of it in order to affect climates materially, submerging all existing lands, and leaving, until removed by denudation, miles upon miles of solid earth in unsymmetrical belts, like the moraines of retreating glaciers, as the equator shifted into new positions. And all this must have occurred, not once, but twice at least, and that with many minor vicissitudes, within the narrow limit of the quaternary period. It is unnecessary to say that nothing of the sort could by any possibility have occurred. Some evidence has recently been adduced that some very slight changes in latitude are going on at the observatories of Dorpat and Greenwich, but if confirmed these can only be of very minute amount, arising from slight changes in the position of the earth's centre of gravity owing to partial elevations and depressions, and could never

have been sufficient to account for great variations of climate.[1]

Neither could the precession of the equinoxes have been of itself a principal cause, for here also the limit of time negatives the supposition. This precessional circle carries the perihelion and aphelion, and with it the seasons, completely round, and brings them back to the old position, in about 21,000 years, and therefore if glacial periods were occasioned by them, there ought to be alternations from *maximum* of cold to *maximum* of warmth in each hemisphere every 10,500 years. But this has certainly not been the case even in recent times, and still less if we go back to the quaternary, tertiary, and earlier geological periods.

In fact it is only when combined with periods of high eccentricity of the earth's orbit, according to Croll's theory, that precession can pretend to have any claim to be an important factor in the production of glacial periods. And even then the question is not of its being the sole or principal cause, but only whether it has had such a perceptible auxiliary effect on other more powerful causes, as may enable us to use it as a chronometer in assigning approximate dates for some of the more important phenomena of the long and varied period between the close of the Tertiary and the establishment of the Recent period.

As man certainly existed throughout the whole of this period, the possibility of finding such a chronometer becomes intensely interesting, and I proceed to discuss the latest state of scientific opinion respecting it. But

[1] The latest researches seem to show that these slight variations in latitude do not exceed 2″ or 3″, and are periodical, with a period of no longer than 300 to 310 days.

as Croll's theory if a real is clearly only an auxiliary cause, I will, in the first instance, point out what are the certain and admitted causes which account for variations of temperature irrespective of latitude.

They may be summed up, in Lyell's words, as different combinations of sea and land, for on these depend the secondary conditions which affect temperature. Thus elevation of land is as certain a cause of cold as high latitude, and even Killimanjaro, under the equator, retains patches of unmelted snow throughout the year. It is estimated that a rise of 1000 feet in height is about equivalent to a fall of 3° F. in mean annual temperature, and that the line of perpetual snow is, on the average, a little higher than the line where this mean annual temperature is at 32° F., or freezing-point. If there is any mass of land so high as to be below this temperature, snow accumulates and forms glaciers, which descend some 4000 feet below the snow-line before the excess of ice pushing down is melted off by the summer heat unless it has been previously floated off in icebergs at a higher level. Now the mean temperature of the north of Scotland at sea-level is about 46° F., so that an elevation of 8000 or 10,000 feet would bring a great part of it well above the snow-line, and vast glaciers would inevitably accumulate, which would push down through the principal valleys almost to the sea-level; a state of things which actually exists in New Zealand, where glaciers from the Southern Alps at about this elevation descend, in some instances to within 700 feet of the sea-level, in the latitude of Devonshire. But a still more important factor of temperature is found in aërial and oceanic currents, which again, to a great extent, are a product of the configuration of sea

and land. The most familiar instance is that of the Gulf Stream, which raises the temperature of Western Europe some 10°, and in Norway as much as 15° F., above that due to latitude, and which prevails on the other side of the Atlantic. The northern extremity of the British Islands in Shetland is on the same parallel of latitude as the southern extremity of Greenland, Cape Farewell. One is buried under perpetual ice, in the other there is so little frost in winter that skating is an unknown art.

What is the reason of this? We must go to the tropics to find it. A vast mass of vapour is raised by the sun's heat from the oceans near the equator, which being lighter rises and overflows, the trade winds rushing in from the north to supply its place, and being deflected to the west by the earth's rotation. This prevalence of easterly surface winds sweeps the waters of the Atlantic to the west, where they are intercepted by South America, turned northwards into the Gulf of Mexico, where they circle round under a tropical sun and become greatly heated, and finally run out through the Straits of Florida with a rapid current, and spread a surface return current eastwards over the Northern Atlantic. The shores of North-west Europe are thus in the position of a house warmed by hot-water pipes, while their neighbours over the way in North-eastern America have no such apparatus.

This oceanic circuit of warm water has a counterpart in the aërial circuit of heated air. The vapour which rose in the tropics overflows, and as it cools and gets beyond the region of the trade winds, descends mainly over the Northern Atlantic, carrying with it its greater velocity of rotation, and so causing westerly winds,

which reach our shores after blowing over a wide expanse of ocean heated by the Gulf Stream, thus bringing us warmth and wet, while the corresponding counter-currents which blow over continental Europe and Asia from the north-east bring cold and drought. The extreme effects of this may be seen by comparing the Black Sea at Odessa, where ice often stops navigation, with the North Sea at the Lafoden islands, where the cod-fishing is carried on in open boats in the middle of winter. We in England are in the happy position where on the whole the mild and genial west winds prevail, though not exclusively, so as to give us the drenching rains of Western Ireland and Scotland, or to prevent spells of a continental climate which give us bracing frosts in winter, and alternations of cold and heat in summer.

If we turn from these temperate regions to those in which exactly opposite conditions prevail, we find them still in the icy chains of a glacial period. Greenland, for instance, which is a typical case, shows us what happens when a continental mass of land stands at a high elevation in high latitudes with no Gulf Stream, but instead of it cold currents from a Polar ocean, and seas around it frozen or covered with icebergs for nine months out of the year. We have a dome of solid ice piled up to the height of 9000 feet or upwards, and sending millions upon millions of tons of glaciers down to the sea to be floated off as icebergs. The only trace we can see here of the old great glacial period is that these conditions were formerly more intense. Thus the glaciation of some of the mountain sides and islands off the coast of Greenland seem to show that the ice formerly stood 2000 or

3000 feet higher than at present, a result which would be attained if the whole continental mass, which is now slowly subsiding, had then been elevated to that extent.

The southern hemisphere affords a still more striking example of this on a larger scale, for we have there, in all probability, higher land in higher latitudes, surrounded by frozen seas, and washed by cold currents. I pass from this however, as beyond these general facts the special conditions of the Antarctic Circle are not known to us like those of Greenland.

From the above facts we are very safe in drawing the conclusion that during the great quaternary glacial period the conditions which now cause glaciation must have existed in an aggravated degree, and those which now give us temperate climates in regions once glaciated must have disappeared or been reversed. On the other hand, the warm climates which prevailed during the tertiary and other geological epochs, and permitted a temperate flora to flourish as far north as Grinnell Land and Spitzbergen, could only have occurred under conditions exactly the reverse of those which produced the cold. If high land in high latitudes is the principal cause of the present glaciation of Greenland, still higher land must have been so in causing the still greater glaciation of the former period. Scandinavia, Laurentia, the British Islands, the Alps, Apennines, Rocky Mountains, Sierra Nevada, and all great mountain ranges in the northern hemisphere must have stood at greater elevations. There must have been such an accumulation of ice and snow as to chill the air, cause fogs, and prevent the summer heat of the sun from melting off the water which fell in the solid form

during winter; and on the other hand, there must have been hot summers and great expanses of ocean to the south to supply the abundant evaporation which became condensed by contact with the chilly mountains and uplands of the north.

One supposition is that the Isthmus of Panama was then submerged, so that the Gulf Stream ran into the Pacific. But this wants geological confirmation, as the Isthmus shows no sign of such recent marine formations as must have been deposited if it had been submerged to a sufficient depth to let the Gulf Stream escape, and the extension of the ice-cap in North America to much lower latitudes than in Europe, points rather to the conclusion that the Gulf Stream must have run very much in its present course.

The only geological evidence bearing on this question is the recent discovery of deep oceanic deposits such as the Globigerena ooze, above tertiary deposits in Barbadoes and Jamaica, leading to the inference that the whole West Indian area was a deep sea in comparatively modern times. This no doubt might affect both the temperature and the velocity of the Gulf Stream to a considerable extent.

But the geological evidence is much more conclusive for the greater elevation of the land during the periods of greater glaciation as well as for its depression during the inter-glacial period. American geologists estimate that a large part of Eastern Canada with adjacent regions must have been at least 2000, and may have been as much as 3000 feet above its present level during the first great glaciation; while the Champlain marine beds show that it was some hundreds of feet below the present sea-level during part of the inter-glacial period. Scandi-

navia stood at least 2000 feet higher than at present during the climax of the glacial period as proved by the depths of the fiords, and afterwards 500 or 600 lower as proved by the raised beaches. In Great Britain and Ireland we have conclusive evidence both of higher elevation, and of depression of at least 1300 feet, and probably more than 2000 feet below the present sea-level, as proved by the marine shells on the top of Moel-Tryfen.

But these elevations and depressions are small in amount compared with the mountain building which is known to have occurred in Asia in comparatively recent geological times. Here the Himalayas, stretching for 1500 miles from east to west, and rising to heights of from 20,000 to 29,000 feet above the sea, have been formed in great part during this period. Within the same period the great table-lands of Thibet and Central Asia have been uplifted, and the Asian Mediterranean Sea, of which the Black Sea, the Caspian, the Salt deserts and Lake Balkash are the remnants, has been converted into dry land. Movements of this magnitude, of which there are many other examples, may well account for great changes in isothermal lines and climates.

The complete removal of the conditions which produced the glacial period might go far to account for the preceding tertiary period. We have only to suppose a different configuration of sea and land; nothing but low lands and islands in high latitudes; free access for warm oceanic currents like the Gulf Stream into the limited area of the Polar basin; no great continents or lofty mountain ranges to drain the return trade winds of their moisture; in short, all the

conditions of a mild and moist insular climate, as opposed to those of a continental one, to understand how forests of temperate trees might flourish as far north as Greenland and Spitzbergen. And the geological evidence which, as we have seen, shows that great elevation of land in the northern hemisphere did in fact inaugurate the glacial period, favours the conclusion that the reverse conditions actually prevailed during the tertiary and preceding epochs.

The presence of the Nummulitic and other marine Eocene and Miocene formations over such extensive areas, and at such great elevations, is a conclusive proof that a great part of our existing continents were then at the bottom of deep oceans. The Alps were certainly 10,000 feet lower than their present level, and the Himalayas more so; and when this was the case a great part of Europe and Asia must have been sea, in which only a few of the highest peaks and elevated plateaux stood up as islands. The Pacific and Indian Oceans as well as the Atlantic might then have poured their Gulf Streams into the Polar basin, and prevalent southerly and westerly winds, blowing over wide expanses of water, have deposited their vapour in genial showers instead of in solid snow. The effect of such geographical conditions in producing both heat and cold is admirably worked out by Wallace in his *Island Life*, and few who read it can doubt that Lyell was right in saying that they have been the principal causes of the vicissitudes of climate. And here I may say a word to express my admiration of the innate sagacity with which Lyell, many years ago, and with comparatively few facts to work upon, sketched out the leading lines of geology, which have been

confirmed by subsequent research. Details may have been corrected or added, but his main theories have stood the fullest test of the survival of the fittest. His law of the uniformity of natural causes, continued for long intervals of time, holds the field unchallenged. These causes may have operated a little more quickly or slowly in former ages than at present, but they have been of the same order. The waste of continents, instead of averaging one foot in 4000 years, may have averaged ten or twenty feet during certain periods, and certain portions of the earth's crust may have been elevated or depressed at a quicker rate than is now going on in Scandinavia; but no one any longer believes in paroxysms throwing up mountain chains or sinking continents below the ocean at a single blow.

In like manner later geologists have corrected details in the distribution of land and sea suggested by Lyell to account for the glacial period, but his main law has only received confirmation—viz. that this distribution, and especially high land in high latitudes, has been the principal cause of such periods.

At the same time there is a pretty general consensus of the best and latest geologists, that, as Lyell himself suggested, elevation and depression and other geographical changes, though the principal, are not the sole causes of the glacial period. The main argument is, that the phases of this period, though not exactly simultaneous over the whole world, are too nearly so to be due to mere local movements, and require the intervention of some general cosmic cause. We have already seen that of such causes there is none which appears feasible except Croll's theory of the effects of precession combined with high eccentricity.

Let us consider what this theory really asserts. If the earth were a perfect sphere, its orbit round the sun a perfect circle, and the equator coincided with the ecliptic, there would be no seasons. The four quarters of the year would each receive the same quantity of solar heat and light, and the days and nights would be always equal. But the inclination of the equator to the ecliptic, that is, of the earth's plane of daily rotation to that of its annual revolution, necessitates seasons. Each pole must be alternately turned to and away from the sun every year. Each hemisphere, therefore, must have alternately its spring, summer, autumn, and winter. But if the earth's orbit were exactly circular, these seasons would be of equal duration, and the distance from the sun no greater in one than in another. But the earth's orbit is not circular, but elliptic, and the eccentricity, or deviation of the oval from the circular form, varies considerably over very long periods, though always coming back to the amount from which it started. These variations are due to perturbations from the other bodies of the solar system acting according to the law of Newton's gravitation, and therefore calculable.

Again, the earth is not a perfect sphere, but a spheroid, and there is a factor called precession, due to the attraction on the protuberant mass at and towards the equator. The effect of this is, that instead of the earth's axis pointing uniformly towards the same celestial pole, it describes a small circle round it. This circle is completed in about 21,000 years, so that if the earth is nearest to the sun when the North Pole is turned away from it, and it is winter in the northern hemisphere, as is now the case, in 10,500 years the conditions will be reversed, and the southern hemisphere will be in peri-

helion, or nearest the sun, when its pole points away from it. And as the perihelion portion of the earth's orbit is, owing to its eccentricity, shorter and more quickly traversed than the aphelion portion, this means practically that winters will be shorter than summers in the hemisphere which precession favours, and longer in that to which it is adverse.

As precession now favours the northern hemisphere, which is warmer than the southern in corresponding latitudes, it might be thought at first sight that this was the cause of the glacial period. But it is evident that this is not the case, for the precessional revolutions come round far too rapidly, and it is impossible to suppose that there have been glacial and genial periods alternating every 10,500 years, with all the inevitable changes of seas and lands, and of fauna and flora, accompanying each alternation throughout the whole of geological time. In fact, it is abundantly evident, on historical evidence alone, that there has been no approach to any such changes during the last 10,500 years, which carries us back to a period when our northern summers were short and our winters long.

But Croll's theory brings in the secular variation of the eccentricity, and contends that although precession may have little or no effect while the earth's orbit is nearly circular, as it is now, it must have a considerable effect when the orbit flattens out, so that the distances from the sun and the durations of summer and winter become exaggerated. Croll calculated the periods when such *maxima* and *minima* of eccentricity occurred for several revolutions back from the formula of the great astronomer Leverrier, and found that going back for the last 260,000 years there had been two *maxima*

of high eccentricity, one 100,000 years, and the other, and more intense, 210,000 years ago, with corresponding *minima* of low eccentricity between, which corresponded remarkably well with the refrigeration commencing in the Pliocene, culminating towards its close or in the early Quaternary, subsiding into a long inter-glacial period, rising again in the later Quaternary to a second glacial *maximum* a little less intense than the first, and finally gradually subsiding into the low eccentricity and temperate climates of more recent times; especially as the geological evidence shows many minor oscillations of heat and cold, and advances and retreats of glaciers during each phase of these periods, such as must have occurred from the shorter recurrent effects of precession according to Croll's theory.

Croll's calculations show that, at the period of *maximum* eccentricity 210,000 years ago, the earth would have been in mid-winter 8,736,420 miles further from the sun than it is now, and the winter half of the year nearly twenty-eight days longer than the summer half, instead of being six days shorter as at present. It appears, moreover, from a volume just published, *On the Astronomical Causes of an Ice Age*, by Sir R. Ball, one of the highest authorities on mathematics and astronomy, that Croll had understated his case. Ball says that "Croll, misled by a statement of Herschell's, had assumed the number of units of heat received from the sun, in a hemisphere of the earth, as equal in summer and winter. But in reality, of 100 such units, 63 are received in summer and only 37 in winter. As the maximum of eccentricity which is possible would produce an inequality between summer and winter of 33 days, they had the following possible conditions in a

hemisphere—summer 199 days and winter 166 days, or summer 166 days and winter 199 days. In each case it must be borne in mind that 63 heat units arrived in summer and 37 in winter. If the summer were a long one and the winter short, then the allotment of heat between the two seasons would be fairly adjusted. The 63 units were distributed over 199 days and the 37 units over 166 days, and a general inter-glacial state was the result on the hemisphere. If, however, a torrent of heat represented by 63 units was poured in during a brief summer of 166 days, whilst the balance of 37 units is made to stretch itself over 199 days, a brief, intensely hot summer would be followed by a very long and cold winter, and as this condition lasted for many centuries, it seemed sufficient to produce a glacial epoch."

It would be going too far, however, to assume that these conditions necessarily produced glacial periods whenever they occurred, and Ball himself points out that even on astronomical grounds, several conditions must concur before high eccentricity alone would affect climate. But even with this reservation the same objection applies to assigning this as the sole or principal cause of Ice Ages, as to precession alone, viz. that periods of high eccentricity occur too frequently to allow us to suppose that every such period in the past has had its corresponding glacial period. There was a *maximum* phase of eccentricity 700,000 years ago, even higher than that of 210,000 years, and there must have been at least two or three such *maxima* within each of the twenty-eight geological ages. But there are only two or three traces of glacial periods in past epochs on which geologists can rely with confidence, as proving

extensive ice-action—one in the Permian, the other in the Carboniferous age.

There are a few other instances which look like glacial action, as the conglomerate of the Superga at Turin, the Flysch of Switzerland, the great conglomerate at the base of the Devonian; and Professor Geikie thinks that the oldest Cambrian rocks in the West Highlands have been rounded and smoothed by ice before the Silurian strata were deposited on them. But even if these were authenticated and proved to be due to general and not merely local causes, they would not supply anything like the number of glacial periods required by Croll's theory. Croll attempts to meet this by the extensive denudation which has repeatedly carried away such large portions of land surface; but this scarcely explains the absence of the boulders of hard rocks, which accompany every moraine and iceberg; and still less the continuance of the same fauna and flora throughout whole geological periods with little or no change. We have no such abrupt changes as during the last glacial period, when at one time the canary laurel flourished in Central France, while at another the reindeer moss and Arctic willow extended to the Pyrenees, both occurring within what may be called a short time, geologically speaking. On the contrary, there seems to have been no material changes in the flora throughout very long geological periods such as that of the Coal Measures.

The only real answer to this objection is that the question is, not whether Croll's theory is the sole or even the principal cause of glacial periods, or able to influence them materially if the geographical conditions favour genial climates; but whether it has not a

co-operating effect, when these conditions are such as to produce glaciation. It seems difficult to suppose that such contrasts of conditions as are pointed out by Sir R. Ball can have had no perceptible effect on climates; or that such close coincidences as are shown between the astronomical theory and geological facts, during the last glacial period, can be due to mere accident.

Geology shows six phases of this period:—(1) a refrigeration coming on in the Pliocene; (2) its culmination in a first and most intense *maximum;* (3) a gradual return to a milder inter-glacial period; (4) a second refrigeration; (5) its culmination in a second *maximum;* (6) a second return to genial conditions, such as still prevail. Croll's theory shows six astronomical phases, corresponding to these six geological phases. Geology shows that each of its six phases involves several minor alternations of hot and cold; Croll shows that this must have been the case owing to the effects of the shorter cycles of precession, occurring during the long cycles of variations in eccentricity. Geology tells us that cold alone would not account for a glacial period; we must have heat to supply the evaporation which is condensed by the cold; Croll shows that with high eccentricity cold and long winters must have been accompanied by short and hot summers. And Sir R. Ball's recent calculations show that the argument is really very much stronger than Croll puts it.

The duration of each of the phases of Croll's theory corresponds also, on the whole, remarkably well with that required for each phase of the geological record. They would average about 40,000 years each for Croll's phases, and a less time can hardly be allowed for the immense amount of geological work in the way of

denudation and deposition, elevation and depression, and changes of fauna and flora which have occurred since the commencement of the great refrigeration in the late Pliocene. In fact the only reasonable doubt seems to be whether Croll's times are sufficient, and whether, as Lyell was inclined to think, the first and greatest glaciation must not be carried back to the extreme period of high eccentricity which occurred about 700,000 years ago.

Unless we are prepared to ignore all these considerations and deny that Croll's theory, as amended by Sir R. Ball, has had any appreciable effect on the conditions of the glacial period, it follows with mathematical certainty, that this period, taking it from the commencement of the great refrigeration in the Pliocene to its final disappearance in the Recent, must have lasted for about 200,000 years. And as man clearly existed in the pre-glacial period, and was already widely spread and in considerable numbers in the early glacial, 250,000 years may be taken as an approximation to the *minimum* duration of the existence of the human race on the earth. To this must be added an indefinitely long period beyond, unless we are prepared to disprove the apparently excessively strong evidence for its existence in the Pliocene and even in the Miocene periods; evidence which has been rapidly accumulating of late years; and to which, as far as I know, there has been no serious and unbiassed attempt at scientific refutation; and to which confirmation is given by the undoubted fact that the Dryopithecus, the Hylobates, and other quadrumana, closely resembling man in physical structure, already existed in the Miocene, and, if Professor Ameghino's discoveries referred to at p. 264 are confirmed, in the vastly more remote period of the early Eocene.

CHAPTER X.

QUATERNARY MAN.

No longer doubted—Men not only existed, but in numbers and widely spread—Palæolithic Implements of similar Type found everywhere—Progress shown—Tests of Antiquity—Position of Strata—Fauna—Oldest Types—Mixed Northern and Southern Species—Reindeer Period—Correspondence of Human Remains with these Three Periods—Advance of Civilization—Clothing and Barbed Arrows—Drawing and Sculpture—Passage into Neolithic and Recent Periods—Corresponding Progress of Physical Man—Distinct Races—How tested—Tests applied to Historical, Neolithic, and Palæolithic Man—Long Heads and Broad Heads—Aryan Controversy—Primitive European Types—Canon Taylor—Huxley—Preservation of Human Remains depends mainly on Burials—About forty Skulls and Skeletons known from Quaternary Times—Summary of Results—Quatrefages and Hamy—Races of Canstadt—Cro-Magnon—Furfooz—Truchere—Skeletons of Neanderthal and Spy—Canstadt Type oldest—Cro-Magnon Type next—Skeleton of Cro-Magnon—Broad-headed and Short Race resembling Lapps—American Type—No Evidence from Asia, Africa, India, Polynesia, and Australia—Negroes, Negrillos, and Negritos—Summary of Results.

THE time is past when it is necessary to go into any lengthened argument to prove that man has existed throughout the Quaternary period. Less than half a century has elapsed since the confirmation of Boucher-de-Perthes' discovery of palæolithic implements in the old gravels of the Somme, and yet the proofs have multiplied to such an extent that they are now reckoned, not by scores or hundreds, but by tens of thousands. They have been found not in one locality or in one formation

only, but in all the deposits of the Quaternary age, from the earliest to the latest, and in association with all the phases of the Quaternary period, from the extinct mammoth, woolly rhinoceros, and cave-bear, to the reindeer, horse, ox, and other existing animals. No geologist or palæontologist, who approaches the subject

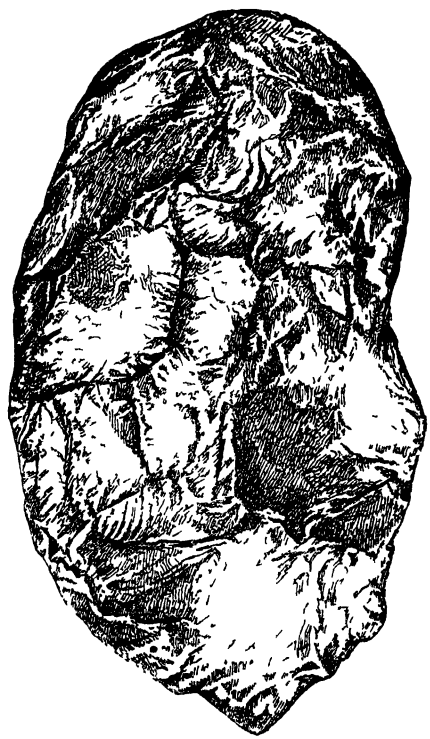


PALÆOLITHIC CELT (type of St Acheul)
From Quaternary deposits of the Nerbudda, India

with anything like competent knowledge, and without theological or other prepossessions, doubts that man is as much a characteristic member of the Quaternary fauna as any of these extinct or existing animals, and that reasonable doubt only begins when we pass from the Quaternary into the Tertiary ages. I will content myself, therefore, instead of going over old ground and

proving facts which are no longer disputed, with showing what bearing they have on the question of human origins.

The first remarkable fact to note is, that at this remote period man not only existed, but existed in con-



Palæolithic Celt in Argillite
From the Delaware, United States (Abbott)

siderable numbers, and already widely spread over nearly the whole surface of the habitable earth.

Implements and weapons of the palæolithic type, such as celts or hatchets, lance and arrow-heads, knives, borers and scrapers of flint, or if that be wanting of

some hard stone of the district, fashioned entirely by chipping without any grinding or polishing, have been found in the sands and gravels of most of the rivers of Southern England, France, Belgium and Germany, of



Palæolithic Flint Celt (type of St Acheul)
From Algeria (Lubbock)

the Tagus and Manzanares in Spain, and the Tiber in Italy. Still more numerously also in the caves and glacial drifts of these and other European countries. Nor are they confined to Europe. Stone implements of the same type have been found in Algeria, Morocco, and

Egypt, and in Natal and South Africa. Also in Greece, Syria, Palestine, Hindostan, and as far east as China and Japan, while in the New World they have been found in Maryland, Ohio, California, and other States in North



Palæolithic Celt of Quartzite from Natal, South Africa. (Quatrefages)

America, and in Brazil, and the Argentine pampas in the South. And this has been the result of the explorations of little more than thirty years, prior to which the co-existence of man with the extinct animals was almost universally denied; and of explorations which except in a few European countries have been very partial.

In fact the area over which these evidences of man's existence have been found may be best defined by the negative, where they have not been found, as there is every probability that it will eventually be proved that, with a few exceptions, wherever man could have existed during the Quaternary period, there he did exist. The northern portions of Europe which were buried under ice-caps are the only countries where considerable search has failed to discover palæolithic implements, while nearly all Asia, Africa, and America, and vast extents of desert and forests remain unexplored.

The next point to observe is, that throughout the whole of the Quaternary period there has been a constant progression of human intelligence upwards. Any theory of human origins which says that man has fallen and not risen is demonstrably false. How do we know this? The time scale of the Quaternary as of other geological periods is determined partly by the superposition of strata, and partly by the changes of fauna. In the case of existing rivers which have excavated their present valleys in the course of ages, it is evident that the highest deposits are the oldest. If the Somme, Seine, or Thames left remains of their terraces and patches of their silts and gravels at heights 100 feet or more above their present level, it is because they began to run at these higher levels, and gradually worked their way downwards, leaving traces of their floods ever lower and lower. In the case of deposits in caves or in still water, or where glacial moraines and *débris* are superimposed on one another, the case is reversed, and the lowest are the oldest and the highest the most recent.

In like manner if the fauna has changed, the remains found in the highest deposits of rivers and lowest of

caves will be the oldest, and will become more modern as we descend in the one case or ascend in the others.

This is practically confirmed by the coincidence of innumerable observations. The oldest Quaternary fauna is characterized by a preponderance of three species, the mammoth (Elephas primigenius), the woolly rhinoceros (Rhinoceros tichorinus), and the cave-bear (Ursus spelæus).

There are a few survivals from the Pliocene, as the gigantic elephant (Elephas antiquus) and a few anticipations of later phases, as the reindeer, horse, and ox, but the three mentioned are, with palæolithic man, the most characteristic. Then comes a long period when a strange mixture of northern and southern forms occurs. Side by side with the remains of Arctic animals such as the mammoth, the glutton, the musk ox, and the lemming, are found those of African species adapted only for a warm climate, the lion, panther, hyena, and above all the hippopotamus, not distinguishable from the existing species, which could certainly not have lived in rivers that were frozen in winter.

The intermixture is most difficult to account for. No doubt Africa and Europe were then united, and the theory of migration is invoked. The Arctic animals may, it is said, have moved south in winter and the African animals north in summer, and this was doubtless the case to some extent. But there are some facts which militate against this theory; for instance, the hyena caves, which seem to show a continuous occupation by the same African species for long periods. Nor is it easy to conceive how the hippopotamus could have travelled every summer from Africa to Yorkshire, and retreated every autumn with the approach of frost.

Such instances point rather to long inter-glacial periods with vicissitudes of climate, enabling now a northern, and now a southern fauna to inhabit permanently the same region.

Be this as it may, the fact is certain that this strange intermixture of northern and southern species is found in almost all the European deposits of the Quaternary age, until towards its close with the coming on of the second great glacial period, when the southern forms disappear, and the reindeer, with an Arctic or boreal flora and fauna, become preponderant, and extend themselves over Southern France and Germany up to the Alps and Pyrenees.

The Quaternary period is therefore roughly divided by geologists into three stages: 1st, that of the mammoth and cave-bear, there being some difference of opinion as to which came first, though probably they were simultaneous; 2nd, the middle stage of the mixed fauna; 3rd, the latest stage, that of the reindeer.

Now to these stages there is an exact correspondence in the character of the human implements found in them. In the earliest, those of the oldest deposits and of the oldest animals, we find the rudest implements. They consist almost exclusively of native stones, chipped roughly into a few primitive shapes: celts, which are merely lumps of flint or other hard stone with a little chipping to supplement natural fractures in bringing them to a point or edge, while the butt-end is left rough to be grasped by the hand; scrapers with a little chipping to an edge on one side; very rude arrow-heads without the vestige of a barb or socket; and flakes struck off at a blow, which may have served for knives. As we ascend to later deposits we find these primitive types

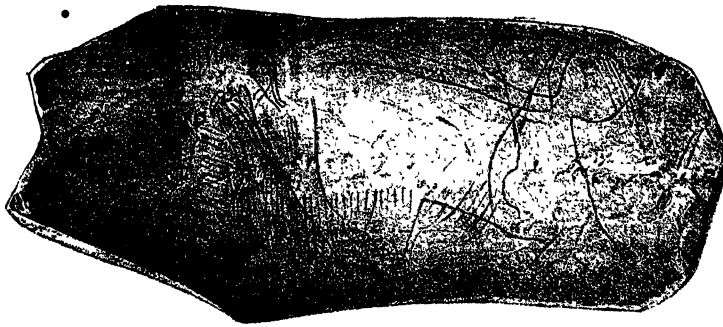
constantly improving. The celts are chipped all over and the butt-ends adapted for haftings, so also are the other implements and weapons, and the arrow-heads by degrees acquire barbs. But the great advance occurs with the use of bone, which seems to have been as important a civilizing agent for palæolithic as metals were for neolithic man. This again seems to have been due to the increasing preponderance of the reindeer, whose horns afforded an abundant and easily manipulated material for working into the desired forms by flint knives.

At any rate the fact is, that as we trace palæolithic man upwards into the later half of the Quaternary period when the reindeer became abundant, we find a notable advance of civilization. Needles appear, showing that skins of animals were stitched together with sinews to provide clothing. Barbed arrows and harpoons show that the arts of war and of the chase had made a great advance on the primitive unhafted celt. And finally we arrive at a time when certain tribes showed not only an advance in the industrial arts, but a really marvellous proficiency in the arts of sculpture and drawing. In the later reindeer period, when herds of that animal and of the wild horse and ox roamed over the plains of Southern France and Germany, and when the mammoth and cave-bear, though not extinct, were becoming scarce, tribes of palæolithic savages who lived in the caves and rock shelters of the valleys of Southern France and Germany, and of Switzerland and Belgium, drew pictures of their chases and of the animals with which they were surrounded, with the point of a flint on pieces of bone or of schist. They also carved bones into images of these animals, to adorn the handles of their

weapons or as idols or amulets. Both drawings and sculptures are in many cases admirably executed, so as to leave no doubt of the animal intended, especially in the case of the wild animals, for the rare portraits of the human figure are very inferior. Most of them represent the reindeer in various attitudes, but the mammoth, the cave-bear, the wild horse, the Bos primigenius, and others, are also represented with wonderful fidelity.

With the close of the reindeer age we pass into the Recent period and from palæolithic to neolithic man. Physically there is no very decided break, and we cannot draw a hard-and-fast line where one ends and the other begins. All we can say is, that there is general evidence of constantly decreasing cold during the whole post-glacial period, from the climax of the second great glaciation until modern conditions of climate are fairly established, and the existing fauna has completely superseded that of the Quaternary, the older characteristic forms of which having either become extinct or migrated. How does this affect the most characteristic of all Quaternary forms, that of man? Can we trace an uninterrupted succession from the earliest Quaternary to the latest modern times, or is there a break between the Quaternary and Recent periods which with our present knowledge cannot be bridged over? And did the division of mankind into distinct and widely different races, which is such a prominent feature at the present day and ever since the commencement of history, exist in the case of the palæolithic man, whose remains are so widespread?

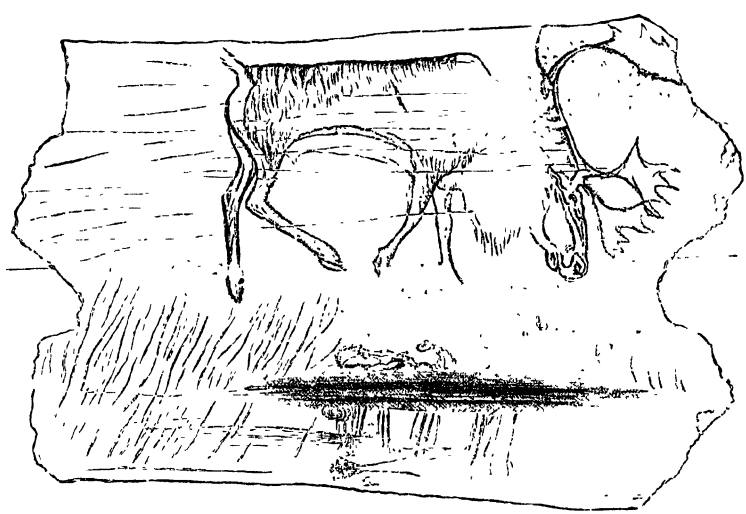
These are questions which can only be answered by the evidence of actual remains of the human body.



PORTRAIT OF MAMMOTH.
Drawn with a flint on a piece of Mammoth's ivory; from Cave of La Madeleine, Dordogne, France.



EARLIEST PORTRAIT OF A MAN WITH SERPENTS AND HORSES' HEADS.
From Grotto of Les Eyzies. Reindeer Period.



REINDEER FEEDING.
From Grotto of Thayngen, near Schaffhausen, Switzerland.

Implements and weapons may have altered gradually with the lapse of ages, and new forms may have been introduced by commerce and conquest, without any fundamental change in the race using them. Still less can language be appealed to as a test of race, for experience shows how easily the language of a superior race may be imposed on populations with which it has no affinity in blood. To establish distinction of races we consult the anthropologist rather than the geologist or philologist.

On what are the distinctions of the human race founded? Mainly on colour, stature, hair, and on the anatomical character of skulls and skeletons. These are wonderfully persistent, and have been so since historical times, intermediate characters only appearing where there has been intercrossing between different races. But the primitive types have continued unchanged, and no one has ever seen a white race of Negroes, or a black one of Europeans. And this has certainly been the case during the historical period, or for at least 7000 years, for the paintings on old Egyptian tombs show us the types of the Negro, the Libyan, the Syrian, and the Copt as distinct as at the present day, and the Negroes especially, with their black colour, long heads, projecting muzzles, and woolly hair growing in separate tufts, might pass for typical photographs of the African Negro of the nineteenth century.

Of these indications of race we cannot hope to meet with any of the former class in Quaternary gravel or caves. We have to trust to the anatomical character to be drawn from skulls and skeletons, of which it may be inferred, as a matter of course, that they will be few and scanty, and will become constantly fewer and more

imperfect as we ascend the stream of time to earlier periods. It must be remembered also that even these scanty specimens of early man are confined almost entirely to one comparatively small portion of the earth, that of Europe, and that we have hardly a single palæolithic skull or skeleton of the black, the yellow, the olive, the copper-coloured, or other typical race into which the population of the earth is actually divided.

We are confined therefore to Europe for anything like positive evidence of these anatomical characters of prehistoric and primæval man, and can only draw inferences from implements as to those of other portions of the earth and other races. Fortunately these racial characters are very persistent, especially those of the skull and stature, and they exist in ample abundance throughout the historic, prehistoric, and neolithic ages, to enable us to draw very certain conclusions. Thus at present, and as far as we can see back with certainty, the races which have inhabited Europe may be classified under the heads, tall and short, long-headed and broad-headed, and those of intermediate types, which latter may be dismissed for the present, though constituting a majority of most modern countries, as they are almost certainly not primitive, but the result of intercrossing.

Colour, complexion, and hair are also very persistent, though, as we have pointed out, we have no certain evidence by which to test them beyond the historical period. But the form of skulls, jaws, teeth, and other parts of the skeleton remain wonderfully constant in races where there has been little or no intermixture.

The first great division is in the form of the skull. Comparing the extreme breadth of the skull with its

extreme length from front to back, if the breadth does not exceed three-fourths or 75 per cent. of the length, the skull is said to be dolicocephalic or long-headed; if it equals or exceeds 83 per cent. it is called brachycephalic, *i. e.* short or broad-headed. Intermediate indices between 75 and 83 per cent. are called sub-dolicocephalic, or sub-brachycephalic, according as they approach one or the other of these extremes, but these are of less importance, as they probably are the result of intercrossing.

The prognathism also of the jaws, the form of the eye-orbits and nasal bones, the superciliary ridges, the proportion of the frontal to the posterior regions of the skull, the stature and proportions of the limbs, are also both characteristic and persistent features, and correspond generally with the type of the skull.

The controversy as to the origin of the Aryans has led to a great deal of argument as to these ethnological traits in prehistoric and neolithic times, and the interesting volume of Canon Taylor's on the *Origin of the Aryans*, and Professor Huxley's article on the same subject in the *Nineteenth Century* for November 1890, give a summary of the latest researches on the subject. We shall have to refer to these more fully in discussing the question as to the place or places of human origins; but for the present it is sufficient to state the general result at which the latest science has arrived.

The theory of a common Asiatic centre from which all the races of mankind have migrated is given up as unsupported by the slightest vestige of evidence. When we first know anything of the Aryan and other European races, we find them occupying substantially very much the same regions as at present. There are four distinct

European types, two tall and two short, two long-headed and two broad-headed. Of these two were fair, and two dark, and one, apparently the oldest in Western Europe and in the Mediterranean region, and probably represented by the Iberians, and now by the Spanish Basques, was short, dark, and long-headed; a second short, dark, and broad-headed, who are probably represented by the ancient Ligurians, and survive now in the Auvergnats and Savoyards; a third, tall, fair, and long-headed, whose original seats were in the regions of the Baltic and North Sea, and who were always an energetic and conquering race; and the fourth, like the third, tall and fair, but with broad heads, and possibly not a primitive race, but the result of some very ancient intermixture of the third or Northern type with some of the broad-headed races.

Now as far back as frequent human remains enable us to form some satisfactory conclusion, that is up to the early neolithic period, we find similar race-types already existing, and to a considerable extent in the same localities. In modern and historical times we find, according to Canon Taylor, "all the anthropological tests agreeing in exhibiting two extreme types—the African, with long heads, long eye-orbits, and flat hair; and the Mongolian, with round heads, round orbits, and round hair. The European type is intermediate—the head, orbits, and sections of hair are oval. In the east of Europe we find an approximation to the Asiatic type; in the south of Europe to the African."

More specifically, we find in Europe the four races mentioned above of tall and short long-heads, and tall and short broad-heads. The question is, how far back can any of these races be identified?

The preservation of human remains depends mainly on the practice of burying the dead. Until the corpse is placed in a tomb protected by a stone coffin or dolmen, or in a grave dug in a cave, or otherwise sheltered from rains, floods, and wild beasts, the chances of its preservation are few and far between. Now it is not until the neolithic period that the custom of burying the dead became general, and even then it was not universal, and in many nations even in historical times corpses were burnt, not buried. It was connected doubtless with ideas of a future existence, which either required troublesome ghosts to be put securely out of the way, or to retain a shadowy existence by some mysterious connection with the body which had once served them for a habitation. Such ideas, however, only come with some advance of civilization, and it is questionable whether in palæolithic times the human animal had any more notion of preserving the body after death than the other animals by which he was surrounded.

This neolithic habit moreover of burying, though it preserves many relics of its own time, increases the difficulty when we come to deal with those of an earlier age. A great many caves which had been inhabited by palæolithic man were selected as fitting spots for the graves of their neolithic successors, and thus the remains of the two periods became intermixed. It is never safe to rely on the antiquity of skulls and skeletons found in association with palæolithic implements and extinct animals, unless the exploration has been made with the greatest care by some well-known scientific observer, or the circumstances of the case are such as to preclude the possibility of later interments.

Thus in the famous cavern of Aurignac there is no doubt that it had been long a palæolithic station, and that many of the human remains date back to this period; but whether the fourteen skeletons which were found in it, and lost owing to the pietistic zeal of the Mayor who directed their burial, were really palæolithic, is a disputed point, or rather the better opinion is that they were part of a secondary neolithic interment.

But to return to undoubted neolithic skulls, we have very clear evidence that the four distinct European races already existed. Thus in Britain we have two distinct forms of barrows or burial tombs, one long, the other round, and it has become proverbial that long skulls go with long barrows, and round skulls with round barrows. The long barrows are the oldest, and belong entirely to the stone age, no trace of metal, according to Canon Greenwell, having ever been found in them. The skulls and skeletons are those of a long-headed, short, and feeble race, who may be identified with the Iberians; while the round barrows contain bronze and finally iron, and the people buried in them were the tall, fair, round-headed Gauls or Celts of early history, or intermediate types between these and the older race. Later came in the tall, fair, and long-headed Anglo-Saxon and Scandinavian races, so that we have three out of the four European types clearly defined in the British islands and traceable in their descendants of the present day. But when we attempt to go beyond the Iberians of the neolithic age in Britain, we are completely at fault. We have abundant remains of palæolithic implements, but scarcely a single undoubted specimen of a palæolithic skeleton, and it is impossible to say whether the men who feasted on the mammoth and

rhinoceros in Kent's cavern, or who left their rude implements in the high-level gravel of the chalk downs, were tall or short, long-headed or round-headed. On the contrary, there seems a great hiatus between the neolithic and the palæolithic periods, and, as Geikie has shown, this appears to be the case not in England only but in a great part of Europe. It would almost seem as if the old era had disappeared with the last glacial period, and a completely new one had been introduced. But although the skulls and bones of palæolithic races are wanting in Britain and scarce everywhere, enough of them have been found in other European countries to enable anthropologists not merely to say that different races already existed at this immensely remote period, but to classify them by their types, and see how far these correspond with those of later times. This has been done especially in France and Belgium, where the discoveries of palæolithic skeletons and skulls have been far more frequent than elsewhere. Debierre in his *L'Homme avant l'histoire*, published in the *Bibliothèque Scientifique* of 1888, enumerates upwards of forty instances of such undoubted Quaternary human remains, of which at least twenty consisted of entire skulls, and others of jaws and other important bones connected with racial type.

The best and latest conclusions of modern anthropology from these remains will be found in this work of Debierre's, and in Hamy's *Palæontologie humaine*, Quatrefages' *Races humaines*, and Topinard's *Anthropologie*, and it will be sufficient to give a short summary of the results.

The history of Quaternary fossil man is divided, in the *Crania Ethnica* of Quatrefages and Hamy, into four

races: 1st, the Canstadt race; 2nd, the Cro-Magnon race; 3rd, the races of Grenelle and Furfooz; 4th, the race of Truchere.

The Canstadt race, so called from the first skull of this type, which was discovered in the loess of the valley of the Neckar near Wurtemberg, though it is better known from the celebrated Neanderthal skull, which gave rise to so much discussion, and was pronounced by some that of an idiot, by others the most pithecoid specimen of a human skull yet known, in fact almost the long-sought-for missing link.

A still later discovery, however, has set at rest all doubt as to the reality of this Neanderthal type, and of its being the oldest Quaternary human type known in Western Europe. In the year 1886 two Belgian savants, Messrs. Fraissent and Lohest, one an anatomist, the other a geologist, discovered in a cave at Spy near Namur two skeletons with the skulls complete, which presented the Neanderthal type in an exaggerated form. They were found under circumstances which leave no doubt as to their belonging to the earliest Quaternary deposit, being at the bottom of the cave, in the lowest of three distinct strata, the two uppermost of which were full of the usual palæolithic implements of stone and bone, while the few found in the lowest stratum with the skeletons were of the rudest description. Huxley pronounces the evidence such as will bear the severest criticism, and he sums up the anatomical characters of the skeletons in the following terms—

"They were short of stature, but powerfully built, with strong, curiously curved thigh-bones, the lower ends of which are so fashioned that they must have

walked with a bend at the knees. Their long depressed skulls had very strong brow-ridges, their lower jaws, of brutal depth and solidity, sloped away from the teeth downwards and backwards, in consequence of the absence of that especially characteristic feature of the higher type of man, the chin prominence."

M. Fraissent says, "We consider ourselves in a position to say that, having regard merely to the anatomical structure of the man of Spy, he possessed a greater number of pithecoid characters than any other race of mankind."

And again he says—

"The distance which separates the man of Spy from the modern anthropoid ape is undoubtedly enormous; but we must be permitted to point out that if the man of the Quaternary age is the stock whence existing races have sprung, he has travelled a very great way. From the data now obtained, it is permissible to believe that we shall be able to pursue the ancestral type of man and the anthropoid apes still further, perhaps as far as the Eocene and even beyond."

This Canstadt or Neanderthal type was widely diffused early in the Quaternary period, having been found in a skull from the breccia of Gibraltar, in skulls from Italy, Spain, Austria, Sweden, and in France, Belgium, and Western Germany; in fact almost everywhere where skulls and skeletons have been found in the oldest deposits of caves and river-beds, notably in the alluvia of the Seine valley near Paris, where three distinct superimposed strata are found, each with different human types, that of Canstadt being the oldest. Wherever explorations have been carefully made it seems to be certain that the oldest race of

all in Europe was dolicocephalic, and probable that it was of the Canstadt type, the skulls of which are all low and long, the length being attained by a great development of the posterior part of the head, which compensates for a deficient forehead.

This type is also interesting because, although the oldest, it shows occasional signs of survival through the later palæolithic and neolithic ages down to recent times. The skulls of St. Manserg, a mediæval bishop of Toul, and of Lykke, a scientific Dane of the last century, closely resemble the Neanderthal skull in type, and can scarcely be accounted for except as instances of that atavism, or reversion to old ancestral forms, which occasionally crops up both in the human and in animal species. It is thought by many that these earliest palæolithic men may be the ancestors of the tall, fair, long-headed race of Northern Europe; and Professor Virchow states that in the Frisian islands off the North German coast, where the original Teutonic type has been least affected by intermixture, the Frisian skull unmistakably approaches the Neanderthal and Spy type. But if this be so, the type must have persisted for an immense time, for, as Huxley observes, "the difference is abysmal between these rude and brutal savages, and the comely, fair, tall, and long-headed races of historical times and of civilized nations." At the present day the closest resemblance to the Neanderthal type is afforded by the skulls of certain tribes of native Australians.

Next in antiquity to the Canstadt type, though still in the early age when the mammoth and cave-bear were abundant, and the implements and weapons still very rude, a totally different type appears, that of

Cro-Magnon. The name is taken from the skeleton of an old man, which was found entire in the rock shelter of Cro-Magnon in the valley of the Vezere, near the station of Moustier, which gave the type of some of the oldest and rudest stone implements of the age of the mammoth. The skeleton was found in the inner extremity of the shelter, buried under a mass of *débris* and fallen blocks of limestone, and associated with bones of the mammoth and implements of the Moustier type, so that there can be no doubt of its extreme antiquity.

The skull, like that of the Canstadt type, is dolichocephalic, but in all other respects totally different. The brow-ridges and generally bestial characters have disappeared; the brain is of fair or even large capacity; the stature tall; the forehead fairly high and well-rounded; the face large; the nose straight, the jaws prognathous, and the chin prominent.

This type is found in a number of localities, especially in the south-west of France, Belgium, and Italy, and it continued through the quaternary into the neolithic period, being found in the caves of the reindeer age, and in the dolmens. It is thought by some ethnologists to present analogies to the Berber type of North Africa, and to that of the extinct Guanches of the Canary Islands.

Coexistent with or a little later than this type is one of a totally different character both from it and from that of Canstadt, viz. that of a brachycephalic race of very short stature, closely resembling the modern Lapps. This has been subdivided into the several races of Furfooz, Grenelle, and Truchere, according to the degree of brachycephaly and other features; but practically we

may look on these as the results of local variations or intercrossings, and consider all the short, brachycephalic races as forming a third type sharply opposed to those of Canstadt and Cro-Magnon.

We have thus distinct evidence that the Quaternary fauna in Europe comprised at least three distinct races of palæolithic men, and there is a good deal of evidence for the existence of a fourth distinct race in America with features differing from any of the European races, and resembling those of the native American men in recent times. But this affords absolutely no clue as to the existence of other palæolithic types in Asia, Africa, India, Australia, and other countries, forming quite three-fourths of the inhabited world, in which totally different races now exist and have existed since the commencement of history, who cannot possibly have been derived from any of the European types within the lapse of time comprised within the Quaternary period.

The Negro race is the most striking instance of this, for it differs essentially from any other in many particulars, which are all in the direction of an approximation towards the pithecoid type.

The size of the brain is less, and a larger proportion of it is in the hinder half; the muzzle much more projecting, and the nose flatter; the fore-arm longer; and various other anatomical peculiarities all point in the same direction, though the type remains perfectly human in the main features. It diverges, however, from the known types of Quaternary man in Europe and from the American type, as completely as it does from those of modern man, and it is impossible to suppose that it can be derived from them, or they from it, in

the way of direct descent. If there is any truth in evolution, the Negro type must be one of the oldest, as nearest to the animal ancestor, and this ancestor must be placed very far back beyond the Quaternary period, to allow sufficient time for the development of such entirely different and improved races.

This will be the more evident if we consider the case of the pygmy Negritos and Negrillos, who are spread over a wide tropical belt of half the circumference of the earth, from New Guinea to Western Africa. They seem originally to have occupied a large part of this belt, and to have been driven into dense forests, high mountains, and isolated islands, by taller and stronger races, such as the true Negro, the Melanesian, and the Malay, and probably represent therefore a more primitive race. But they had already existed long enough to develop various sub-types among themselves, for although always approaching more to the Negro type than any other, the Asiatic Negrito and the African Negrillo and Bushman differ in the length of skull, colour, hair, prognathism, and other particulars. But they all agree in the one respect which makes it impossible to associate them with any known Quaternary type, either as ancestors or descendants, viz. that of dwarfish stature. As a rule the Bushmen and Negritos do not average above four feet six inches, and the females three inches less; while in some cases they are as low as four feet—*i. e.* they are quite a foot shorter than the average of the higher races, and nearly a foot and a half below that of the Quaternary Cro-Magnon and Mentone skeletons, and of the modern Swedes and Scotchmen. And they are small and slightly built in proportion, and by no means deformed specimens

of humanity. Professor Flower suggests that they may be "the primitive type from which the African Negroes on the one hand, and the Melanesians on the other have sprung." In any case they must certainly have existed as a distinct type in the Quaternary period, and probably much earlier. It is remarkable also that the very oldest human implements known get continually smaller as they get older, until those of the Miocene, from Thenay and Puy Courny, are almost too small for the hands even of Stanley's pygmies. If mere guesses were worth anything, it would be rather a plausible one that the original Adam and Eve were something between a monkey and an Andaman islander.

In concluding this summary of the evidence as to Quaternary man, I must remark on the analogy which it presents to that of the historical period dealt with in the earlier chapters. In each case we have distinct evidence carrying us a long way back; in that of the historical period for 7000 years; in that of the Quaternary for a vastly longer time, which, if the effects of high eccentricity, postulated by Croll's theory, had any influence on the two last glacial periods, cannot be less than 200,000 years, an estimate which is confirmed by the amount of geological work and changes of flora and fauna which have taken place. In each case also the positive evidence takes us back to a state of things which gives the most incontrovertible proof of long previous existence; in the historical case the evidence of a dense population and high civilization already long prevailing when written records began; in the case of palæolithic man, that of his existence in the same state of rude civilization in the most remote regions, and over

the greater part of the habitable earth, his almost uniform progression upwards from a lower to a higher civilization, and his existing at the beginning of the Quaternary period already differentiated into races as remote from one another as the typical races of the present day. These facts of themselves afford an irresistible presumption that the origin of the human race must be sought much further back, and it remains to consider what positive evidence has been adduced in support of this presumption.

CHAPTER XI.

TERTIARY MAN.

Definition of Periods—Passage from Pliocene to Quaternary—Scarcity of Human Remains in Tertiary—Denudation—Evidence from Caves wanting—Tertiary Man a necessary inference from widespread existence of Quaternary Man—Both equally inconsistent with Genesis—Was the first great Glaciation Pliocene or Quaternary?—Section of Perrier—Confirms Croll's Theory—Elephas Meridionalis—Mammoth—St. Prest—Cut Bones—Instances of Tertiary Man—Halitherium—Balæonotus—Puy Courny—Thenay—Evidence for—Proofs of Human Agency—Latest Conclusions—Gaudry's Theory—Dryopithecus—Type of Tertiary Man—Skeleton of Castelnedolo—Shows no approach to the Missing Link—Contrary to Theory of Evolution—Must be sought in the Eocene—Evidence from the New World—Glacial Period in America—Palæolithic Implements—Quaternary Man—Similar to Europe—California—Conditions different—Auriferous Gravels—Volcanic Eruptions—Enormous Denudation—Great Antiquity—Flora and Fauna—Point to Tertiary Age—Discovery of Human Remains—Table Mountain—Latest Finds—Calaveras Skull—Summary of Evidence—Other Evidence—Tuolumne—Brazil—Buenos Ayres—Nampa Images—Take us farther from First Origins and the Missing Link—If Darwin's Theory applies to Man, must go back to the Eocene.

THE first difficulty which meets us in this question is that of distinguishing clearly between the different geological periods. No hard-and-fast line separates the Quaternary from the Pliocene, the Pliocene from the Miocene, or the Miocene from the Eocene. They pass from one into the other by insensible gradations, and the names given to them merely imply that such considerable changes have taken place in the fauna

as to enable us to distinguish one period from another. And even this only applies when we take the periods as a whole, and see what have been the predominant types, for single types often survive through successive periods. The course of evolution seems to be that types and species, like individuals, have their periods of birth, growth, maturity, decay, and death. Thus fish of the ganoid type appear sparingly in the Silurian, culminate in the Devonian, and gradually die out in the later formations. So also Saurian reptiles appear in the Carboniferous, culminate in the Lias, and die out with the Secondary, or so nearly so that the crocodilia are their sole remaining representatives.

And this applies when we attempt to take our first step backwards in tracing the origin of man, and follow him from the Quaternary into the Pliocene. When did the Pliocene end and the Quaternary begin? Within which of the two did the first great glacial period fall? Does pre-glacial mean Pliocene, or is it included in the Quaternary? and to which do the oldest human remains belong, such as the skeletons of Spy?

The difficulty of answering these questions is increased because, as we go back in time, the human remains which guide us in the Quaternary age necessarily become scarcer. Mankind must have been fewer in number, and their relics to a great extent removed by denudation. Thus the evidence from caves, which affords by far the most information as to Quaternary man, entirely fails us as to the Pliocene and earlier periods. This may be readily accounted for when we consider the great amount of the earth's surface which has been removed by denudation. In fact we have seen that nearly 2000 feet of a mountain range must

have disappeared from denudation in the Weald of Kent, since the streams from it rolled down the gravels with human implements, scattered over the North Downs as described by Professor Prestwich. What chance would Tertiary caves have of surviving such an extensive denudation? Moreover, if any of the present caves existed before the glacial period, their original contents must have been swept out, perhaps more than once, before they became filled by the present deposits. There is evidence in many caves that this was the case, from small patches of the older deposit being found adhering to the roof, as at Brixham and Maccaguone in Sicily, in which latter case flakes of chipped stone and pieces of carbon were found by Dr. Falconer in these patches of a hard breccia.

There is another consideration also which must have greatly diminished the chance of finding human remains in Tertiary deposits. Why did men take to living in dark and damp caves? Presumably for protection against cold. But in the Miocene and the greater part of the Pliocene there was no great cold. The climate, as shown by the vegetation, was mild, equable, and ranged from semi-tropical to south-temperate, and the earth was to a certain extent covered by forests sustaining many fruit-bearing trees. Under such conditions men would have every inducement to live in the open air, and in or near forests where they could obtain food and shelter, rather than in caves. And a few scattered savages, thus living, would leave exceedingly few traces of their existence. If the pygmy races of Central Africa, or of the Andaman Islands, became extinct, the chances would be exceedingly small of a future geologist finding any of their stone implements, which

alone would have a chance of surviving, dropped under secular accumulations of vegetable mould in a wide forest.

It is the more important therefore where instances of human remains in Tertiary strata, supported by strong *primâ facie* evidence, and vouched for by competent authorities, do actually occur, to examine them dispassionately, and not, as a good many of our English geologists are disposed to do, dismiss them with a sort of scientific *non possumus*, like that which was so long opposed to the existence of Quaternary man, and the discoveries of Boucher-de-Perthès. It is perfectly evident from the admitted existence of man throughout the Quaternary period, already spread over a great part of the earth's surface, and divided into distinct types, that if there is any truth in evolution, mankind must have had a long previous existence. The only other possible alternative would be the special miraculous creations of men of several different types, and in many different centres, at the particular period of time when the Tertiary was replaced by the Quaternary. In other words that, while all the rest of the animal creation have come into existence by evolution from ancestral types, man alone, and that not merely as regards his spiritual qualities, but physical man, with every bone and muscle having its counterpart in the other quadrumana, was an exception to this universal law, and sprang into existence spontaneously or by repeated acts of supernatural interference.

As long as the account of the creation in Genesis was held to be a divinely-inspired narrative, and no facts contradicting it had been discovered, it is conceivable that such a theory might be held, but to admit

evolution for Quaternary, and refuse to admit it for Tertiary man, is an extreme instance of "straining at a gnat and swallowing a camel," for a duration of even 10,000 or 20,000 years is just as inconsistent with Genesis as one of 100,000 or half a million.

In attacking the question of Tertiary man, the first point is to aim at some clear conception of where the Pliocene ends and the Quaternary begins. These are after all but terms applied to gradual changes through long intervals of time; still they require some definition, or otherwise we should be beating the air, and ticketing in some museums as Tertiary the identical specimens which in others were labelled as Quaternary. This turns very much on whether the first great glaciation was Pliocene or Quaternary, and must be decided partly by the order of superposition and partly by the fauna. If we can find a section where a thick morainic deposit is interposed between two stratified deposits, a lower one characterized by the usual fauna of the Older Pliocene, and an upper one by that of the Newer Pliocene, it is evident that the glacier or ice-cap which left this moraine must have existed in Pliocene times. We know that the climate became colder in the Pliocene, and rapidly colder towards its close, and that in the cliffs of Cromer, the forest bed with a temperate climate had given place to Arctic willows and mosses, before the first and lowest boulder-clay had brought blocks of Scandinavian granite to England. We should be prepared, therefore, for evidence that this first period of greatest cold had occurred within the limits of the Pliocene period.

Such evidence is afforded by the valleys which radiate from the great central boss of France in the

Auvergne. The hill of Perrier had long been known as a rich site of the fossil remains of the extinct Pliocene fauna, and its section has been carefully studied by some of the best French geologists, whose results are summed up as follows by Hamy in his *Palæontologie humaine*—

"The bed-rock is primitive protogine, which is covered by nearly horizontal lacustrine Miocene, itself covered by some mètres of fluviatile gravels. Above comes a bed of fine sand, a mètre thick, which contains numerous specimens of the well-known mammalian fauna of the Lower Pliocene, characterized by two mastodons (*M. Armenicus* and *M. Borsoni*). Then comes a mass of conglomerates 150 mètres thick, consisting of pebbles and boulders cemented by yellowish mud; and above this a distinct layer of Upper Pliocene characterized by the *Elephas Meridionalis*.

"The boulders, some of which are of great size, are all angular, never rounded or stratified, often scratched, and mostly consisting of trachyte, which must have been transported twenty-five kilomètres from the Puy de Dôme. In short, the conglomerate is absolutely indistinguishable from any other glacial moraine, whether of the Quaternary period or of the present day. It is divided into three sections by two layers of rolled pebbles and sands, which could only have been caused by running water, so that the glacier must have advanced and retreated three times, leaving each time a moraine fifty mètres thick, and the whole of this must have occurred before the deposit of the Upper Pliocene stratum with its *Elephas Meridionalis* and other Pliocene mammals."

The importance of this will presently be seen, for the *Elephas Meridionalis* is one of the extinct animals

which is most directly connected with the proofs of man's existence before the Quaternary period. It is also important as confirming the immense time which must have elapsed between the date of the first and second *maxima* of glacial cold, and thus adding probability to the calculations derived from Croll's periods of maximum and minimum eccentricity.

The three advances and retreats of the great Perrier glacier also fit in extremely well with the calculated effects of precession during high eccentricity, as about three of such periods must have occurred in the period of the coming on, culminating, and receding of each phase of maximum eccentricity.

This evidence from Perrier does not stand alone, for in the neighbouring valleys, and in many other localities, isolated boulders of foreign rocks which could only have been transported by ice, are found at heights considerably above those of the more recent moraines and boulders which had been supposed to mark the limit of the greatest glaciation. Thus on the slopes of the Jura and the Vosges, boulders of Alpine rocks, much worn by age, and whose accompanying drifts and moraines have disappeared by denudation, are found at heights 150 or 200 mètres above the more obvious moraines and boulders, which themselves rise to a height of nearly 4000 feet, and must have been the front of glaciers from the Alps which buried the plain of Switzerland under that thickness of solid ice.

The only possible alternative to this evidence from Perrier would be to throw back the duration of the Quaternary and limit that of the Pliocene enormously, by supposing that all the deposits above the great glacial conglomerate or old moraine, are inter-glacial

and not Tertiary. This is, as has been pointed out, very much a question of words, for the phenomena and the time required to account for them remain the same by whatever name we elect to call them. But it still has its importance, for it involves the fundamental principle of geology, that of classifying eras and formations by their fauna. If the *Elephas Meridionalis* is a Pliocene and not a Quaternary species, we must admit, with the great majority of continental geologists, that the first and greatest glaciation fell within the Pliocene period. If, on the other hand, this elephant is, like the mammoth, part of the Quaternary fauna, we may believe, as many English geologists do, that the first glacial period coincided with and probably occasioned the change from Pliocene to Quaternary, and that everything above the oldest boulder-clays and moraines is not Tertiary but inter-glacial.

As bones of the *Elephas Meridionalis* have been frequently found in connection with human implements, and with cuts on them which could only have been made by flint knives ground by the human hand, it will be seen at once what an interest attaches to this apparently dry geological question, of the age of the great southern elephant.

The transition from the mastodon into the elephant took place in the Old World (for in America the succession is different) in the Pliocene period. In the older Pliocene we have nothing but mastodons, in the newer nothing but elephants, and the transition from the older to the newer type is distinctly traced by intermediate forms in the fossil fauna of the Sewalek hills. The *Elephas Meridionalis* is the oldest known form of true elephant, and it is characteristic of all the different

formations of the Upper Pliocene, while it is nowhere found in cave or river deposits which belong unmistakably to the Quaternary. It was a gigantic animal, fully four feet higher than the tallest existing elephant, and bulky in proportion. It had a near relation in the *Elephas Antiquus*, which was of equal size, and different from it mainly in a more specialized structure of the molar teeth, and the remains of this elephant have been found in the lower strata of some of the oldest bone-caves and river-silts, as to which it is difficult to say whether they are older or younger than the first glacial period. The remains of a pygmy elephant, no bigger than an ass, have also been found in the Upper Pliocene, at Malta and Sicily, and those of the existing African elephant in Sicily and Spain. It would seem, therefore, that the Upper Pliocene was the golden age of the elephants where they were most widely diffused, and comprised most species and most varieties, both in the direction of gigantic and of diminutive size. But in passing from the Pliocene into the Quaternary period, they all, or almost all, disappeared, and were superseded by the *Elephas Primigenius*, or mammoth, which had put in a first appearance in the latest Pliocene, and became the principal representative of the genus *Elephas* in Europe and Northern Asia down to comparatively recent times.

This succession is confirmed by that of the rhinoceros, of which several species were contemporary with the *Elephas Meridionalis*, while the *Rhinoceros tichorinus*, or woolly rhinoceros, who is the inseparable companion of the mammoth, appeared and disappeared with him.

In these matters, those who are not themselves specialists must rely on authority, and when we find

Lyell, Geikie, and Prestwich coinciding with all modern French, German, Italian, and Belgian geologists, in considering *Elephas Meridionalis* as one of the characteristic Upper Pliocene fauna, we can have no hesitation in adopting their conclusion.

In this case the section of St. Prest, near Chartres, affords a first absolutely secure foothold in tracing our way backwards towards human origins beyond the Quaternary. The sands and gravels of a river which ran on the bed rock without any underlying glacial *débris* are here exposed. It had no relation to the existing river Eure, the bed of which it crosses at an angle, and it must have run before that river had begun to excavate its valley, and when the drainage of the country was quite different. The sands contain an extraordinary number of bones of the *Elephas Meridionalis*, associated with old species of rhinoceros, and other Pliocene species. Lyell, who visited the spot, had no hesitation in calling it a Pliocene river. In fact it never would have been disputed if the question of man's antiquity had not been involved in it, for in these sands and gravels have been found numerous specimens of cut bones of the *Elephas Meridionalis*, together with the flint knives which made the cuts, and other stone implements, rude but still unmistakably of the usual palæolithic type.

The subjoined plate will enable the reader to compare the arrow-head, which is the commonest type found at St. Prest, with a comparatively recent arrow-head from the Yorkshire wolds, and see how impossible it is to concede human agency to the post-glacial and deny it to the Pliocene specimen.

In this and other instances, cut bones afford one of

the most certain tests of the presence of man. The bones tell their own tale, and their geological age can be certainly identified. Sharp cuts could only be made on them while the bones were fresh, and the state of fossilization, and presence of dendrites or minute crystals alike on the side of the cuts and on the bone, negative any idea of forgery. The cuts can be compared with those on thousands of undoubted human cuts on bones from the reindeer and other later periods, and with cuts now made with old flint knives on fresh bones. All these tests have been applied by



ARROW-HEAD—ST. PREST.
(Hamy, *Palæontologie Humaine.*)

POST-GLACIAL.



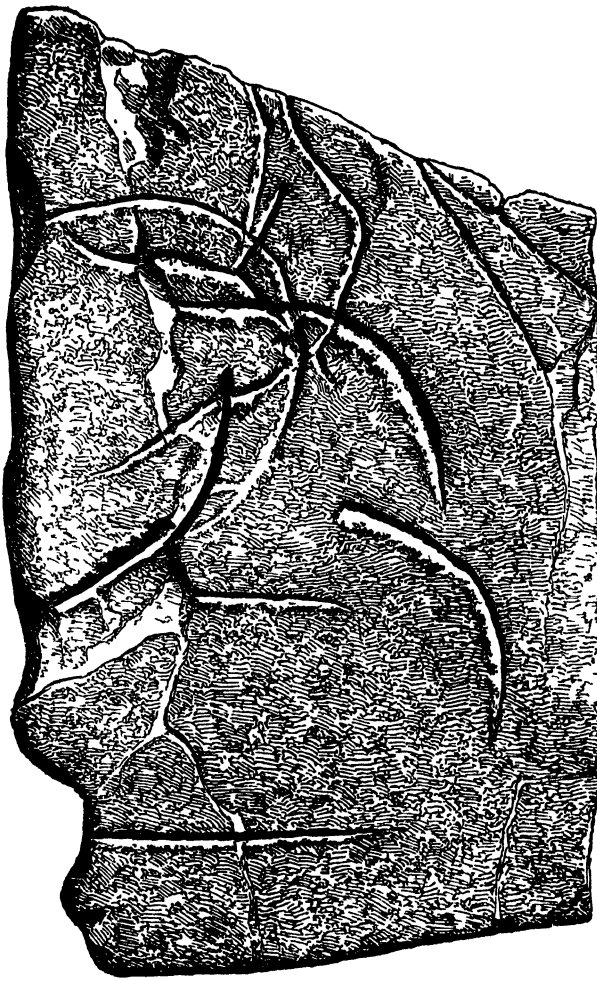
ARROW-HEAD—YORKSHIRE WOLDS.
(Evans, *Stone Implements.*)

some of the best anthropologists of the day, who have made a special study of the subject, and who have shown their caution and good faith by rejecting numerous specimens which did not fully meet the most rigorous requirements, with the result that in several cases there could be no reasonable doubt that the cuts were really made by human implements guided by human hands. The only possible alternative suggested is, that they might have been made by gnawing animals or fishes. But as Quatrefages observes, even an ordinary carpenter would have no difficulty in distinguishing between a clean cut made by a sharp knife,

and a groove cut by repeated strokes of a narrow chisel; and how much more would it be impossible for a Professor trained to scientific investigation, and armed with a microscope, to mistake a groove gnawed out by a shark or rodent for a cut made by a flint knife. No one who will refer to Quatrefages' *Hommes fossiles*, and look at the figures of cut bones given there from actual photographs, can feel any doubt that the cuts there delineated were made by flint knives held by the human hand.

In addition to this instance of St. Prest, Quatrefages in his *Histoire des Races Humaines*, published in 1887, and containing the latest summary of the evidence generally accepted by French geologists as to Tertiary man, says that, omitting doubtful cases, the presence of man has been signalized in deposits undoubtedly Tertiary in five different localities, viz. in France by the Abbé Bourgeois, in the Lower Miocene of Thenay near Pontlevoy (Loir-et-Cher); by M. Rames at Puy Courny near Aurillac (Cantal), in the Upper Miocene; in Italy by M. Capellini in the Pliocene of Monte Aperto near Sienna, and by M. Ragazzoni in the Lower Pliocene of Castelnedolo near Brescia; in Portugal by M. Ribiero at Otta, in the valley of the Tagus, in the Upper Miocene.

To these may be added the cut bones of Halitherium, a Miocene species, from Pouancé (Maine et Loire), by M. Delaunay; and those on the tibia of a Rhinoceros Etruscus, and other fossil bones from the Upper Pliocene of the Val d'Arno. In addition to these are the numerous remains, certainly human and presumably Tertiary, from North and South America, which will be referred to later, and a considerable number of cases



CUTS WITH FLINT KNIFE ON RIB OF BALÆONOTUS—PLIOCENE From Monte Aperto, Italy. (Quatrefages, *Histoire des Races Humaines.*)



CUT MAGNIFIED BY MICROSCOPE

where there is a good deal of *primâ facie* evidence for Tertiary human remains, but where doubts remain and their authenticity is still denied by competent authorities. Among these ought to be placed the instance from Portugal, for although a large celt very like those of the oldest palæolithic type was undoubtedly found in strata which had always been considered as Miocene, the Congress of Palæontologists who assembled at Lisbon were divided in opinion as to the conclusiveness of the evidence.

But there remain six cases in the Old World, ranging from St. Prest in the Upper Pliocene to Thenay in the Lower Miocene, in which the preponderance of evidence and authority in support of Tertiary man seems so decisive, that nothing but a preconceived bias against the antiquity of the human race can refuse to accept it.

I have already discussed this evidence so fully in a former work (*Problems of the Future*, ch. v. on Tertiary Man) that I do not propose to go over the ground again, but merely to refer briefly to some of the more important points which come out in the above six instances. In three of them, those of the Halitherium of Pouancé, the Balæonotus of Monte Aperto, and the rhinoceros of the Val d'Arno, the evidence depends entirely on cut bones, and in the case of St. Prest on that of cut bones of *Elephas Meridionalis* combined with palæolithic implements.

The evidence from cut bones is for the reasons already stated very conclusive, and when a jury of four or five of the leading authorities, such as Quatrefages, Hamy, Mortillet, and Delaunay, who have devoted themselves to this branch of inquiry, and have shown

their great care and conscientiousness by rejecting numbers of cases which did not satisfy the most rigid tests, arrive unanimously at the conclusion that many of the cuts on the bones of Tertiary animals are unmistakably of human origin, there seems no room left for any reasonable scepticism. I cannot doubt therefore that we have positive evidence to confirm the existence of man, at any rate from the Pliocene period, through the long series of ages intervening between it and the Quaternary.

But the discovery of flint implements at Puy Courny in the Upper Miocene, and at Thenay in the Lower Miocene, carry us back a long step further, and involves such important issues as to the origin of the human race, that it may be well to recapitulate the evidence upon which those discoveries rest.

The first question is as to the geological age of the deposits in which these chipped implements have been found. In the case of Puy Courny this is beyond dispute. In the central region of the Auvergne there have been two series of volcanic eruptions, the latest towards the close of the Pliocene or commencement of the Quaternary period, and an older one, which, from its position and fossils, is clearly of the Upper Miocene. The gravels in which the chipped flints were discovered by M. Rames, a very competent geologist, were interstratified with tuffs and lavas of these older volcanoes, and no doubt as to their geological age was raised by the Congress of French archæologists to whom they were submitted. The whole question turns therefore on the sufficiency of the proofs of human origin, as to which the same Congress expressed themselves as fully satisfied.

The specimens consist of several well-known palæolithic types, celts, scrapers, arrow-heads and flakes, only ruder and smaller than those of later periods. They were found at three different localities in the same stratum of gravel, and comply with all the tests by which the genuineness of Quaternary implements is ascertained, such as bulbs of percussion, conchoidal fractures, and above all, intentional chipping in a determinate direction. It is evident that a series of small parallel chips or trimmings, confined often to



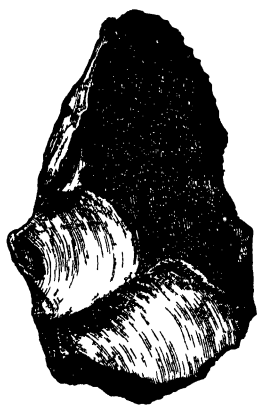
FLINT SCRAPER FROM HIGH LEVEL DRIFT, KENT (Prestwich)

one side only of the flint, and which have the effect of bringing it into a shape which is known from Quaternary and recent implements to be adapted for human use, imply intelligent design, and could not have been produced by the casual collisions of pebbles rolled down by an impetuous torrent. Thus the annexed plate of an implement from the high level drift on the North Downs, shown by Professor Prestwich to the Anthropological Society, is rude enough, but no one has ever expressed the least doubt of its human origin.

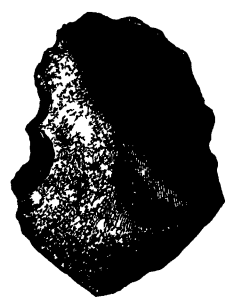
The chipped flints from Puy Courny also afford another very conclusive proof of intelligent design.

The gravelly deposit in which they are found contains five different varieties of flints, and of these all that look like human implements are confined to one particular variety, which from its nature is peculiarly adapted for human use. As Quatrefages says, no torrents or other natural causes could have exercised such a discrimination, which could only have been made by an intelligent being, selecting the stones best adapted for his tools and weapons.

UPPER MIOCENE IMPLEMENTS PUY COURNY.



SCRAPER, OR LANCE-HEAD
Puy Courny Upper Miocene (Rames).
(Quatrefages, *Races Humaines*, p 95)



SCRAPER
Puy Courny. Upper Miocene (Rames)
(Quatrefages, *Races Humaines*, p 95)

The general reader must be content to rely to a great extent on the verdict of *experts*, and in this instance of Puy Courny need not perhaps go further than the conclusion of the French Congress of archæologists, who pronounced in favour both of their Miocene and human origin. It may be well, however, to annex a plate showing in two instances how closely the specimens from Puy Courny resemble those of later periods, of the human origin of which no doubt has ever been

entertained. It is certainly carrying scientific scepticism to an unreasonable pitch to doubt that whatever cause fashioned the two lower figures, the same cause must equally have fashioned the upper ones; and if that cause be human intelligence in the Quaternary period it must

COMPARE QUATERNARY IMPLEMENTS



WOKEY HOLE—GLACIAL
(Evans, *Stone Implements*, p 473)

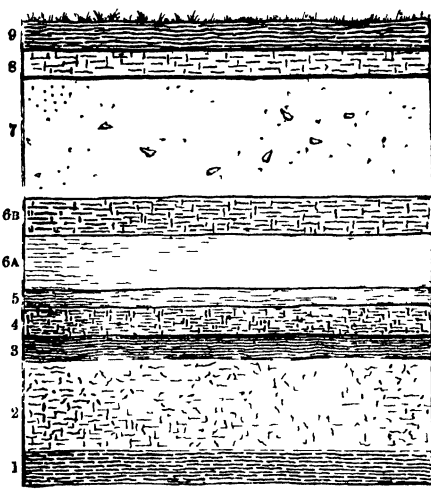


HEADLEAU DRIFT
North Downs, Kent (Prestwich)

have been human or human-like intelligence in the Upper Miocene.

The evidence for the still older implements of Thenay is of the same nature as that for those of Puy Courny. First as regards the geological horizon. Subjoined is the section at Thenay as made by M. Bourgeois, verified by MM. Vibraye, Delaunay, Schmidt, Belgrand, and others, from personal inspection, and given by M. Hamy in his *Palæontologie humaine.*

It would seem that there could be little doubt as to the geological position of the strata from which the alleged chipped flints come. The Faluns are a well-known marine deposit of a shallow sea spread over a great part of Central and Southern France, and identified, beyond a doubt, as Upper Miocene by its shells. The Orleans Sands are another Miocene deposit perfectly characterized by its mammalian fauna, in which the



SECTION AT THENAY.

Mastodon Angustidens first appears, with other peculiar species. The Calcaire de Beauce is a solid freshwater limestone formed in the great lake which in the Miocene age occupied the plain of the Beauce and extended into Touraine. It forms a clear horizon or dividing line between the Upper Miocene, characterized by the Mastodon, and the Lower Miocene, of which the Acrotherium, a four-toed and hornless rhinoceros, is the most characteristic fossil.

The supposed chipped flints are said to appear sparingly in the upper deposits, disappear in the Calcaire de Beauce, and reappear, at first sparingly and then plentifully, in the lacustrian marls below the limestone. They are by far the most numerous in a thin layer of greenish-yellow clay, No. 3 of section, below which they rapidly disappear. There can be no question therefore that if the flints really came from the alleged deposits, and really show the work of human hands, the savages by whom they were chipped must have lived on the shores or sand-banks of this Miocene lake. As regards the geological question, it is right to observe that Professor Prestwich, who visited the section a good many years ago in company with the Abbé Bourgeois, and who is one of the highest authorities on this class of questions, remained unconvinced that the flints shown him really came from the alleged strata below the Calcaire de Beauce, and thought that the specimens which appeared to show human manufacture might have come from the surface, and become intermixed with the natural flints of the lower strata.

The geological horizon, however, seems to have been generally accepted by French and Continental geologists, especially by the latest authorities, and the doubts which have been expressed have turned mainly on the proof of human design shown by the implements. This is a question which must be decided by the authority of experts, for it requires special experience to be able to distinguish between accidental fractures and human design, in implements of the extremely rude type of the earlier formations. The test is mainly afforded by the nature of the chipping. If it consists of a number of small chips, all in the same direction, with

the result of bringing one face or side into a definite form, adapted for some special use, the inference is strong that the chips were the work of design. The general form might be the result of accident, but fractures from frost or collisions simulating chipping could hardly be all in the same direction, and confined to one part of the stone. The inference is strengthened if the specimen shows bulbs of percussion, where the blows had been struck to fashion the implement, and if the microscrope discloses parallel striæ and other signs of use on the chipped edge, such as would be made by scraping bones or skins, while nothing of the sort is seen on the other natural edges, though they may be sharper. But above all, the surest test is afforded by a comparison with other implements of later dates, or even of existing savages, which are beyond all doubts products of human manufacture.

Tried by these tests, the evidence stands as follows—

When specimens of the flints from Thenay were first submitted to the Anthropological Congress at Brussels, in 1867, their human origin was admitted by MM. Worsae, de Vibraye, de Mortillet, and Schmidt, and rejected by MM. Nilson, Hebert, and others, while M. Quatrefages reserved his opinion, thinking a strong case made out, but not being entirely satisfied. M. Bourgeois himself was partly responsible for these doubts, for, like Boucher-de-Perthes, he had injured his case by overstating it, and including a number of small flints, which might have been, and probably were, merely natural specimens. But the whole collection having been transferred to the Archæological Museum at St. Germain, its director, M. Mortillet, selected those which appeared most demonstrative of human origin,

and placed them in a glass case, side by side with similar types of undoubted Quaternary implements. This removed a great many doubts, and later discoveries of still better specimens of the type of scrapers have, in the words of Quatrefages, "dispelled his last doubts," while not a single instance has occurred of any convert in the opposite direction, or of any opponent who has adduced facts contradicting the conclusions of Quatrefages, Mortillet, and Hamy, after an equally careful and minute investigation.

In order to assist the reader in forming an opinion as to the claim of these flints from Thenay, to show

MIDDLE MIOCENE IMPLEMENTS



SCRAPER FROM THENAY
(Hamy, *Palæontologie Humaine*, p 49)



SCRAPER, OR BORER Thenay.
(Showing bulb of percussion Quatrefages, *Races Humaines*, p 92)

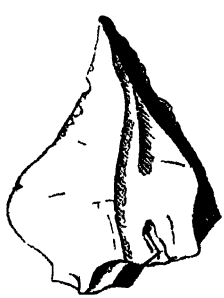
clear traces of human design, I subjoin some illustrations of photographs in which they are compared with specimens of later date, which are undoubtedly and by universal consent works of human hands, guided by human intelligence.

These figures seem to leave no reasonable doubt that some at least of the flints from Thenay show unmistakable signs of human handiwork, and I only hesitate to accept them as conclusive proofs of the existence of man in the Middle Miocene, because such an authority as Prestwich retains doubts of their having come from the

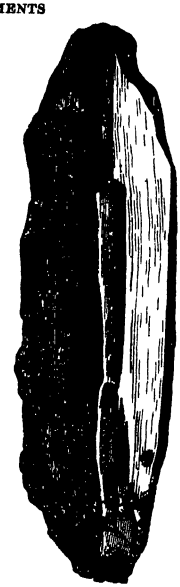
geological horizon accepted by the most eminent modern French geologists.

The evidence of the authenticity of these implements from Thenay is, moreover, greatly strengthened by the discovery of other Miocene implements at Puy Courny, which have not been seriously impugned, and by the essay of Professor Prestwich, confirming the discovery of numerous flint implements in the upper

MIDDLE MIOCENE IMPLEMENTS



BORER, OR AWL Thenay Miocene (Congrès Préhistorique, Bruxelles, 1872)



KNIFE, OR SCRAPER Thenay (Gaudry Quatrefages, p 92)

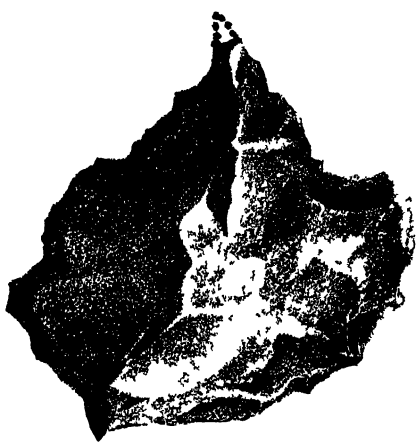
level gravels of the North Downs, which could only have been deposited by streams flowing from a mountain ridge along the Anticlinal of the Weald, of which 2000 feet must have disappeared by sub-aerial denudation since these rivers flowed northwards from its flanks. How far back such a denudation may carry us is a matter

of speculation. Certainly, as Prestwich admits, into the pre-glacial or very early glacial ages, and possibly into the Tertiaries, but at any rate for a time which, by whatever name we call it, must be enormous according

COMPARE QUATERNARY IMPLEMENTS.



SCRAPER Yorkshire Wold
(Evans, *Stone Implements*)



QUATERNARY Mammoth Period
River Drift, Mesvin, Belgium
(Congrès Préhistorique, Bruxelles, 1872)



QUATERNARY Chaleux, Belgium
Reindeer Period (Congres
Préhistorique, Bruxelles, 1872)

to any standard of centuries or millenniums. And what is specially interesting in these extremely ancient implements is that, in Prestwich's words, "these plateau implements exhibit distinct characters and types such as would denote them to be the work of a more

primitive and ruder race than those fabricated by palæolithic men of the valley drift times."

In fact we have only to look at the figures which accompany Prestwich's essay,[1] to see that their types resemble those of Puy Courny and Thenay, rather than those of St. Acheul and Moustier.

The following remarks of the Professor would apply almost as well to the Miocene implements as to those of the plateau—

"Unlike the valley implements, the plateau implements are, as a rule, made of the *fragments* of natural drift flints, that are found scattered over the surface of the ground, or picked up in gravel-beds and merely roughly trimmed. Sometimes the work is so slight as to be scarcely apparent; at others, it is sufficient to show a distinct design and object. It indicates the very infancy of the art, and probably the earliest efforts of man to fabricate his tools and weapons from other substances than wood or bone. That there was an object and design is manifest from the fact that they admit of being grouped according to certain patterns. These are very simple, but they answered to the wants of a primitive people.

"With few exceptions, the implements are small, from 2 to 5 inches in length, and mostly such as could have been used in the hand, and in the hand only. There is, with the exceptions before named, an almost entire absence of the large massive spear-head forms of the valley drifts, and a large preponderance of forms adapted for chipping, hammering, and scraping. With these are some implements that could not have been used in the hand, but they are few and rude. The difference

[1] *Journal of Anthropological Institute*, Feb. 1892, p. 262.

between the plateau and the valley implements is as great or greater than between the latter and the neolithic implements. Though the work on the plateau implements is often so slight as scarcely to be recognizable, even modern savage work, such as exhibited for example by the stone implements of the Australian natives, show, when divested of their mounting, an amount of work no greater or more distinct, than do these early palæolithic specimens.

"Some persons may be disposed to look upon the slight and rude work which these flints have received as the result only of the abrasion and knocking about caused by collision during the transport of the drift. This belief prevailed for a time even in the case of the comparatively well-fashioned valley implements. A little practice, and comparison with natural drift flints, will show the difference, notwithstanding the, at first, unpromising appearance of these early specimens of man's handicraft. It is as such, and from their being the earliest such work with which we are acquainted, that they are of so great interest, for they give us some slight insight into the occupation and surroundings of the race by whom they were used. A main object their owners would seem to have had in view, was the trimming of flints to supply them with implements adapted to the breaking of bones for the sake of the marrow, scraping skins, and round bodies such as bones or sticks, for use as simple tools or poles. From the scarcity of the large massive implements of the pointed and adze type, so common in the valley drifts, it would seem as though offensive and defensive weapons of this class had not been so much needed, whether from the rarity of the large mammalia, so common later on in the

low-level valley drifts, or from the habits and character of those early people."

The positive evidence is therefore extremely strong that men existed in the Tertiaries, and if we add to it the irresistible inference that he must have done so to develop so many different races, and leave his rude implements in so many and such remote regions as we found early in the Quaternary, I do not see how it is possible to avoid accepting it as an established fact.

But in using the term Tertiary Man, I do not venture to define the exact meaning of "man," or the precise stage in his evolution which had been attained at this enormously remote period. M. Gaudry, an excellent authority, while admitting that the flints from Thenay showed evidence of intentional chipping, thought that they might have been the work of the Dryopithecus, a fossil ape, supposed to be nearer man than any existing anthropoid, whose remains had been found at Sausan in the Middle Miocene. But the Dryopithecus has been deposed from his pride of place by the subsequent discovery of a more perfect jaw, and he is now considered, though undoubtedly an anthropoid ape, to be of a lower type than the chimpanzee or gorilla.[1] The strongest argument how-

[1] Having applied to Professor Flower, as the highest authority, to inform me of the actual position of the evidence as to the Dryopithecus, he was good enough to reply to me as follows—

"Dryopithecus (Middle Miocene of France) is an undoubted anthropoid, allied to gorilla and chimpanzee, but the recent discovery of a more complete jaw than that first found shows that it is rather a lower form than the two just mentioned, instead of higher as once thought. See Gaudry, Mem. Soc. Geol. France—*Palæontologie*, 1890.

"The animal called *Pliopithecus*, from the same formation, is now generally considered to be not distinguishable from the genus Hylobates (Gibbon).

"So there is no doubt about the existence of anthropoid apes in the Miocene of Europe, but not of a higher type than the present African or Asiatic species. Yours truly, "W. FLOWER."

ever for the essentially human character of the artificers of the flints of Thenay and Puy Courny is that their type continues, with no change except that of slight successive improvements, through the Pliocene, Quaternary, and even down to the present day. The scraper of the Esquimaux and the Andaman islanders is but an enlarged and improved edition of the Miocene scraper, and in the latter case the stones seem to have been split by the same agency, viz. that of fire. The early knowledge of fire is also confirmed by the discovery, reported by M. Bourgeois in the Orleans Sand at Thenay, with bones of mastodon and dinotherium, of a stony fragment mixed with carbon, in a sort of hardened paste, which, as we can hardly suppose pottery to have been known, must be the remnant of a hearth on which there had been a fire.

There must always, however, remain a doubt as to the nature of this ancestral Tertiary man, until actual skulls and skeletons have been found, under circumstances which preclude doubt, and in sufficient numbers to enable anthropologists to speak with the same confidence as to types and races, as they can of his Quaternary successors. This again is difficult from the rarity of such remains, and from the fact that after burial of the dead was introduced, graves must often have been dug down from the surface into older strata, with which in course of time their contents become intermixed. No case, therefore, can be safely admitted where the find was not made by well-known scientific authorities, under circumstances which preclude the possibility of subsequent interment, and vouch for the geological age of the undisturbed deposit. This test disposes of all the alleged discoveries of human remains in the Tertiaries of the Old World, except one,

and although it is quite possible that some may be genuine among those rejected, it is safer not to rely on them. There is one, however, which is supported by extremely strong evidence, and the discussion of which I have reserved for the last, as if accepted it throws a new and unexpected light on the evolution of the human race.

The following is the account of it, taken from Quatrefages' *Races humaines*—

"The bones of four individuals, a woman and two children, were found at Castelnedolo, near Brescia, in a bed identified by its fossils as Lower Pliocene. The excavations were made with the utmost care, in undisturbed strata, by M. Ragazzoni, a well-known scientific man, assisted by M. Germani, and the results confirmed by M. Sergi, a well-known geologist, after a minute personal investigation. The deposit was removed in successive horizontal layers, and not the least trace was found of the beds having been mixed or disturbed. The human bones presented the same fossilized appearance as those of the extinct animals in the same deposit. The female skeleton was almost entire, and the fragments of the skull were sufficiently perfect to admit of their being pieced together so as to show almost its entire form."

The first conjecture naturally was that it must have been a case of subsequent interment, a conjecture which was strengthened by the fact of the female skeleton being so entire; but this is negatived by the undisturbed nature of the beds, and by the fact that the other bones were found scattered at considerable distances throughout the stratum. M. Quatrefages sums up the evidence by saying, "that there exists no serious reason for doubting the discovery, and that if made in a Quaternary deposit, no one would have thought of contesting its accuracy.

Nothing can be opposed to it but theoretical *à priori* objections similar to those which so long repelled the existence of Quaternary man."

But if we accept this discovery, it leads to the remarkable conclusion that Tertiary man not only existed, but has undergone little change in the thousands of centuries which have since elapsed. The skull is of fair capacity, very much like what might be expected from a female of the Canstadt type, and less rude and ape-like than the skulls of Spy and Neanderthal, or those of modern Bushmen and Australians. And the other bones of the skeleton show no marked peculiarities.

This makes it difficult to accept the discovery unreservedly, notwithstanding the great weight of positive evidence in its favour. The great objection to Tertiary man has been, that as all other species had changed, and many had become extinct two or three times over since the Miocene, it was unlikely that an animal so highly specialized as man should alone have had a continuous existence. And this argument of course becomes stronger the more it can be shown that the oldest skeletons differed little if it at all from man of the Quaternary and Recent ages. Moreover, the earlier specimens of Quaternary man which are so numerous and authentic, show, if not anything that can be fairly called the "missing link," still a decided tendency, as they get older, towards the type of the rudest existing races, which again show a distinct though distant approximation towards the type of the higher apes. The oldest Quaternary skulls are dolichocephalic, very thick with enormous frontal sinuses; low and receding foreheads; flattened vertices; prognathous jaws, and slight and receding chins. The average cranial capacity is about 1150 cubic centimètres, or fully

one-fourth less than that of modern European man, and of this smaller brain a larger proportion is in the posterior region. The other peculiarities of the skeletons all tend in the same direction, and, as we have seen in Huxley's description of the men of Spy, sometimes go a long way in the pithecoid direction, even to the extent of not being able to straighten the knee in walking.

It would, therefore, be contrary to all our ideas of evolution to find that some 100,000 or 200,000, or more probably 400,000 or 500,000 years prior to these men of Spy and Neanderthal, the human race had existed in higher physical perfection nearer to the existing type of modern man.

Quatrefages meets this by saying that Tertiary men with a larger brain, and therefore more intelligence than the other Tertiary mammals, might have survived, where these succumbed to changes and became extinct. This is doubtless true to some extent, but it hardly seems sufficient to account for the presence of a higher and more recent type, like that of Castelnedolo in the Lower Pliocene, that is a whole geological period earlier than that of the Lower Quaternary. It is more to the purpose to say with Gaudry that the changes on which the distinction of species are founded are often so slight that they might just as well be attributed to variations of races; and to appeal to instances like that of the Hylobates of the Miocene, one of the nearest congeners of man, in which no genuine difference can be detected from the Hylobates or Gibbon of the present day; and if the discovery referred to at p. 264, of anthropoid primates in the Eocene of Patagonia, should be confirmed, it would greatly strengthen the argument for the persist-

ence of the order to which man belongs through several geological periods.

In any case we require more than the evidence of this one discovery before we can assume the type of Tertiary man as a proved fact with the same confidence as we can the existence of something like man in those remote ages, from the repeated evidence of chipped stones and cut bones, showing unmistakable signs of being the work of human intelligence. And in the meantime, the only safe conclusion seems to be that it is very probable that we may have to go back to the Eocene to find the "missing link," or the ancestral animal which may have been the common progenitor of man and of the other quadrumana.

I turn now to the evidence from the New World. I have kept this distinct, for there is no such proof of synchronism between the later geological phases of this and of the Old World as would warrant us in assuming that what is true in one is necessarily true in the other. Thus in Europe the presence of the mastodon is a conclusive proof that the formation in which its remains are found is Upper Miocene or Pliocene, and it has completely disappeared before the glacial period and the Quaternary era. But in North America it has survived both these periods, and it is even a question whether it is not found in recent peat-mosses with arrow-heads of the historical Indians.

The glacial period also, which in the Old World affords such a clear demarcation between Tertiary and Recent ages, and such manifest proofs of two great glaciations with a long inter-glacial period, presents different conditions in America, where the ice-caps radiated from different centres, and extended further south and over

wider areas. There is no proof whether the great cold set in sooner or later, and whether the elevations and depressions of land synchronized with those of Europe. The evidence for a long inter-glacial period is by no means so clear, and the best American geologists differ respecting it. And above all, the glacial period seems to have lasted longer, and the time required for post-glacial or recent denudation, and erosion of river-gorges, to be less than is required to account for post-glacial phenomena on this side of the Atlantic.

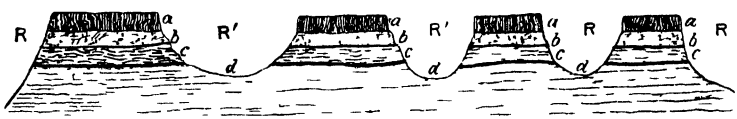
The evidence, therefore, from the New World, though conclusive as to the existence of man from an immense antiquity, can hardly be accepted as equally so in an attempt to prove that antiquity to be Tertiary in the sense of identifying it with specific European formations. With this reservation I proceed to give a short account of this evidence as bearing on the question of the oldest proofs of man's existence. The first step or proof of the presence of man in the Quaternary deposits which correspond with the oldest river-drifts of Europe, has only been made quite recently. Mr. Abbott was the first to discover such implements of the usual palæolithic type in Quaternary gravels of the river Delaware, near Trenton in New Jersey, and since then they have been frequently found, as described by Dr. Wright in his recently-published *Ice Age in America*, in Ohio, Illinois, and other States, in the old gravels of rivers which carried the drainage of the great lake district to the Hudson and the Mississippi, before the present line of drainage was established by the Falls of Niagara and the St. Lawrence. So far the evidence merely confirms that drawn from similar finds in the Old World of the existence of man in the early glacial or

Quaternary times, already widely diffused, and everywhere in a similar condition of primitive savagery, and chipping his rude stone implements into the same forms. But if we cross the Rocky Mountains into California, we find evidence which apparently carries us further back and raises new questions.

The whole region west of the Rocky Mountains is comparatively recent. The Coast Range which now fronts the Pacific is composed entirely of marine Tertiary strata, and when they were deposited, the waves of the Pacific beat against the flanks of the Sierra Nevada. At length the Coast Range was upheaved and a wide valley left between it and the Sierra of over 400 miles in length, and with an average breadth of seventy-five miles. The Sierra itself is old land, the lower hills consisting of Triassic slates and the higher ranges of granite, and it has never been under water since the Secondary Age though doubtless it stood much higher before it was so greatly denuded. All along its western flank and far down into the great valley is an enormous bed of auriferous gravel, doubtless derived from the waste of the rocks of the Sierra during an immense time by old rivers now buried under their own deposits. While these deposits were going on a great outburst of volcanoes occurred on the western slope of the Sierra, and successive sheets of tuffs, ashes, and lavas are interstratified with the gravels, while finally an immense flow of basalt covered up everything. The country then presented the appearance of a great plain, sloping gradually downwards from the Sierra according to the flow of the basalt and lavas. This plain was in its turn attacked by denudation and worn down by the existing main rivers into valleys and gorges, and by their tribut-

ary streams into a series of flat-topped hills, capped by basalt and divided from one another by deep and narrow cañons.

The immense time required for this latest erosion may be inferred when it is stated that where the Columbia river cuts through the axis of the Cascade Mountains, the precipitous rocks on either side, to a height of from 3000 to 4000 feet, consist of this late Tertiary or Post-Tertiary basalt, and that the Deschutes



SECTION OF GREAT CALIFORNIAN LAVA STREAM, CUT THROUGH BY RIVERS.

a, *a*, basalt; *b*, *b*, volcanic ashes; *c*, *c*, tertiary; *d*, *d*, cretaceous rocks; *R*, *R*, direction of the old river-bed; *R'*, *R'*, sections of the present river-beds.
(Le Conte, from Whitney.)

river has been cut into the great basaltic plain for 140 miles to a depth of from 1000 to 2500 feet, without reaching the bottom of the lava. The American and Yuba valleys have been lowered from 800 to 1500 feet, and the gorge of the Stanislas river has cut through one of these basalt-covered hills to the depth of 1500 feet.

The enormous gorge of the Colorado has cut its cañons for hundreds of miles from 3000 to 6000 feet deep through all the orders of sedimentary rocks from the Tertiaries down, and from 600 to 800 feet into the primordial granite below, thus draining the great lakes which in Tertiary times occupied a vast space in the interior of America which is now an arid desert.

Evidently the gravels which lie below the basalt, and interstratified with the tuffs and lavas, or below them, and which belong to an older and still more extensive

denudation, must be of immense antiquity, an antiquity which remains the same whether we call it Quaternary or Tertiary. It is in these gravels that gold is found, and in the search for it great masses have been removed in which numerous stone implements have been found.

The great antiquity of those gravels and volcanic tuffs is further confirmed by the changes in the flora and fauna which are proved to have occurred. The animal remains found beneath the basaltic cap are very numerous, and all of extinct species. They belong to the genera rhinoceros, elatherium, felis, canis, bos, tapirus, hipparion, elephas (primigenius), mastodon, and auchenia, and form an assemblage entirely distinct from any now living in any part of North America. Some of the genera survived into the Quaternary age as in Europe, but many, both of the genera and species, are among those most characteristic of the Pliocene period.

The flora also, which is well preserved in the white clays formed from the volcanic ash, comprises forty-nine species of deciduous trees and shrubs, all distinct from those now living, without a single trace of the pines, firs, and other conifera which are now the prevalent trees throughout California.

Tried by any test, therefore, of fauna, flora, and of immensely long deposit before the present drainage and configuration of the country had begun to be established, Professor Whitney's contention that the auriferous gravels are of Tertiary origin seems to be fully established. It can only be met by obliterating all definite distinction between the Quaternary and the Pliocene, and adding to the former all the time subtracted from the latter. And even if we apply this to the physical

changes, it would upset all our standards of geological formations characterized by fossils, to suppose that a fauna comprising the elatherium, hipparion, and auchenia could be properly transferred to the Quaternary. In fact no one would have thought of doing so if human implements and remains had not been found in them.

The discovery of such implements was first reported in 1862, and since then a large number have been found, but their authenticity has been hotly contested. The most common were stone mortars very like those of the Indians of the present day, only ruder, and it was objected, first, that they were ground and not chipped, and therefore belonged to the neolithic age; secondly, that they might have slipped down from the surface or been taken down by miners. The difficulty in meeting these objections was that the implements had been found not by scientific men *in situ*, but by ignorant miners, who were too keen in the pursuit of gold to notice the particulars of the find, and only knew that they had picked them out in sorting loads of the gravels, and generally thrown them aside. This, however, had occurred in such a number of instances, over such wide areas, and with such a total absence of any motive on the part of the miners to misrepresent or commit a fraud, that the cumulative evidence became almost irresistible; and we cannot sum it up better than in the words of the latest and best authority, Professor Wright, in an article in the *Century* of April 1891, which is the more important because only two years previously, in his *Ice Age in North America*, he had still expressed himself as retaining doubts.

He says, "But so many of such discoveries have

been reported as to make it altogether improbable that the miners were in every case mistaken; and we must conclude that rude stone implements do actually occur in connection with the bones of various extinct animals in the undisturbed strata of the gold-bearing gravel."

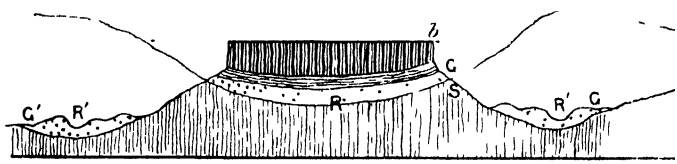
Fortunately the most important human remains have been found in what may be considered as a test case, where it was physically impossible that they could have been introduced by accident, and where the evidence of a common workman as to the locality of the find is as good as that of a professed geologist.

During the deposition of the auriferous gravel on the western flanks of the Sierra there were great outbursts of volcanoes near the summits of that range. Towards their close a vast stream of lava flowed down the shallow valley of the ancient Stanislas river, filling up its channel for forty miles or more, and covering its extensive gravel deposits. The modern Stanislas river has cut across its former bed, and now flows in a gorge from 1200 to 2000 feet deeper than the old valley which was filled up by the lava stream, the surface of which appears as a long flat-topped ridge, known as Table Mountain. In many places the sides of the valley which originally directed the course of the lava have been worn away, so that the walls on either side present a perpendicular face one hundred feet or more in height.

The gravel of the ancient Stanislas river being very auriferous, great efforts have been made to reach the portion of it which lies under Table Mountain. Large sums have been spent in sinking shafts from the top through the lava cap, and tunnelling into it from the sides. Great masses of gravel have been thus quarried and removed, and a considerable amount of gold

obtained, though in most cases not enough to meet the expenses, and the workings have been mostly discontinued.

It is evident that objects brought from a great depth below this lava cap must have remained there undisturbed since they were deposited along with the gravels, and that the evidence of the simplest miner, who says he brought them with a truck-load of dirt from the bottoms of shafts, or ends of tunnels pierced for hundreds of feet through the solid lava, is, if he speaks the truth, as good as if a scientist had found them *in*



SECTION ACROSS TABLE MOUNTAIN, TUOLUMNE COUNTY, CALIFORNIA.

b, lava; *G*, gravel; *S*, slate; *R*, old river-bed; *R'*, present river-bed. (Le Conte.)

situ. And this evidence, together with that of mining inspectors and respectable residents who took an interest in scientific subjects, has been forthcoming in such a large number of instances as to preclude any supposition of mistake or fraud. Three of the latest of these discoveries were reported at the meeting of the Geological Society of America on the 30th December, 1890, and they seem to be supported by very first-class evidence.[1] Mr. Becker, one of the staff of the United States Geological Survey, to whom has been committed the responsible work of reporting upon the gold-bearing gravels of California, exhibited to the Society a stone mortar, and some arrow or spear-heads, with the sworn

[1] Professor Wright in *Century*, April 1891.

statement from Mr. Neale, a well-known mining superintendent, that he took them with his own hands from undisturbed gravel in a mine of which he had charge under the lava of Table Mountain.

A second object exhibited was a pestle found by Mr. King, who was at one time General Director of the United States Geological Survey, and is an expert whose judgment on such matters should be final, and who had no doubt that the gravel in which he found the object must have lain in place ever since the lava came down and covered it. The third object was a mortar taken from the old gravel at the end of a tunnel driven diagonally 175 feet from the western edge of the basalt cliff, and 100 feet or more below the surface of the flat top of Table Mountain, as supported by evidence entirely satisfactory to Professor Wright, who had just visited the locality and cross-examined the principal witnesses. This may prepare us to consider the case of the celebrated Calaveras skull as by no means an isolated or exceptional one, but antecedently probable from the number of human implements found in the same gravels, under the same beds of basalt and lava, at Table Mountain and numerous other places.

Professor Wright in the article already referred to, which is the latest on the subject, and made after his visit to California in 1890, which he says enabled him to add some important evidence, sums up the facts as follows—

"In February 1866, Mr. Mattenson, a blacksmith living near Table Mountain, in the county Calaveras, employed his spare earnings in driving a tunnel under the portion of the Sierra lava flow known as Bald Hill. At a depth of 150 feet below the surface, of which 100

feet consisted of solid lava, and the last fifty of interstratified beds of lava, gravel, and volcanic tuffs, he came upon petrified wood, and an object which he at first took for the root of a tree, thickly encased in cemented gravel. But seeing what he took for one of the roots was a lower jaw, he took the mass to the surface, and gave it to Mr. Scribner, the agent of an express company, and still living in the neighbourhood, and highly respected. Mr. Scribner, on perceiving what it was, sent it to Dr. Jones, a medical gentleman of the highest reputation, now living at San Francisco, who gave it to Professor Whitney, who visited the spot, and after a careful inquiry was fully satisfied with the evidence. Soon afterwards Professor Whitney took the skull home with him to Cambridge, where, in conjunction with Dr. Wynam, he subjected it to a very careful investigation to see if the relic itself confirmed the story told by the discoverer, and this it did to such a degree that, to use Professor Wright's words, the circumstantial evidence alone places its genuineness beyond all reasonable question."

This is not a solitary instance, for the Professor reports as the result of his personal inquiries only a year ago in the district, that "the evidence that human implements and fragments of the human skeleton have been found in the stratum of gravel underneath the lava of Table Mountain seems to be abundantly sufficient;" among others a fragment of a skull which came up with a bucketful of dirt from 180 feet below the surface of Table Mountain at Tuolumne.

Dr. Wallace, in an article on the "Antiquity of Man in North America," in the *Nineteenth Century* of November 1887, thus enumerates some of the principal instances—

"In Tuolumne county from 1862 to 1865 stone mortars and platters were found in the auriferous gravel along with bones and teeth of mastodon 90 feet below the surface, and a stone muller was obtained in a tunnel driven under Table Mountain. In 1870 a stone mortar was found at a depth of 60 feet in gravel under clay and 'cement,' as the hard clay with vegetable remains (the old volcanic ash) is called by the miners. In Calaveras county from 1860 to 1869 many mortars and other stone implements were found in the gravels under lava beds, and in other auriferous gravels and clays at a depth of 150 feet. In Amador county stone mortars have been found in similar gravel at a depth of 40 feet. In Placer county stone platters and dishes have been found in auriferous gravels from 10 to 20 feet below the surface. In Nevada county stone mortars and ground discs have been found from 15 to 30 feet deep in the gravel. In Butte county similar mortars and pestles have been found in the lower gravel beneath lava beds and auriferous gravel; and many other similar finds have been recorded. . . . .

"Even these Californian remains do not exhaust the proofs of man's great antiquity in America, since we have the record of another discovery which indicates that he may, possibly, have existed at an even more remote epoch. Mr. E. L. Berthoud has described the finding of stone implements of a rude type in the Tertiary gravels of the Crow Creek, Colorado. Some shells were obtained from the same gravels, which were determined by Mr. T. A. Conrad to be species which are 'certainly not older than Older Pliocene, or possibly Miocene.'"

I do not dwell on the discoveries which have been

made of human implements and skeletons in the caves of Minas Geraes in Brazil, and in the drift or loess of the pampas of Buenos Ayres, for although associated with extinct animals usually considered as Pliocene, there is a difference of opinion among competent geologists, whether the deposits are really Tertiary or only early Quaternary.

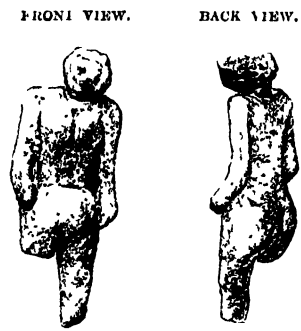
There is, however, one discovery, made since the date of these above recorded, of human work below the great basalt cap of North-Western America, brought up from a great depth of underlying gravels and sands of a silted-up lake, formerly forming part of the course of the Snake river at Nampa in Idaho, which is as startling in its way as that of the Calaveras skull. The following account of it is given on the authority of Professor Wright, who, having visited the locality in the summer of 1890, states that he found "abundant confirmatory evidence"—

The Nampa image was brought up in boring an Artesian well, at Nampa in Ada county, Idaho, through a lava-cap 15 feet thick, and below it about 200 feet of the quicksands and clays of a silted-up lake, formed in a basin of the Snake river, which joins the Columbia river, and flows into the Pacific, forming part, therefore, of the same geographical and drainage system as the Californian gravels. At this depth the borers came down to a stratum of coarse sand, mixed with clay balls at the top, and resting at the bottom on an ancient vegetable soil, and the image came up from the lower part of this coarse sand. The borer, or liner of the well, was a six-inch iron tube, and the drill was only used in piercing the lava, while the sands below it were all extracted by a sand pump. Mr. King, a respectable citizen of Nampa, who was boring the well, states that he had

been for several days closely watching the progress of the well and passing through his hands the contents of the sand pump as they were brought up, so that he had hold of the image before he suspected what it was. Mr. Cumming, superintendent of that portion of the Union Pacific Railway, a highly-trained graduate of Harvard College, was on the ground next day and saw the image, and heard Mr. King's account of the discovery, and Mr. Adams, the president of the railway, happening to pass that way about a month later, he brought it to the notice of some of the foremost geologists in the United States. The image was sent to Boston by Mr. King, who gave every information, and it was found to be modelled from stiff clay, like that of the clay balls found in the sand, slightly if at all touched by fire, and incrusted like those balls with grains of oxide of iron, which Professor Putnam considers to be a conclusive proof of its great antiquity. Mr. Emmons, of the State Geological Society, gives it as his opinion that the strata in which this image is said to have been found, is older by far than any others in which human remains have been discovered, unless it be those under Table Mountain, in California, from which came the celebrated Calaveras skull. So much for the authenticity of the discovery, which seems unassailable, but now comes the remarkable feature of it, which to a great extent revolutionizes our conception of this early palæolithic age. The image, or rather statuette, which is scarcely an inch and a half long, is by no means a rude object, but on the contrary more artistic, and a better representation of the human form, than the little idols of many comparatively modern and civilized people, such as the Phœnicians. It is in fact very like the little statuettes so abundantly found

in the neighbourhood of the old temple-pyramids of Mexico, which are generally believed to be not much older than the date of the Spanish Conquest.

In the face of this mass of evidence, from both the Old and New Worlds, it seems more like obstinate incredulity than scientific caution to deny the existence of Tertiary man. Indeed the objections put forward by those who still cling to the notion that any proofs of greater antiquity of man take them further back from



THE NAMPA IMAGE.—ACTUAL SIZE.
(Drawn from the object by J. D Woodward.)

the orthodox standpoint of Genesis, are sufficient of themselves to show the straits to which they are driven to explain the facts. A conspiracy has been imagined of many hundreds of ignorant miners, living hundreds of miles apart, to hoax scientists, or make a trade of forging implements, which is about as probable as the theory that the palæolithic remains of the Old World were all forged by the devil, and buried in Quaternary strata in order to discredit the Mosaic account of creation. It is enough to say that the great majority of the implements had been thrown away as rubbish,

and that not a single instance has ever been adduced in which money was asked or offered for any of them.

Another equally wild theory is that gold-mining tunnels had been driven by some race of prehistoric Indians through hundreds of feet of solid basalt and quicksands, who left their implements in them; and this on the face of the fact that no such tunnels or evidences of ancient mining have ever been found in California, and that gold was unknown there until its recent discovery.

In accepting, however, the evidence for Tertiary man, we must accept with it conclusions which are much opposed to preconceived opinions. In the two best authenticated instances in which human skulls have been found in presumably Tertiary strata, those of Castelnedolo and Calaveras, it is distinctly stated that they present no unusual appearance, and do not go nearly as far in a brutal or pithecoid direction as the Quaternary skulls of Neanderthal and Spy, or as those of many existing savage races. The Nampa image also appears to show the existence of considerable artistic skill at a period which, if not Tertiary, must be of immense antiquity. How can this be reconciled with the theory of evolution and the descent of man from some animal ancestor common to him and the other quadrumana? Up to a certain point, viz. the earliest Quaternary period, the evidence of progression seems fairly satisfactory. If we take the general average of this class of skulls as compared with modern skulls, we find them of smaller brain-capacity, thicker and flatter, with prominent frontal sinuses, receding foreheads, projecting muzzles, and weaker chins. The brain is decidedly smaller, the average being 1150 cubic centimètres as

compared with 1250 in Australians and Bushmen, and 1600 in well-developed Europeans; and of this smaller capacity a larger proportion is contained in the posterior part.[1] Other parts of the skeleton will tell the same story, and in many of the earliest and most extreme instances, as those of Neanderthal and Spy, a very decided step is made in the direction of the "missing link."

But if we accept the only two specimens known of the type of Tertiary man, the skulls of Castelnedolo and Calaveras, which are supported by such extremely strong evidence, it would seem that as we recede in time, instead of getting nearer to the "missing link," we get further from it. This, and this alone, throws doubt on evidence which would otherwise seem to be irresistible, and without a greater number of well-authenticated confirmations we must be content to hold our judgment to a certain extent in suspense. This, however, it must be remarked, extends only to the type of man as shown by these two skulls, and does not at all affect the fact that man, of some type or other, did exist in the Pliocene and Miocene periods, which is established beyond reasonable doubt by the numerous instances in which chipped implements and cut bones have been found by experienced observers, and pronounced genuine by the highest authorities.

All we can say with any certainty is, that if the Darwinian theory of evolution applies to man, as it does to all other animals, and specially to man's closest kindred, the other quadrumana, the common ancestor must be sought very much further back, in the Eocene, which inaugurated the reign of placental mammalia, and

[1] Quatrefages and Hamy, *Crania Ethnica*.

in which the primitive types of so many of the later mammals have been found. Nor will this appear incredible when we consider that man's cousins, the apes and monkeys, first appear in the Miocene, or even earlier in the Eocene, and become plentiful in the later Pliocene, and that even anthropoid apes, and one of them, the Hylobates, scarcely if at all distinguishable from the Gibbon of the present day, have been found at Sansan and other Miocene deposits in the south of France, at Œningen in Switzerland, and Pikermi in Greece; while if Professor Ameghino's discoveries are to be credited, anthropoids already existed in the Eocene, and their development may be traced from the oldest Eocene forms.

CHAPTER XII.

RACES OF MANKIND.

Monogeny or Polygeny—Darwin—Existing Races—Colour—Hair—Skulls and Brains—Dolichocephali and Brachycephali—Jaws and Teeth—Stature—Other Tests—Isaac Taylor—Prehistoric Types in Europe—Huxley's Classification—Language no Test of Race—Egyptian Monuments—Human and Animal Races unchanged for 6000 years—Neolithic Races—Palæolithic—Different Races of Man as far back as we can trace—Types of Canstadt, Cro-Magnon, and Furfooz—Oldest Races Dolichocephalic—Skulls of Neanderthal and Spy—Simian Characters—Objections—Evidence confined to Europe—American Man—Calaveras Skull—Tertiary Man—Skull of Castelnedolo—Leaves Monogeny or Polygeny an open Question—Arguments on each side—Old Arguments from the Bible and Philology exploded—What Darwinian Theory requires—Animal Types traced up to the Eocene—Secondary Origins—Dog and Horse—Fertility of Races—Question of Hybridity—Application to Man—Difference of Constitutions—Negro and White—Bearing on Question of Migration—Apes and Monkeys—Question of Original Locality of Man—Asiatic Theory—Eur-African—American—Arctic—None based on sufficient Evidence—Mere Speculations—Conclusion—Summary of Evidence as to Human Origins.

THE immense antiquity of man upon earth having been established, other questions of great interest present themselves as to the origin of the race. These questions, however, no longer depend on positive facts of observation, like the discovery of palæolithic remains in definite geological deposits, but on inference and conjecture from these and other observed facts, most of which are of comparatively recent date and hardly extend beyond the historical period.

Thus if we start with the existing state of things, we find a great variety of human races actually prevailing, located in different parts of the world, and of fundamental types so dissimilar as to constitute what in animal zoology would often be called separate species,[1] and yet fertile among themselves, and so similar in many physical and mental characters as to infer an origin from common ancestors. And we can infer from history that this was so to a great extent 6000 years ago, and that the length of time has been insufficient to produce any marked changes, either in physical or linguistic types of the different fundamental races.

Was this always so, and what inference can be drawn as to the much-disputed question between monogeny and polygeny, that is, between the theory of descent from a single pair in a single locality, and that of descent from several pairs, developed in different localities by parallel, but not strictly identical, lines of evolution?

This is a question which cannot be decided off-hand by *à priori* considerations. No doubt Darwinism points to the evolution of all life from primitive forms, and ultimately, perhaps, from the single simplest form of life in the cell or protoplasm. But this does not necessarily imply that the more highly specialized, and

[1] Topinard, one of the latest and best authorities, says in his book on Anthropology: "We have seen the marked difference between woolly and straight hair, between the prognathous and the orthognathous, the jet black of the Yoloff and the pale complexion of the Scandinavian, between the ultra-dolichocephalic Esquimaux or New Caledonian, and the ultra-brachycephalic Mongolian. But the line of separation between the European and the Bosjesman, as regards these two characters, is, in a morphological point of view, still wider, as much so as between each of the anthropoid apes, or between the dog and the wolf, the goat and the sheep."

what may be called the secondary forms of life, have all originated from single secondary centres, at one time and in one locality.

On the contrary, we have the authority of Darwin himself for saying that this is not a necessary consequence of his theory. In a letter to Bentham he says—"I dispute whether a new race or species is necessarily or even generally descended from a single or pair of parents. The whole body of individuals, I believe, became altered together—like our race-horses, and like all domestic breeds which are changed through unconscious selection by man."

The problem is, therefore, an open one, and can only be solved (or rather attacked, for in the present state of our knowledge a complete solution is probably impossible) by a careful induction from ascertained facts, ascending step by step from the present to the past, from the known to the unknown.

The first step is to have a clear idea of what actually exists at the present moment. There are an almost endless number of minor varieties of the human race, but none of them of sufficient importance to imply diversity of origin, with the exception of four, or at the most five or six fundamental types, which stand so widely apart that it is difficult to imagine that they are all descended from a common pair of ancestors. These are the white, yellow, and black races of the Old World, the copper-coloured of America, and perhaps the olive-coloured of Malaysia and Polynesia, and the pygmy races of Africa and Eastern Asia. The difficulty of supposing these races to have all sprung from a single pair will at once be apparent if we personify this pair under the name of Adam for the first man and Eve for

the first woman, and ask ourselves the question, what do we suppose to have been their colour?

But colour alone, though the most obvious, is by no means the sole criterion of difference of race. The evidence is cumulative, and other equally marked and persistent characters, both of physical structure and of physiological and mental peculiarities, stand out as distinctly as differences of colour in the great typical races. For instance, the hair is a very persistent index of race. When the section of it is circular, the hair is straight and lank; when flattened, woolly; and when oval, curly or wavy. Now these characters are so persistent that many of the best anthopologists have taken hair as the surest test of race. Everywhere the lank and straight hair and circular section go with the yellow and copper-coloured races; the woolly hair and flat section with the black; and the wavy hair and oval section with the white races.

The solid framework of the skeleton also affords very distinctive types of race, especially where it is looked at in a general way as applicable to great masses of pure races, and not to individuals of mixed race, like most Europeans. The skull is most important, for it affords the measure of the size and shape of the brain, which is the highest organ, and that on which the differentiation of man from the lower animals mainly depends. The size of the brain alone does not always afford a conclusive proof of mental superiority, for it varies with sex, height, and other individual characters, and often seems to depend more on quality than on quantity. Still, if we take general averages, we find that superior and civilized races have larger brains than inferior and savage ones. Thus the average brain of the European

is about 1500 cubic centimètres, while that of the Australian and Bushman does not exceed 1200.

The shape as well as the size of the skull affords another test of race which is often appealed to. The main distinction taken is between dolichocephalic and brachycephalic, or long and broad skulls. Here also we must look at general averages rather than at individuals, for there is often considerable variation within the same race, especially among the mesocephalic, or medium between the two extremes, which is generally the prevalent form where there has been much intermixture of races. But if we take widely different types there can be no doubt that the long or broad skull is a characteristic and persistent feature. The formation of the jaws and teeth affords another important test. Some races are what is called prognathous, that is, the jaws project, and the teeth are set in sockets sloping outwards, so that the lower part of the face approximates to the form of a muzzle; others are orthognathous, or have the jaws and teeth vertical. And the form of the chin seems to be wonderfully correlated with the general character and energy of the race. It is hard to say why, but as a matter of fact a weak chin generally denotes a weak, and a strong chin a strong, race or individual. Thus the chimpanzee and other apes have no chin, the negro and lower races generally have chins weak and receding. The races who, like the Iberians, have been conquered or driven from plains to mountains, have had poor chins; while their successive conquerors, of Aryan race,—Celts, Romans, Teutons, and Scandinavians,—might almost be classified by the prominence and solidity of this feature of the face.

Stature is another very persistent feature. The pygmy races of Equatorial Africa described by Stanley have remained the same since the early records of Egypt, while the pure Aryan races of the north temperate zone, Gauls, Germans, and Scandinavians, have from the first dawn of history amazed the shorter races of the south by their tall stature, huge limbs, blue eyes, and yellow hair. Here and there isolated tall races may be found where the race has become thoroughly acclimatized to a suitable environment, as among some negro tribes, and the Araucanian Indians of Patagonia; but as a rule the inferior races are short, the bulk of the civilized races of the world of intermediate stature, and the great conquering races of the north temperate zone decidedly tall.

Other tests are afforded by the shape of the eye-orbits and nasal bones, and other characters, all of which agree, in the words of Isaac Taylor in his *Origin of the Aryans*, in "exhibiting two extreme types—the African with long heads, long orbits, and flat hair; and the Mongolian with round heads, round orbits, and round hair. The European type is intermediate, the head, the orbit, and the hair being oval. In the East of Europe we find an approximation to the Asiatic type; in the South of Europe to the African."

Taking these prominent anthropological characters as tests, we find four distinct types among the earliest inhabitants of Europe, which can be traced back from historic to neolithic times. They consist of two long-headed and two short-headed races, and in each case one is tall and the other short. The dolichocephalic are recognized everywhere throughout Western Europe and on the Mediterranean basin, including North Africa, as

the oldest race, and they are thought still to survive in the original type in some of the people of Wales and Ireland and the Spanish Basques; while they doubtless form a large portion, intermixed with other races, of the blood of the existing populations of Great Britain and Ireland, of Western and Southern France, of Spain, Portugal, Sicily, Sardinia, North Africa, and other Mediterranean districts. This is known as the Iberian race, and it can be traced clearly beyond history and the knowledge of metals, into the neolithic stone age, and may possibly be descended from some of the vastly older palæolithic types such as that of Cro-Magnon. The type is everywhere a feeble one, of short stature, dolichocephalic skull, narrow oval face, orthognathic teeth, weak chin, and swarthy complexion. We have only to compare a skull of this type with one of ruder and stronger races, to understand how the latter must have survived as conquerors in the struggle for existence in the early ages of the world, before gunpowder and military discipline had placed civilization in a better position to contend with brute force and energy. Huxley sums up the latest evidence as to the distinctive types of these historic and prehistoric races of Europe as follows—

1. Blond long-heads of tall stature who appear with least admixture in Scandinavia, North Germany, and parts of the British Islands.

2. To these broad-heads of short stature in Central France, the Central European Highlands, and Piedmont. These are identified with the Ligurian race, and their most typical modern representatives are the Auvergnats and Savoyards.

3. Mongoloid brunette broad-heads of short stature

in Arctic and Eastern Europe, and Central Asia, represented by the Lapps and other tribes of Northern Russia, passing into the Mongols and Chinese of Eastern Asia.

4. Brunette long-heads of short stature—the Iberian race.

Huxley adds, "The inhabitants of the regions which lie between these five present the intermediate gradations which might be expected to result from their intermixture. The evidence at present extant is consistent with the supposition that the blond long-heads, the brunette broad-heads, and the brunette long-heads —*i. e.* the Scandinavian, Ligurian, and Iberian races— have existed in Europe very nearly in their present localities throughout historic times and very far back into prehistoric times. There is no proof of any migration of Asiatics into Europe west of the basin of the Dnieper down to the time of Attila. On the contrary, the first great movements of the European population of which there is any conclusive evidence are that series of Gaulish invasions of the East and South, which ultimately extended from North Italy to Galatia in Asia Minor." I may add, that in more recent times many of the principal movements have been from west to east, viz. of Germans absorbing Slavs, and Slavs absorbing or expelling Fins and Tartars.

The next question is, how far can we trace back the existence of the present widely different fundamental types of mankind by the light of ascertained and certain facts?

The most important of these facts is, that Egyptian monuments enable us to say, that the existing diversities

of the typical races of mankind are not of recent origin, but have existed unchanged from the first dawn of history, say 7000 years ago. The Egyptians themselves have come down from the Old Empire, through all the vicissitudes of conquests, mixtures of races, changes of religion and language, so little altered that the fellah of to-day is often the image of the Egyptians who built the pyramids. The wooden statue of an officer of Chephren who died some 6000 years ago, was such a striking portrait of the village magistrate of to-day, that the Arab workmen christened it the "Sheik-el-beled." And these old Egyptians knew from the earliest times three at least of the fundamental types of mankind: the Nahsu, or negroes to the south, who are represented on the monuments so faithfully that they might be taken as typical pictures of the modern negro; the Lebu to the west, a fair-skinned and blue-eyed white race, whose descendants remain to this day as Kabyles and Berbers, in the same localities of North Africa; and to the east various tribes of Arabs, Syrians, and other Asiatics, who are always painted of a yellowish-brown colour, and whose features may often be traced in their modern descendants.

The same may be said of the wild and domestic animals of the various countries, which are the same now, unless where subsequently imported, as when they were first known to the ancient Egyptians.

We start, therefore, with this undoubted fact, that a period of 6000 or 7000 years has been insufficient to make any perceptible change in the types of pure races, whether of the animal or of human species. And doubtless this period might be greatly extended if we had historical records of the growth of Egyptian

civilization in the times prior to Menes, for in the earliest records we find accounts of wars both with the Nahsu and the Lebu, implying large populations of those races already existing both to the south and west of the valley of the Nile.

These positive dates carry us back so far that it is of little use to investigate minutely the differences of races shown by the remains of the neolithic period. They were very marked and numerous, but we have no evidence to show that they were different from those of more recent times, or that their date can be certainly said to be much older than the oldest Egyptian records. All we can infer with certainty is, that whether the neolithic period be of longer or shorter duration, no changes have taken place in the animal fauna contemporary with man which cannot be traced to human agency or other known causes. No new species have appeared, or old ones disappeared, in the course of natural evolution, as was the case during the quaternary and preceding geological periods.

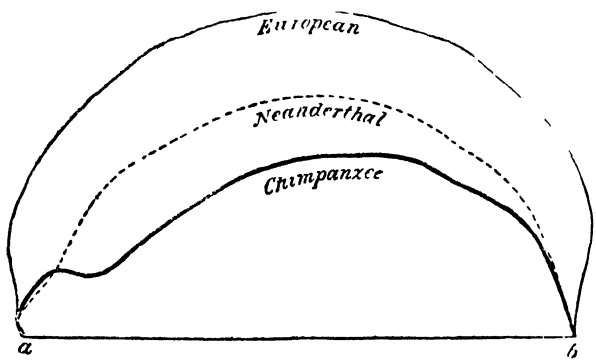
The neolithic is, however, a mere drop in the ocean of time compared with the earlier periods in which the existence of palæolithic man can be traced by his remains; and as far back as we can go we find ourselves confronted by the same fact of a diversity of races. As we have seen in the chapter on Quaternary man, Europe, where alone skulls and skeletons of the palæolithic age have been discovered, affords at least three very distinct types—that of Canstadt, of Cro-Magnon, and of Furfooz.

The Canstadt type, which includes the men of Neanderthal and Spy, and which was widely diffused, having been found as far south as Gibraltar, is apparently the oldest, and certainly the rudest and most

savage, being characterized by enormous brow-ridges, a low and receding forehead, projecting muzzle, and thick bones with powerful muscular attachments. It is very dolichocephalic, but the length is due mainly to the projection of the posterior part of the brain, the total size of which is below the average. The Cro-Magnon type, which is also very old, being contemporary with the cave-bear and mammoth, is the very opposite of that of Canstadt in many respects. The superciliary ridges are scarcely marked, the forehead is elevated, the contour of the skull good, and the volume of the brain equal or superior to that of many modern civilized races. The stature was tall, the nose straight or projecting, and the chin prominent. The only resemblance to the Canstadt type is, that they are both dolichocephalic chiefly on the posterior region, and both prognathous; but the differences are so many and profound that no anthropologist would say that one of these races could have been derived directly from the other. Still less could he say that the small round-headed race of Furfooz could have been a direct descendant of either of the two former. It is found in close vicinity with them over an extensive area, but generally in caves and deposits which, from their geological situation and associated fauna, point to a later origin. In fact, if we go by European evidence alone, we may consider it proved that the oldest known races were dolichocephalic, that the brachycephalic races came later, and that as long ago as in neolithic times, considerable intercrossing had taken place, which has gone on ever since, producing the great variety of intermediate types which now prevail over a great part of Europe.

This inference of the priority of the Canstadt type

is strengthened by its undoubted approximation to that of the most savage existing races and of the anthropoid apes. If we take the skulls and skeletons of Neanderthal and Spy, and compare them with those of modern civilized man, we find that while they are still perfectly human, they make a notable approximation towards a savage and Simian type in all the peculiarities which have been described by anthropologists as tests. The most important of all, that of the capacity and form of the brain, is best illustrated by the subjoined diagram of the skulls of the European, the Neanderthal, and the chimpanzee placed in superposition.



L'HOMME AVANT L'HISTOIRE (From Debierre)

It will be seen at a glance that the Neanderthal skull, especially in the frontal part, which is the chief seat of intelligence, is nearer to the chimpanzee than to modern man. And all the other characters correspond to this inferiority of brain. The enormous superciliary ridges; the greater length of the fore-arm; the prognathous jaws, larger canine teeth, and smaller chin; the thicker bones and stronger muscular attachments; the rounder ribs; the flatter tibia, and many

other characters described by palæontologists, all point in the same direction, and take us some considerable way towards the missing link which is to connect the human race with animal ancestors.

Still there are other considerations which must make us pause before asserting too positively that in following Quaternary man up to the Canstadt type, we are on the track of original man, and can say with confidence that by following it up still further we shall arrive at the earlier form from which man was differentiated. In the first place, Europe is the only part of the world where this Canstadt type has hitherto been found. We have abundant evidence from palæolithic stone implements that man existed pretty well over the whole earth in early Quaternary times, but have hitherto no evidence from human remains outside of Europe from which we can draw any inference as to the type of man by whom these implements were made. It is clear that in Europe the oldest races were dolichocephalic, but we have no certainty that this was the case in Asia, in so many parts of which round-headed races exclusively prevail, and have done so from the earliest times. Again, we have no evidence as to the origin of another of the most strongly marked types, that of the Negro, or of the Negrito, Negrillo, Bushmen, Australian, or other existing races who approach most nearly to the Simian type. The only evidence we have of the type of races who were certainly early Quaternary, and may very possibly go back to an older geological age than that of the men of Neanderthal and Spy, comes from the New World, from California, Brazil, and Buenos Ayres, and points to a type not so savage and Simian as that of Canstadt, but rather to that which

characterizes all the different varieties of American man, though here also we find evidence of distinct dolichocephalic and brachycephalic races from the very earliest times. Another difficulty in the way of considering the Canstadt type as a real advance towards primitive man and the missing link, arises from the totally different and very superior type of Cro-Magnon being found so near it in time, as proved by the existence in both of the cave-bear, mammoth, and other extinct animals. We can hardly suppose the Cro-Magnon type to have sprung by slow evolution in the ordinary way of direct succession, from such a very different type as that of Canstadt during such a short interval of time as a small portion of one geological period. Again, it is very perplexing to find that the only Tertiary skulls and skeletons for which we possess really strong evidence, those of Castelnedolo, instead of showing, as might be expected, a still more rude and Simian aspect than that of Canstadt, show us the Canstadt type indeed, but in a milder and more human form.

All that can be said with certainty is, that as far as authentic evidence carries us back, the ancestral animal, or missing link, has not been discovered, but that man already existed from an enormous antiquity, extending certainly through the Quaternary into the Pliocene, and probably into the Miocene period, and that at the earliest date at which his remains have been found the race was already divided, as at present, into several sharply distinguished types.

This leaves the question of man's ultimate origin completely open to speculation, and enables both monogenists and polygenists to contend for their respective views with plausible arguments, and without fear

of being refuted by facts. Polygeny, or plural origins, would at first sight seem to be the most plausible theory to account for the great diversities of human races actually existing, and which can be shown to have existed from such an immense antiquity. And this seems to have been the first guess of primitive nations, for most of them considered themselves as autochthonous, sprung from the soil, or created by their own native gods. But by degrees this theory gave place to that of monogeny, which has been for a long while almost universally accepted by the civilized world. The cause of this among Christians, Jews, and Mahometans has been the acceptance of the narratives in Genesis, first of Adam and secondly of Noah, as literally true accounts of events which actually occurred. This is an argument which has completely broken down, and no competent and dispassionate thinker any longer accepts the Hebrew Scriptures as a literal and conclusive authority, on facts of history and science which lie within the domain of human reason. The question, therefore, became once more an open one, but as the old orthodox argument for monogeny faded into oblivion, a new and more powerful one was furnished by the doctrine of Evolution as expounded by Darwin. The same argument applies to man as to the rest of the animal world, that if separate species imply separate creations, these supernatural creations must be multiplied to such an extent as to make them altogether incredible; as for instance 150 separate creations for the land shells alone of one of the group of Madeira islands; while on the other hand genera grade off into species, species into races, and races into varieties, by such insensible degrees, as to establish an irresistible inference that they have all been

developed by evolution from common ancestors. No one, I suppose, seriously doubts that this is in the main the true theory of life, though there may still be some uncertainty as to the causes and mode of operation, and of the different steps and stages of this evolution. Monogeny therefore in this general sense of evolution from some primitive mammalian type, may be accepted as the present conclusion of science for man as it has come to be for the horse, dog, and so many other animals which are his constant companions. Their evolution can in many cases be traced up, through successive steps, to some more simple and generalized type in the Eocene; and it may be permitted to believe that if the whole geological record could be traced as far back as that of the horse, in the case of man and the other quadrumana, their pedigree would be as clearly made out. This, however, does not conclude the question, for it is quite permissible to contend that in the case of man, as in that of the horse, though the primary ancestral type in the Eocene may be one, the secondary types from which existing races are more immediately derived may be more than one, and may have been evolved in different localities. Thus in the case of the dog, it is almost certain that some of the existing races have been derived from wolves, and others from jackals and foxes; but this is quite consistent with the belief that all the canine genus have been evolved from the marsupial Carnivora of the Eocene, through the Arctocyon, who was a generalized type, half dog and half bear. In fact, we have the authority of Darwin himself, as quoted in the beginning of this chapter, for saying that this would be quite consistent with his view of the origin of species.

Now the controversy between monogenists and polygenists has turned mainly on these comparatively recent developments of secondary types. It has been fought to a great extent before the immense antiquity of the human race had been established, and it had become almost certain that its original starting-point must be sought at least as far back as in the Eocene period.

The main argument for monogeny has been that the different races of mankind are fertile among themselves. This is doubtless true to a great extent, and shows that these races have not diverged very far from their ancestral type. But the researches of Darwin and his successors have thrown a good deal of new light on the question of hybridity. Species can no longer be looked upon as separated from one another and from races by hard-and-fast lines, on one side of which is absolute sterility and on the other absolute fertility; but rather as blending into one another by insensible gradations from free intercrossing to sterility, according as the differences from the original type became more pronounced and more fixed by heredity.

To revert to the case of dogs, we find free interbreeding between races descended from different secondary ancestors, such as wolves, jackals, and foxes, though freer, I believe, and more permanent as the races are closer; but as the specific differences become more marked, the fertility does not abruptly cease, but rapidly diminishes. Thus Buffon's experiment shows that a hybrid cross between the dog and the wolf may be produced and perpetuated for at least three generations, and the leporine cross between the hare and rabbit is almost an established race. On the other hand, we see

in the mule the last expiring trace of fertility in a cross between species which have diverged so far in different directions as the horse and the ass.

The human race repeats this lesson of the animal world, and shows a graduated scale of fertility and permanence in crosses, between different types according as they are closely or distantly related. Thus if we take the two extremes, the blond white of North temperate Europe and the Negro of Equatorial Africa, the disposition to union is almost replaced by repugnance which is only overcome under special circumstances, such as slavery, and an absence of women of their own race; while the offspring, the mulatto, is everywhere a feeble folk, with deficient vitality, diminished fertility, and prone to die out, or revert to one or other of the original types. But where the types are not so extremely divergent the fertility of the cross increases, as between the brunet white of Southern Europe and the Arab or Moor with the Negro, and of the European with the native Indian of America.

Perhaps the strongest argument for polgyeny is that derived from the different constitutions of different races as regards susceptibility to climatic and other influences.

At present, and as far back as history or tradition enables us to trace, mankind has, as in the case of other animals, been very much restricted to definite geological provinces. Thus in the extreme case of the fair white and the Negro, the former cannot live and propagate its type south of the parallel of 40°, or the latter north of it. This argument was no doubt pushed too far by Agassiz, who supposed the whole world to be divided into a number of limited districts, in each of which a separate creation both of men, animals, and plants had

taken place suited to the environment. This is clearly inconsistent with facts, but there is still some force in it when stripped of exaggeration, and confined to the three or four leading types which are markedly different. Especially it bears on the argument, on which monogenists mainly rely, of the peopling of the earth by migration from one common centre. No doubt migration has played a very great part in the diffusion of all animal and vegetable species, and their zoological provinces are determined very much by the existence of insurmountable barriers in early geological times. No doubt also man is better organized for migration than most other terrestrial animals, and history and tradition show that in comparatively recent times he has reached the remotest islands of the Pacific by perfectly natural means. But this does not meet the difficulty of accounting, if we place the origin of man from a single pair anywhere in the northern hemisphere, for his presence in palæolithic times in South Africa and South America. How did he get across the equatorial zone, in which only a tropical fauna, including the tropical Negro, can now live and flourish? Or *vice versâ*, if the original Adam and Eve were black, and the Garden of Eden situated in the tropics, how did their descendants migrate northwards, and live on the skirts of the ice-caps of the glacial period? Or how did the yellow race, so tolerant of heat and cold, and of insanitary conditions, and so different in physical and moral characters from either the whites or the blacks, either originate from them, or give rise to them? The nearest congeners of man, the quadrumana, monkeys and apes, are all catarrhine in the Old World, and all platyrhine in America. Why, if all are descended from the same

pair of ancestors, and have spread from the same spot by migration? We can only reconcile the fact that it is so with the facts of evolution, by throwing the common starting-point or points of the lines of development much further back into the Eocene, or even further; and if this be true for monkeys, why not for man?

One point seems quite clear, that monogeny is only possible by extending the date of human origins far back into the Tertiaries. On any short-dated theories of man's appearance upon earth—as for instance that of Prestwich, that palæolithic man probably only existed for some 20,000 or 25,000 years before the neolithic period—some theory like that of Agassiz, of separate creations in separate zoological provinces, follows inevitably. If the immense time from the Miocene to the Recent period has been insufficient to differentiate the Hylobates and Dryopithecus very materially from the existing anthropoid apes, a period such as 40,000 or 50,000 years would have gone a very little way in deriving the Negro from the white, or the white from the Negro. To deny the extension of human origins into the Tertiaries is practically to deny Darwin's theory of evolution altogether, or to contend that man is an exception to the laws by which the rest of the animal creation have come into existence in the course of evolution.

The question of the locality in which the human species first originated depends also very materially on the date assigned for human origins. The various speculations which have been hazarded on this subject are almost all based on the supposition that this origin took place in comparatively recent times when geographical and other causes were not materially different

pairs who were miraculously preserved in the ark in Armenia. This of course never had any other foundation than the belief in the inspired authority of the Bible, and when it came to be established that this, as regards its scientific and prehistoric speculations, was irreconcilable with the most certain facts of science, the orthodox account of the Creation fell with it. The theory of Asiatic origin was, however, taken up on other grounds, and still lingers in some quarters, mainly among philologists, who, headed by Max Müller, thought they had discovered in Sanscrit and Zend the nearest approach to a common Aryan language. Tracing backwards the lines of migration of these people, the Sanscrit-speaking Hindoos and the Zend-speaking Iranians, they found them intersecting somewhere about the Upper Oxus, and jumped at the conclusion that the great elevated plateau of Pamir, the "roof of the world," had been the birthplace of man, as it was of so many of the great rivers which flowed from it to the north, south, east, and west. This theory, however, has pretty well broken down, since it has been shown that other branches of the Aryan languages, specially the Lithuanian, contain more archaic elements than either Sanscrit or Zend; that language is often no conclusive test of race; that Aryan migrations have quite as often or oftener been from west to east than from east to west; and that all history, prehistoric traditions, and linguistic palæontology point to the principal Aryan races having been located in Northern and Central Europe and in Central and

Southern Russia very much as we find them at the present day.

The question of the locality of human origins is now being debated on very different grounds, and although it is not denied that Max Müller's "somewhere in Asia" may turn out to be a correct guess, it is denied that there is at present a particle of evidence to support it. For really the whole question is very much one of guess-work. The immense antiquity which on the lowest possible estimate can be assigned for the proved existence of man, carries us back to a period when geological, geographical, and climatic conditions were so entirely different, that all inferences from those of the present period are useless. For instance, certainly half the Himalayas, and probably the whole, were under the sea; the Pamir and Central Asia, instead of being the roof of the world, may have been fathoms deep under a great ocean; Greenland and Spitzbergen were types of the north temperate climate best suited for the highest races of man.

In like manner language ceases to be an available factor in any attempt to trace human origins to their source. It is doubtless true that at the present day different fundamental types of language distinguish the different typical races of the human family. Thus the monosyllabic type, consisting of roots only without grammar, characterizes the Chinese and its allied races of the extreme east of Asia; the agglutinative, in which different shades of meaning were attached to roots, by definite particles glued on to them as it were by prefixes or suffixes, is the type adopted by most of the oldest and most numerous races of mankind in the Old World as their means of conveying ideas by sound; while in the

New World the common type of an immense variety of languages is polysynthetic, or an attempt to splutter out as it were a whole sentence in a single immensely long word made up of fragments of separate roots and particles, a type which in the Old World is confined to the Euskarian of the Spanish Basque. And at the head of all as refined instruments for the conveyance of thought, the two inflectional languages, the Aryan and Semitic, by which, though in each case by a totally different system, roots acquire their different shades of meaning by particles, no longer mechanically glued on to them, but melted down as it were with the roots, and incorporated into new words according to definite grammatical rules.

But this carries us back a very little way. Judging by philology alone, the Chinese, whose annals go back only to about 2500 B.C., would be an older race than the Egyptians or Accadians, whose languages can be traced at least 2000 years further back. And if we go back into prehistoric and geological times we are absolutely ignorant whether the neolithic and palæolithic races spoke these languages, or indeed spoke at all. Some palæontologists have fancied that there was evidence for some of the older palæolithic races being speechless, and christened them "Homo alalus," but this is based on the solitary fact that a single human jaw, that of Naulette, is wanting in the genial tubercle, absent also in anthropoid apes, to which one of the muscles of the tongue is attached. But apart from this being a single instance, some of the best anatomists deny that this genial tubercle is really essential to speech, which the latest physiological researches show to be dependent on the development of a small tract in the third frontal

convolution of the left side of the brain, any injury to which causes aphasia, or loss of the power of speech, though its physical organs of the larynx remain unimpaired.

It is probable, however, that from the very first man had a certain faculty, like other animals, of expressing meaning by sounds and gestures, and the researches of Romanes, and quite recently those of Professor Garner on the language of monkeys and apes, make this almost certain. But at what particular moment in the course of the evolution of man this faculty ripened into what may be properly called language is a matter of the purest conjecture. It may have been in the Tertiary, the Quaternary, or not until the Recent period.

All we can say is, that when we first catch sight of languages, they are already developed into the present distinct types, arguing, as in the case of physical types, either for distinct miraculous creations, or for such an immensely remote ancestry as to give time for the fixation of separate secondary types before the formation of language. Thus, if we confine ourselves to the most perfect and advanced, and apparently therefore most modern form of language of the foremost races of the world, the inflectional, we find two types, the Semitic and Aryan, constructed on such totally different principles that it is impossible for one to be derived from the other, or both to be descended from a common parent. The Semitic device of expressing shades of meaning by internal flexion, that is, by ringing the changes of vowels between three consonants, making every word triliteral, is fundamentally different from the Aryan device for attaining the same object by fusing roots and added particles into one new word in which equal value is

attached to vowels and consonants. We can partly see how the latter may have been developed from the agglutinative, but not how the stiff and cramped Semitic can have been derived either from that or from the far more perfect and flexible type of the Aryan languages. It has far more the appearance of being an artificial invention implying a considerable advance of intellectual attainment, and therefore of comparatively recent date. In any case we may safely accept the conclusion that there is nothing in language which assists us in tracing back human origins into geological times, or indeed much further than the commencement of history.

We are reduced, therefore, to geological evidence, and this gives us nothing better than mere probabilities, or rather guesses, as to the original centre or centres of human existence upon the earth. The inference most generally drawn is in favour of the locality where the earliest traces of human remains have been found, and where the existence of the nearest allied species, the apes and monkeys, can be carried back furthest. This locality is undoubtedly Eur-Africa, that is the continent which existed when Europe and Africa were united by one or more land connections. And in this locality the preference must be assigned to Western Europe and to Africa north of the Atlas; in fact to the portion of this ancient continent facing the Atlantic, and Western Mediterranean, then an inland sea. Thus far Central and South-Western France, Spain, Portugal, Italy, and Algeria have afforded the oldest unequivocal proofs of the existence of man, and of the co-existence of anthropoid apes. Accordingly Darwin inclined to the view that North Africa was probably the scene of man's first appearance, and the latest authority on the subject,

Brinton, in his *Races and Peoples*, gives at length reasons for assigning this to somewhere in Eur-Africa.

But it must be remembered that this inference rests entirely on the fact that the district in question has been more or less explored, while the rest of the earth can hardly be said to have been explored at all, for anything prior to those Quaternary palæolithic implements which prove the existence of man already spread over nearly the whole of the habitable globe. Nor would the origin of the white race in Eur-Africa, even if it were established, help us to account for the existence of the Negro race on the other side of the Atlas and the Sahara, or of the yellow race in Eastern Asia, or of the American race. Indeed America may fairly compete with Eur-Africa for the honour of being the original seat of the human race, for the geological conditions and the animal fauna of the auriferous gravels of California point to the Calaveras skull and other numerous human remains and implements found in them being of Tertiary age, and quite possibly as old or even older than anything which has been found in Europe.[1] The wide diffusion of the same peculiar racial type over the whole continent of America down to Cape Horn, and its capability of existing under such different conditions of climate and environment, also point to its being an extremely ancient and primitive race, and the generic distinction between the apes and monkeys of the Old and New Worlds is a remarkable circumstance which is

[1] If Ameghino's discoveries of an anthropoid type in the Lower Eocene of Patagonia should be confirmed, it would incline the balance of evidence in favour of South America, or rather of the temperate zone of the southern hemisphere, as the most probable scene of the evolution of the quadrumana, including the human variety, from ancestral forms allied to the marsupials of the Secondary period.

not accounted for by any monogenist theory of the origin of the order of quadrumana.

It is to be observed also, that although all American races have a certain peculiar type in common, still there are differences which show that secondary types must have existed from a very early period, intercrossing between which must have given rise to numerous varieties. Thus, according to Morton, dolichocephaly was most prevalent among the tribes who inhabited the eastern side of the continent facing the Atlantic both in North and South America, while brachycephaly prevailed on the western side facing the Pacific. Great differences of colour and stature are also found often among contiguous tribes, and irrespective of latitude. On the whole, however, the American type approximates in many important particulars, such as colour, hair, and anatomical structure, more nearly to the yellow races of Eastern Asia than to any other, though it is a fairly open question which of the two may have been the earliest to appear in the immensely remote ages of the Tertiary period.

Another theory is that man probably originated in some continent of the Arctic Circle, where, as we know from fossil remains of the Miocene and Eocene periods, Greenland and Spitzbergen enjoyed a mild climate and forest vegetation, admirably adapted for the evolution of a temperate mammalian fauna, including the human species. This is a very plausible theory, but at present it is a mere theory, like that of a lost Atlantis, or submerged continents in the Pacific or Indian Oceans. The only thing approaching to evidence to support it is, as far as I am aware, that Sir Joseph Hooker and other

eminent botanists think that the diffusion of the forest trees and other flora of America can be traced along lines radiating from the extreme north, along the mountain chains and elevated plateaux which form the backbone of the continent from Alaska to Tierra del Fuego. There seems a probability also that the evolution of the human race, which turns mainly on the development of the erect stature, which is the basis of the larger brain and other anatomical differences between man and the other quadrumana, must have taken place not in tropical regions of dense forests, where climbing would have had a decided advantage over walking in the struggle for life, but rather in some region of wide plains and open forests, where it would be an advantage to see enemies or prey at a distance, or over tall grass or ferns.

It must be admitted, however, that in our present state of knowledge all these theories of the place, time, and manner of human origins are speculations rather than science. We have proof positive that man was already spread over most parts of the world in the Quaternary period, and the irresistible inference that he must have existed long before, is confirmed by conclusive evidence as to the finding of his remains and implements in the earliest Quaternary and latest Pliocene periods, and very strong evidence for carrying them back into the Miocene. Anthropoid apes, which are so similar to man in physical structure, and in their ways are as highly specialized from any more general and primitive ancestral form as man himself, undoubtedly did exist in the Miocene period, and have come down to us with comparatively little change. It puzzles the best

anatomists to find any clear distinction between the present Hylobates and the Hylobates of the Middle Miocene, while that between the white man and the Negro is clear and unmistakable. Why then should "Homo" not have existed as soon as "Hylobates," and why should any prepossession in favour of man's recent creation, based mainly on exploded beliefs in the scientific value of the myths and guesses of the earliest civilized nations of Asia, stand in the way of accepting the enormous and rapidly increasing accumulation of evidence, tracing back the evolution of the mammal man to the same course of development as other mammals?

As regards the course of this evolution, all we know with any certainty is, that as far as we can trace it back, the human species was already differentiated into distinct races, and that in all probability the present fundamental types were already formed. When and where the primitive stock or stocks may have originated, and the secondary ancestral races may have branched off from it, is at present unknown. All we can say is, that the more we examine the evidence, the more it points to extreme antiquity even for these secondary stocks, and makes it probable that we must go, as in the case of the horse and other existing mammals, at least as far back as into the Eocene to look for the primitive generalized type or types from which these secondary lines of quadrumanous and human evolution have taken their origin. As regards the secondary types themselves, there is no certainty as to the place or time of their origin, but the balance of evidence points rather in favour of polygeny, that is, of their having followed slightly different lines of evolution

from the common starting-point, under different circumstances of environment and in different localities; so that when man, as we know him, first appeared, he was already differentiated into races distinct though not very far apart.

In conclusion, I may remark that these hotly-contested questions as to monogeny or polygeny, and as to the place of man's first appearance on earth, lose most of their importance when it is realized that human origins must be pushed back at least as far as the Miocene, and probably into the Eocene period. As long as it was held that no traces of man's existence could be found, as Cuvier held, until the Recent period; or even as some English geologists still contend, until the post-glacial, or at any rate the glacial or Quaternary periods, it was evident that the facts could only be explained by the theory of a series of supernatural interferences. Agassiz's theory, or some modification of it, must be adopted, of numerous special creations of life at special centres, as of the Esquimaux and polar bear in Arctic regions, the Negro and gorilla in the tropics, and so forth. This theory has been completely given up as regards animals, in favour of the Darwinian theory of evolution by natural causes, and no one now believes in a multiplicity of miracles to account for the existence of animal species. Is man alone an exception to this universal law, or is he like the rest of creation, a product of what Darwinians call "Evolution," and enlightened theologians "the original impress"?

The existing species of anthropoid apes, the orang, the chimpanzee, and the gorilla, do not differ more

widely from one another than do many of the extreme types of the human species. In colour, hair, volume of brain, form of skull, stature, and a hundred other peculiarities, the Negro and the European stand further apart than those anthropoids do from one another, and no naturalist from Mars or Saturn, investigating the human family for the first time, and free from prepossession, would hesitate to class the white, black, yellow, red, and perhaps five or six other varieties, as different species.

In the case of these anthropoid apes no one supposes that they were miraculously created in recent times. On the contrary, we find their type already fully developed in the Miocene, and we infer, that like the horse, camel, and so many other existing mammals, their origin may be traced step by step backwards to some lower and generalized type in the Eocene. Who can doubt that physical man, an animal constructed almost exactly on the same anatomical ground-plan as the anthropoids, came into existence by a similar process? The only answer would be, if it could be proved, that his existence on earth had been so short as to make it impossible that so many and so great specific variations as now exist, and some of which have been proved to have existed early in the Quaternary period, could have been developed by natural means and by the slow processes of evolution. But this is just where the evidence fails, and is breaking down more and more every year and with every fresh discovery.

Recent man has given place to Quaternary man; post-glacial to inter-glacial and pre-glacial; and now the evidence for the existence of man or of some

ancestral form of man, in the Tertiary period, has accumulated to such an extent that there are few competent anthropologists who any longer deny it.

But with this extension of time the existence of man, instead of being an anomaly and a discord, falls in with the sublime harmony of the universe, of which it is the dominant note.

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a young gentleman and a young lady on stilts, and Mr Grinder himself, who used his natural legs for pedestrian purposes, and carried at his back a drum The public costume of the young people was of the Highland kind, but the night being damp and cold, the young gentleman wore over his kilt a man's pea-



jacket reaching to his ankles and a glazed hat, the young lady too was muffled in an old cloth pelisse, and had a handkerchief tied about her head Their Scotch bonnets ornamented with plumes of jet-black feathers Mr Grinder carried on his instrument

"Bound for the races, I see," said Mr Grinder, coming up

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Better! a rare strong, hearty, healthy walk—four statute miles an hour—preferable to that rumbling, tumbling, jolting, shaking, scraping, creaking, villanous old gig? Why, the two things will not admit of comparison. It is an insult to the walk, to set them side by side. Where is an instance of a gig having ever circulated a man's blood, unless when, putting him in danger of his neck, it awakened in his veins and in his ears, and all along his spine, a tingling heat, much more peculiar than agreeable? When did a gig ever sharpen anybody's wits and energies, unless it was when the horse bolted, and, crashing madly down a steep hill with a stone wall at the bottom, his desperate circumstances suggested to the only gentleman left inside, some novel and unheard-of mode of dropping out behind? Better than the gig!

The air was cold, Tom; so it was, there was no denying it; but would it have been more genial in the gig? The blacksmith's fire burned very bright, and leaped up high, as though it wanted men to warm; but would it have been less tempting, looked at from the clammy cushions of a gig? The wind blew keenly, nipping the features of the hardy wight who fought his way along; blinding him with his own hair if he had enough of it, and wintry dust if he hadn't; stopping his breath as though he had been soused in a cold bath; tearing aside his wrappings-up, and whistling in the very marrow of his bones; but it would have done all this a hundred times more fiercely to a man in a gig, wouldn't it? A fig for gigs!

Better than the gig! When were travellers by wheels and hoofs seen with such red-hot cheeks as those? when were they so good-humouredly and merrily bloused? when did their laughter ring upon the air, as they turned them round, what time the stronger gusts came sweeping up; and, facing round again as they passed by, dashed on, in such a glow of ruddy health as nothing could keep pace with, but the high spirits it engendered? Better than the gig! Why, here *is* a man in a gig coming the same way now. Look at him as he passes his whip into his left hand, chafes his numbed right fingers on his granite leg, and beats those marble toes of his upon the foot-board. Ha, ha, ha! Who would exchange this rapid hurry of the blood for yonder stagnant misery, though its pace were twenty miles for one?

Better than the gig! No man in a gig could have such

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"Who? why, you," returned his master. "What do you mean by making those horrible faces over your breakfast?"

"Faces are matters of taste, sir," said Mr. Tappertit, rather discomfited; not the less so because he saw the locksmith's daughter smiling.

"Sim," rejoined Gabriel, laughing heartily. "Don't be a fool, for I'd rather see you in your senses. These young fellows," he added, turning to his daughter,



"are always committing some folly or another. There was a quarrel between Joe Willet and old John last night—though I can't say Joe was much in fault either. He'll be missing one of these mornings, and will have gone away upon some wild-goose errand, seeking his fortune.—Why, what's the matter, Doll? *You* are making faces now. The girls are as bad as the boys every bit!"

"It's the tea," said Dolly, turning alternately very red and very white, which is no doubt the effect of a slight scald—"so very hot."

Mr. Tappertit looked immensely big at a quartern loaf on the table, and breathed hard.

"Is that all?" returned the locksmith. "Put some more milk in it.—Yes, I am sorry for Joe, because he is a likely young fellow, and gains upon one every time one sees him. But he'll start off, you'll find. Indeed he told me as much himself!"

"Indeed!" cried Dolly in a faint voice. "In—deed!"

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some mangy bird he had caught, and was plucking before eating raw, Jo, the very, very tough subject Mr. Chadband is to improve.

Mrs. Snagsby screws a watchful glance on Jo, as he is brought into the little drawing-room by Guster. He looks at Mr. Snagsby the moment he comes in. Aha! Why does he look at Mr. Snagsby? Mr. Snagsby looks at him. Why should he do that, but that Mrs. Snagsby sees it all? Why else should that look pass between them, why else should Mr. Snagsby be confused, and cough a signal cough behind his hand? It is as clear as crystal that Mr. Snagsby is that boy's father.

"Peace, my friends," says Chadband, rising and wiping the oily exudations from his reverend visage. "Peace be with us! My friends, why with us? Because," with his fat smile, "it cannot be against us, because it must be for us; because it is not hardening, because it is softening; because it does not make war like the hawk, but comes home untoe us like the dove. Therefore, my friends, peace be with us! My human boy, come forward!"

Stretching forth his flabby paw, Mr. Chadband lays the same on Jo's arm, and considers where to station him. Jo, very doubtful of his reverend friend's intentions, and not at all clear but that something practical and painful is going to be done to him, mutters, "You let me alone. I never said nothink to you. You let me alone."

"No, my young friend," says Chadband, smoothly, "I will not let you alone. And why? Because I am a harvest-labourer, because I am a toiler and a moiler, because you are delivered over untoe me, and are become as a precious instrument in my hands. My friends, may I so employ this instrument as to use it toe your advantage, toe your profit, toe your gain, toe your welfare, toe your enrichment! My young friend, sit upon this stool."

Jo, apparently possessed by an impression that the reverend gentleman wants to cut his hair, shields his head with both arms, and is got into the required position with great difficulty, and every possible manifestation of reluctance.

When he is at last adjusted like a lay-figure, Mr. Chadband, retiring behind the table, holds up his bear's-paw, and says, "My friends!" This is the signal for a general settlement of the audience. The 'prentices giggle internally, and nudge each other. Guster falls into a staring and vacant state, compounded of a stunned admiration of Mr. Chadband and pity for the friendless outcast whose condition touches her nearly. Mrs. Snagsby silently lays trains of gunpowder. Mrs. Chadband composes herself grimly by the fire, and warms her knees: finding that sensation favourable to the reception of eloquence.

It happens that Mr. Chadband has a pulpit habit of fixing some member of his congregation with his eye, and fatly arguing his points with that particular person; who is understood to be expected to be moved to an occasional grunt, groan, gasp, or other audible expression of inward working; which expression of inward working, being echoed by some elderly lady in the next pew, and so communicated, like a game of forfeits, through a circle of the more fermentable sinners present, serves the purpose of parliamentary cheering, and gets Mr. Chadband's steam up. From mere force of habit, Mr. Chadband in saying "My friends!" has rested his eye on Mr. Snagsby; and proceeds to make that ill-starred stationer, already sufficiently confused, the immediate recipient of his discourse.

"We have here among us, my friends," says Chadband, "a Gentile and a Heathen, a dweller in the tents of Tom-all-Alone's and a mover-on upon the surface of the earth. We have here among us, my friends," and Mr. Chadband, untwisting the point with his dirty thumb-nail, bestows an oily smile on Mr. Snagsby, signifying that he will throw him an argumentative back-fall presently

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"Hurrah!" gasped Mr. Winkle, faintly.

"Hurrah!" echoed Mr. Pickwick, taking off his hat and dashing it on the floor, and insanely casting his spectacles into the middle of the kitchen.—At this humorous feat he laughed outright.

"Let's—have—'nother—bottle," cried Mr. Winkle, commencing in a very loud key, and ending in a very faint one. His head dropped upon his breast; and, muttering his invincible determination not to go to his bed, and a sanguinary regret that he had not "done for old Tupman" in the morning, he fell fast asleep; in which condition he was borne to his apartment by two young giants under the personal superintendence of the fat boy, to whose protecting care Mr. Snodgrass shortly afterwards confided his own person. Mr. Pickwick accepted the proffered arm of Mr. Tupman and quietly disappeared, smiling more than ever; and Mr. Wardle, after taking as affectionate a leave of the whole family as if he were ordered for immediate execution, consigned to Mr. Trundle the honour of conveying him up-stairs, and retired, with a very futile attempt to look impressively solemn and dignified.

"What a shocking scene!" said the spinster aunt.

"Dis—gusting!" ejaculated both the young ladies.

"Dreadful—dreadful!" said Jingle, looking very grave: he was about a bottle and a half ahead of any of his companions. "Horrid spectacle—very!"

"What a nice man!" whispered the spinster aunt to Mr. Tupman.

"Good-looking, too!" whispered Emily Wardle.

"Oh, decidedly," observed the spinster aunt.

Mr. Tupman thought of the widow at Rochester· and his mind was troubled. The succeeding ha'f-hour's conversation was not of a nature to calm his perturbed spirit. The new visitor was very talkative, and the number of his anecdotes was only to be exceeded by the extent of his politeness. Mr. Tupman felt that as Jingle's popularity increased, he (Tupman) retired further into the shade. His laughter was forced—his merriment feigned; and when at last he laid his aching temples between the sheets, he thought, with horrid delight, on the satisfaction it would afford him to have Jingle's head at that moment between the feather-bed and the mattress.

The indefatigable stranger rose betimes next morning, and,

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The eleven boots is to be called at half-past eight and the shoe at nine. Who's number twenty-two, that's to put all the others out? No, no; reg'lar rotation, as Jack Ketch said, wen he tied the men up. Sorry to keep you a waitin', sir, but I'll attend to you directly."

Saying which, the man in the white hat set to work upon a top-boot with increased assiduity.

There was another loud ring; and the bustling old landlady of the White Hart made her appearance in the opposite gallery.

"Sam," cried the landlady, "where's that lazy, idle—why, Sam—oh, there you are; why don't you answer?"

"Wouldn't be gen-teel to answer, 'till you'd done talking," replied Sam, gruffly.

"Here, clean them shoes for number seventeen directly, and take 'em to private sitting-room, number five, first floor."

The landlady flung a pair of lady's shoes into the yard, and bustled away.

"Number 5," said Sam, as he picked up the shoes, and taking a piece of chalk from his pocket, made a memorandum of their destination on the soles—"Lady's shoes and private sittin' room! I suppose *she* didn't come in the waggin."

"She came in early this morning," cried the girl, who was still leaning over the railing of the gallery, "with a gentleman in a hackney-coach, and it's him as wants his boots, and you'd better do 'em, that's all about it."

"Vy didn't you say so before," said Sam, with great indignation, sir gling out the boots in question from the heap before him. "For all I know'd he vas one o' the regular three-pennies. Private room! and a lady too! If he's anything of a gen'lm'n, he's vorth a shillin' a day, let alone the arrands."

Stimulated by this inspiring reflection, Mr. Samuel brushed away with such hearty good-will, that in a few minutes the boots and shoes, with a polish which would have struck envy to the soul of the amiable Mr. Warren (for they used Day and Martin at the White Hart), had arrived at the door of number five.

"Come in," said a man's voice, in reply to Sam's rap at the door.

Sam made his best bow, and stepped into the presence of a lady and gentleman seated at breakfast. Having officiously deposited the gentleman's boots right and left at his feet, and the lady's shoes right and left at hers, he backed towards the door.

"Boots," said the gentleman.

"Sir," said Sam, closing the door, and keeping his hand on the knob of the lock.

"Do you know—what's-a-name—Doctors' Commons?"

"Yes, sir."

"Where is it?"

"Paul's Church-yard, sir; low archway on the carriage side, book-

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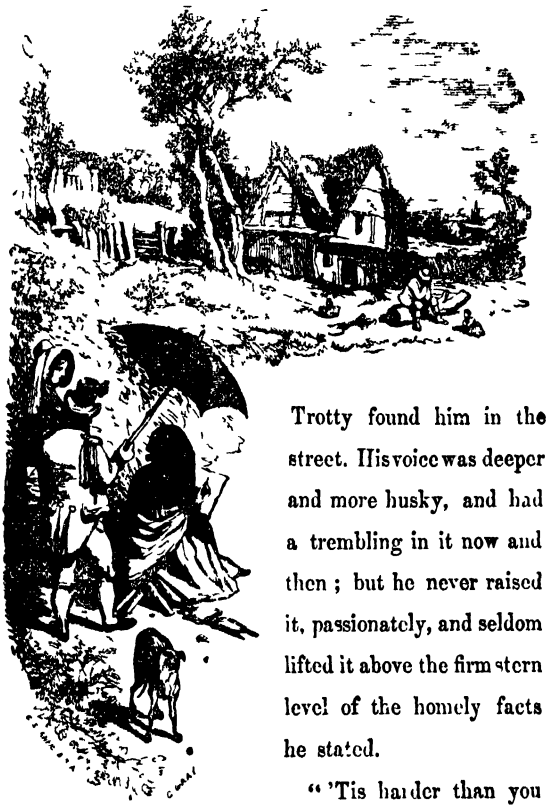
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Trotty found him in the street. His voice was deeper and more husky, and had a trembling in it now and then; but he never raised it, passionately, and seldom lifted it above the firm stern level of the homely facts he stated.

"'Tis harder than you think for, gentlefolks, to grow up decent: commonly decent: in such a place. That I growed up a man and

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The Editor will here admit that, among all the wondrous provinces of Teufelsdröckh's spiritual world, there is none he walks in with such astonishment, hesitation, and even pain, as in the Political. How, with our English love of *Ministry* and *Opposition*, and that *generous conflict of Parties, mind warming itself against* mind in their mutual wrestle for the Public Good, by which wrestle, indeed, is our invaluable Constitution kept warm and alive; how shall we domesticate ourselves *in this spectral Necropolis*, or rather City both of the Dead and of the Unborn, where the Present seems little other than an inconsiderable Film dividing the Past and the Future? In those dim longdrawn expanses, all is so immeasurable; much so disastrous, ghastly; your very radiances and straggling light-beams have a supernatural character. And then with such an indifference, such a prophetic peacefulness (accounting the inevitably coming as already here, to him all one whether it be distant by centuries or only by days), does he sit;—and live, you would say, rather in any other age than in his own! It is our painful duty to announce, or repeat, that, looking into this man, we discern a deep, silent, slow-burning, inextinguishable Radicalism, such as fills us with shuddering admiration.

Thus, for example, he appears to make little even of the Elective Franchise; at least so we interpret the following: 'Satisfy your-'selves,' he says, 'by universal, indubitable experiment, even as ye 'are now doing or will do, whether FREEDOM, heavenborn and 'leading heavenward, and so vitally essential for us all, cannot 'peradventure be mechanically hatched and brought to light in 'that same Ballot-Box of yours; or at worst, in some other dis-'coverable or devisable Box, Edifice, or Steam-mechanism. It 'were a mighty convenience; and beyond all feats of manufacture 'witnessed hitherto.' Is Teufelsdröckh acquainted with the British Constitution, even slightly?—He says, under another figure: 'But 'after all, were the problem, as indeed it now everywhere is, To 'rebuild your old House from the top downwards (since you must 'live in it the while), what better, what other, than the Represent-'ative Machine will serve your turn? Meanwhile, however, mock 'me not with the name of Free, "when you have but knit-up my 'chains into ornamental festoons."'—Or what will any member of the Peace Society make of such an assertion as this: 'The lower 'people everywhere desire War. Not so unwisely; there is then a 'demand for lower people—to be shot!'

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O reader, I say not who are Belial's elect. This poor amphibious Pope too gives loaves to the Poor; has in him more good latent than he is himself aware of. His poor Jesuits, in the late Italian Cholera, were, with a few German Doctors, the only creatures whom dastard terror had not driven mad: they descended fearless into all gulfs and bedlams; watched over the pillow of the dying, with help, with counsel and hope; shone as luminous fixed stars, when all else had gone out in chaotic night: honour to them! This poor Pope,—who knows what good is in him? In a Time otherwise too prone to forget, he keeps up the mournfulest ghastly memorial of the Highest, Blessedest, which once was; which, in new fit forms, will again partly have to be. Is he not as a perpetual death's-head and cross-bones, with their *Resurgam*, on the grave of a Universal Heroism,—grave of a Christianity? Such Noblenesses, purchased by the world's best heart's-blood, must not be lost; we cannot afford to lose them, in what confusions soever. To all of us the day will come, to a few of us it has already come, when no mortal, with his heart yearning for a 'Divine Humility,' or other 'Highest form of Valour,' will need to look for it in death's-heads, but will see it round him in here and there a beautiful living head.

Besides, there is in this poor Pope, and his practice of the Scenic Theory of Worship, a frankness which I rather honour. Not half and half, but with undivided heart does *he* set about worshipping by stage-machinery; as if there were now, and could again be, in Nature no other. He will ask you, What other? Under this my Gregorian Chant, and beautiful wax-light Phantasmagory, kindly hidden from you is an Abyss, of Black Doubt, Scepticism, nay Sansculottic Jacobinism; an Orcus that has no bottom. Think of that. 'Groby Pool *is* thatched with pancakes,'—as Jeannie

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This excellent Captain was too old a Commander to complain of anything; indeed he struggled visibly the other way, to find in his own mind that all here was best; but I could sufficiently discern that, in his natural instincts, if not mounting up to the region of his thoughts, there was a continual protest going on against much of it; that nature and all his inarticulate persuasion (however much forbidden to articulate itself) taught him the futility and unfeasibility of the system followed here. The Visiting Magistrates, he gently regretted rather than complained, had lately taken his treadwheel from him, men were just now pulling it down; and how he was henceforth to enforce discipline on these bad subjects, was much a difficulty with him. "They cared for "nothing but the treadwheel, and for having their rations cut "short:" of the two sole penalties, hard work and occasional hunger, there remained now only one, and that by no means the better one, as he thought. The 'sympathy' of visitors, too, their 'pity' for his interesting scoundrel-subjects, though he tried to like it, was evidently no joy to this practical mind. Pity, yes:—but pity for the scoundrel-species? For those who will not have pity on themselves, and will force the Universe and the Laws of Nature to have no 'pity' on them? Meseems I could discover fitter objects of pity!

In fact it was too clear, this excellent man had got a field for his faculties which, in several respects, was by no means the suitable one. To drill Twelve-hundred scoundrels by 'the method of kindness,' and of abolishing your very treadwheel,—how could any commander rejoice to have such a work cut out for him? You had but to look in the faces of these Twelve-hundred, and despair, for most part, of ever 'commanding' them at all. Miserable distorted blockheads, the generality: ape-faces, imp-faces, angry dog-faces, heavy sullen ox-faces; degraded underfoot perverse creatures, sons of *in*docility, greedy mutinous darkness, and in one word, of STUPIDITY, which is the general mother of such. Stupidity intellectual and stupidity moral (for the one always means the other, as you will, with surprise or not, discover if you look) had born this progeny: base-natured beings, on whom in the course of a maleficent subterranean life of London Scoundrelism, the Genius of Darkness (called Satan, Devil, and other names) had now visibly impressed his seal, and had marked them out as soldiers of Chaos and of him,—appointed to serve in *his* Regiments, First of the line, Second ditto, and so on in their order. Him, you could perceive, they would serve; but not easily another than him. These were the subjects whom our brave Captain and Prison-Governor was appointed to command, and re-

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Here was to be hoped the picturesque in scenery, which he much affected; here the new and true in speculation, which he inwardly longed for and wanted greatly more; at all events, here as readily as elsewhere might a temporary household be struck up, under interesting circumstances.—I conclude he went across in the Spring of 1833; perhaps directly after *Arthur Coningsby* had got through the press. This Novel, which, as we have said, was begun two or three years ago, probably on his cessation from the *Athenæum*, and was mainly finished, I think, before the removal to St. Vincent, had by this time fallen as good as obsolete to his own mind; and its destination now, whether to the press or to the fire, was in some sort a matter at once of difficulty and of insignificance to him. At length deciding for the milder alternative, he had thrown in some completing touches here and there,—especially, as I conjecture, a proportion of Colridgean moonshine at the end; and so sent it forth.

It was in the sunny days, perhaps in May or June of this year, that *Arthur Coningsby* reached my own hand, far off amid the heathy wildernesses; sent by John Mill: and I can still recollect the pleasant little episode it made in my solitude there. The general impression it left on me, which has never since been renewed by a second reading in whole or in part, was the certain prefigurement to myself, more or less distinct, of an opulent, genial and sunny mind, but misdirected, disappointed, experienced in misery;—nay crude and hasty; mistaking for a solid outcome from its woes what was only to me a gilded vacuity. The hero an ardent youth, representing Sterling himself, plunges into life such as we now have it in these anarchic times, with the radical, utilitarian, or mutinous heathen theory, which is the readiest for inquiring souls; finds, by various courses of adventure, utter shipwreck in this; lies broken, very wretched: that is the tragic nodus, or apogee of his life-course. In this mood of mind, he clutches desperately towards some new method (recognisable as Coleridge's) of laying hand again on the old Church, which has hitherto been extraneous and as if non-extant to his way of thought; makes out, by some Coleridgean legerdemain, that there actually is still a Church for him; that this extant Church, which he long took for an extinct shadow, is not such, but a substance; upon which he can anchor him-

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