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HUMAN ORIGINS

BY

SAMUEL LAING

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Revised by EDWARD CLODD

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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, not 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. Thus far, I have treated this question 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 modern discoveries, which is no less important than that made by geological research and by the general doctrine of Evolution.

Down to the middle of the last century, and the belief is far from extinct, 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 the year 4004 B.C., or not quite 6,000 years ago; and that 1,656 years later all human and other life, 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, were destroyed by a universal Deluge.

The latest researches bring to light the existence of uninterrupted historical records, confirmed by contemporary monuments, carrying history back fully 3,000 years before the supposed Creation of Man, and showing even then no trace of a commencement; but populous cities, celebrated temples, great engineering works, and a high state of the arts and of civilisation already existing. This is of the highest interest, both as bearing on the dogma of the inspiration 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 some Power 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 the late Archbishop 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 who constantly intervenes

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 helping us to carry back our researches into the depths of prehistoric and of geological time.

I have therefore in this work begun with the historic period, as giving us a standard of time by which to gauge the vastly longer periods which lie behind, and have advanced 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."

HUMAN ORIGINS

PART I.—EVIDENCE FROM 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—Manetho's Lists—Confirmed by Hieroglyphics—Origin of Writing—The Alphabet—Phonetic Writing—Clue to Hieroglyphics—The Rosetta Stone—Champollion—Principles of Hieroglyphic Writings—Language Coptic—Can be read with certainty—Confirmed by Monuments—Old, Middle, and New Empires—Old Empire 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—Period prior to Menes—Horsheshu—Sphinx—Stone Age—Neolithic and Palæolithic Remains—Horner, Haynes, Pitt-Rivers, and Flinders Petrie.

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 a few of the so-called "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 prehistoric, 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 4,500 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, as these appear to warrant, Egyptian and Chaldæan records carry us back for 9,000 or 10,000 years, and show us then a highly advanced civilisation 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 4,000 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 1,500 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 certainly 7,000 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 1,000 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 3,000 or 4,000, but for 9,000 or 10,000 years, and then show no trace of a beginning, the case is altered, and we may assume the lapse of vast periods, 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 also the facts respecting the origin, antiquity, and early history of the human race, which have come in from other sciences, such as astronomy, palæontology, 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 fascinating 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, desire to keep themselves abreast of modern thought and of the advanced culture 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. Moreover, the capacity of the memory is limited. Further, the historical element in these 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 Christianised 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 credible historians; exclusion 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 begin to appear only when civilisation is so far advanced as to have established powerful dynasties and priestly organisations. 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 statement. 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, 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 to this, if we except the less precise evidence from the inscribed tablets unearthed at Nippur in Northern Babylonia, 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 286 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, among 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 in 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 5,500 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 4800 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 5,500 B.C.

The only other documentary information as to the history of Ancient Egypt was gleaned from references in the 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 extend only 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 perhaps over-vaunted splendours of the nineteenth dynasty. Herodotus visited Egypt about 450 B.C., and wrote a description of it from what he saw and heard. 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, while 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 have 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 show 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 which were extant at the time of

the Spanish Conquest show that a considerable amount of civilisation can be attained and information conveyed by the pictorial 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 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, is secured by 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 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.

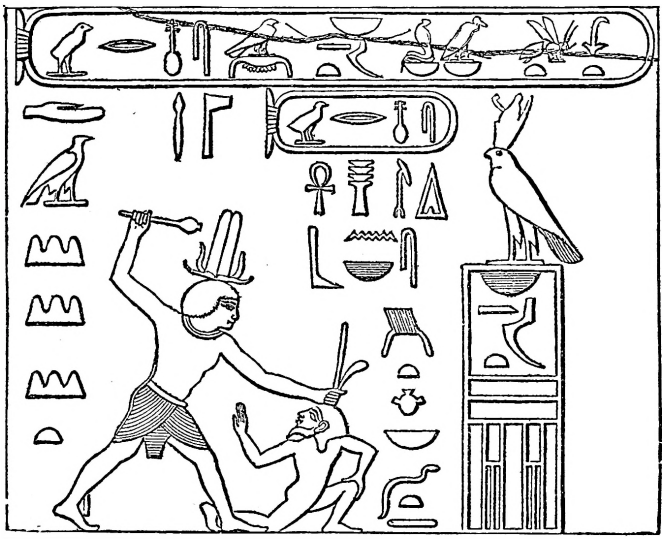
The alphabet is the first lesson of childhood, and it seems such a simple thing that we are apt to forget that it is one of the most important and original inventions of the human intellect. To some genius, musing on the meaning of spoken words, there came the wonderful conception that they might all be resolved 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 differonly 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.

The mysterious and magical character with which the written signs were invested was associated with legends that writing was an invention of some god or culture-hero. 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, so the tradition runs, from Phœnicia 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.' Then, 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 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



TABLET OF SENEFERU AT WADY MAGERAH.

(The oldest inscription in the world, probably 6,000 years old. The king conquering an Arabian or Asiatic enemy.)

army, when the French were driven out of Egypt, and is now lodged at the British Museum. It bears three inscriptions, one in hieroglyphics, the second in the demotic Egyptian character employed for popular use, and the third in Greek. The Greek inscription records a meeting of the Priests at Memphis in honour of Ptolemy V. Epiphanes, B.C. 195. It sets forth the many good deeds of that king, and a decree that his statue be erected in every temple of Egypt. 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 the 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 enclosing the names of kings in what is called a cartouche or oval.

Seneferu is the name of the king of the fourth dynasty, who reigned about 4,000 B.C., or about a century before the building of the Great Pyramids. The tablet 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.

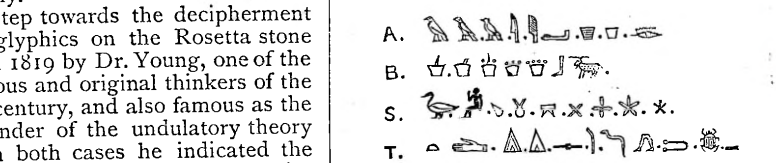
The first step towards the decipherment of the hieroglyphics on the Rosetta stone was made in 1819 by Dr. Young, one of the most ingenious and original thinkers of the nineteenth century, and also famous as the first propounder of the undulatory theory of light. In both cases he indicated the right path and laid down the correct principles, but the development of his theories was reserved for two Frenchmen ; Fresnel in the case of Light, and Champollion in that of Hieroglyphics. The latter task was one which required immense patience and ingenuity, for the hieroglyphic alphabet turned out to be one of great complexity. Many of the signs were not only phonetic, but also ideographic or determinative; some of them stood for syllables, not letters ; while 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 discovery of fresh inscriptions, notably one on a small obelisk in the island of Philæ, 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 recognised 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 enabled Champollion to construct a hieroglyphic dictionary and grammar, which have been so completed by the



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

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 began 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 1,358 separate characters, or conventionalised 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 6,000 or 7,000 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 analysed 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.

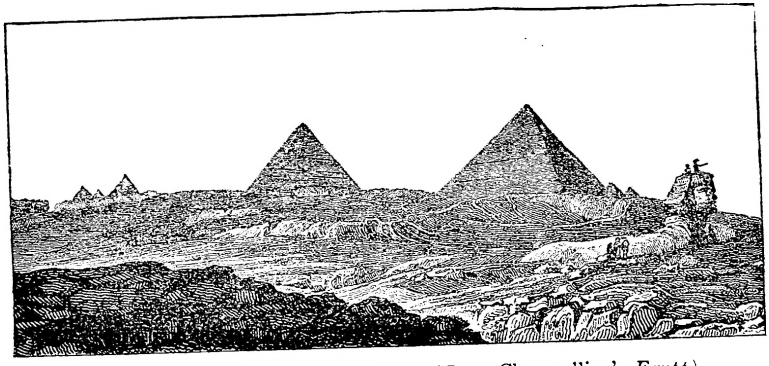
Those who wish to pursue this interesting subject further will do well to read Dr. Isaac Taylor's *History of the Alphabet*, and Sayce on the *Science of Writing;* but for my present purpose it is sufficient to establish the scientific certainty of the process by which hieroglyphic texts are read. With 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 5,867 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 that nearly all his kings and dynasties are proved by monuments to have existed, and that successively and not simultaneously, so that in the case of Menes, Professor Flinders Petrie is able to fix his date at 4,777 B.C., "with a possible error of a century."

Egyptian history is divided into three periods—the Old, the Middle, and the New Empires, the Old Empire dating from the reign of Menes. But the result of Professor Flinder Petrie's excavations in the Royal Tombs of the first Dynasties has revealed the fact that there were kings before Menes. It was no unimportant confirmation of Manetho's tables to have discovered the tomb and hieroglyph of that monarch, but this yields in interest to Professor Petrie's discovery of relics of at least five predecessors. How far the historical horizon in Egypt may yet be pushed, only further diggings will show; but meantime the Professor gives cogent reasons for belief in the existence of no mean state of culture many centuries before the time of Menes. That ruler carried 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; under Den-setui, the fifth king of the first dynasty, art reached to an extraordinary perfection; while the extremely life-like portrait-statues and wooden statuettes, which were never equalled in any subsequent stage of Egyptian art, and with which Chaldæa has nothing to compare, date back to the fourth dynasty.

It is singular that this extremely ancient period is 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 Gizeh, 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 first three dynasties to check and confirm the lists of Manetho. We really know the life of Memphis 6,000 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. 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 civilisation is different and much ruder than it was 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 1,500 years earlier under the third." The tomb of one of these kings of the eleventh dynasty, Antef I., is remarkable as showing on a funeral pillar the sportsman-king surrounded by his four favourite dogs, whose names are given. They are of different breeds, from a large greyhound to a small turnspit.



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

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 Amenemhat or Usertsen; 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 Amenemhat 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; it had a façade of white limestone; and contained in the interior a vast number of small square chambers and vaults—Herodotus says 3,000—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 Amenemhat 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, Sebekhetep VI., found on the island of Argo near Dongola, shows that the frontier fixed by the conquests of Amenemhat 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; while 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.

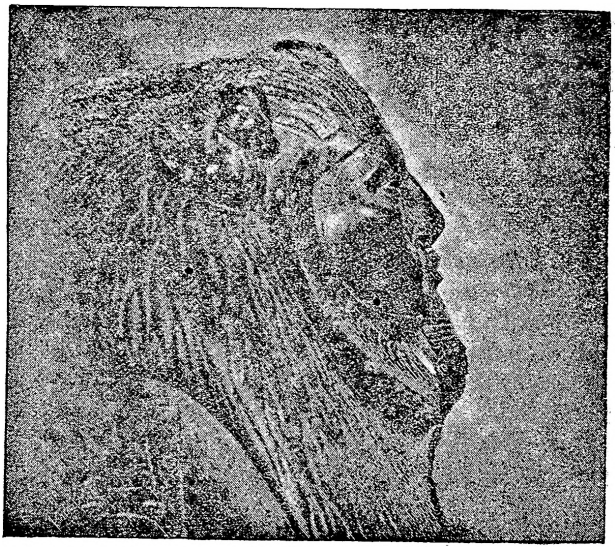
Manetho assigns seventy-five kings and 484 years to the fourteenth dynasty, and it is to this period that a good deal of uncertainty attaches, for there are no monuments, and nothing to confirm Manetho's lists, except a number of unknown names of kings of the dynasty enumerated among the royal ancestors in the Papyrus of Turin. What is certain is that the 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 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. There is considerable doubt as to what race these invaders, who were known as Hyksos, or Shepherd Kings, belonged. They consisted, so some conjecture, mainly of nomad tribes of Canaanites, Arabians, and other Semitic races; but the Hittites seem to have been associated with them, and the leaders to have been Mongolian, 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 of that 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 Hyskos acted as savage barbarians, burning cities, demolishing temples, 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 civilisation 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 sphinxes was discovered, resembling those at Thebes and that of the Great Sphinx 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 civilisation, 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 Hyksos kings can still be deciphered, among which are two Apepis, the second probably the last of the dynasty. It was perhaps 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; in fact, the history of the whole period until the rise of the seventeenth dynasty remains obscure. Manetho, if correctly quoted by Josephus, says they ruled over Egypt for 511 years (2098–1587 B.C.), though his lists show only one dynasty of 259 years, and then the Theban dynasty, which 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 seventeenth Theban dynasty of native Egyptian kings, who finally expelled the Hyksos, after a long war, and founded what is known as the New Empire on the basis of despotic rule. The date of this event is fixed by the best authorities at about 1587 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

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

had founded a great empire in Asia Minor and Syria; and, as their power declined that of Assyria rose, with the long series of warlike Assyrian monarchs, who gradually obtained the ascendancy, 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 Nebuchadrezzar. 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 in 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 civilised 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 guage the duration of historical time.



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

The glimpses of light into the prehistoric stages of Egyptian civilisation, prior to the invasion of the country by the Asiatic founders of the dynasties, 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 Shesu-Heru (or 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 "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 or Cheops, 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 Sphinx. An inscription of Chufu, preserved in the Museum of Boulak, says that a temple adjoining the Sphinx, which had been buried under the sand of the desert, and forgotten for many generations, was discovered by chance in his reign. 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 origin of the Sphinx is wrapped in mystery, but it is mentioned on the above-named inscription as being much older than the great Pyramids, and as requiring repairs in the time of Chufu. 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. It is a gigantic work, consisting of natural rock sculptured into the form of a lion's body with human head, this being the incarnation which the Sun god Rā assumed as protector of his friends and followers. It is directed towards the east so as to face the rising sun, and was an image of the god Hormachis, the Sun of the Lower World, the victor over darkness, the approach to whose temple it guarded. This appears to have been the object in placing sphinxes before the temple entrance. In later centuries they were placed near tombs for the same purpose.

Although there are no monuments of the Stone Age in Egypt like those of the Swiss lake villages and Danish kitchen-middens, which enable us to trace in detail the progress of arts and civilisation from rude commencements through the neolithic and prehistoric ages, 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. 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, says Mr. Campbell, 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 civilisation of Egypt at the earliest dawn of history or tradition had been a plant of extremely slow growth from a state of provincial savagery. Finally, on the limestone plateau fourteen hundred feet above the Nile, and situated thirty miles north of Thebes, Professor Flinders Petrie found numbers of massive, beautifully-worked, and quite unworn palæoliths of exactly the same forms as those found in the river gravels of France and England.

The ethnology of Egypt is by no means settled, but authorities appear to agree that the pre-dynastic race was akin to the Cushites, all of whom have a slight negro strain, infused at a very remote date. We see these ancient Egyptians depicted in wall-paintings as tall, spare, small-headed, thick-lipped, and with high cheek-bones and almond-shaped eyes: the men coloured dark red, and the women coloured yellow. Then, at a period whose date is ever being pushed back, century by century, appear the invading founders of the great and famous dynasties whose names are being spelled, one by one, and their duration brought into harmony with the requirements of comparative chronology.

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 5,800 years old.—From a photograph by Sebah, Cairo.)

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

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 Mongolian speech of any historical nation. 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 Akkadians and Chinese, which point to a prehistoric nomad existence on elevated plains.

For any further inquiries as to the origin and antiquity of Egyptian civilisation 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 4,700 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—Akkadian 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 Akkadians—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 8000 or 9000 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 as remote as that of Egypt. This has been effected partly by the decipherment of an unknown language in inscriptions on ancient monuments, and partly by estimating the age of the deposits in which inscribed tablets have been found. Until recently 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 260 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. Among the fragments of his work which have survived there is a creation legend, 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. These record a mythical period 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 civilisation. 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, probably derived from Akkadian sources.

Prior to the appearance of Oannes, Berosus relates "that Chaldæa had been colonised 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 discoveries of monuments of Chaldæa and Assyria. This authority does not carry us very far back. The first event which can advance any claim—and this is shadowy, because it assumes that the patriarchs are historical—to serious attention 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 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. By some scholars 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. But that equation has no basis.

A long interval 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 battlefield 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 has been referred to already as affording 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 III., 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, who had 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, captured and sacked Damascus. Shalmaneser came up against Hosea 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 (about 600 B.C.), and the great Babylonian conqueror, Nebuchadrezzar, 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 civilisation was unexpectedly pushed back at least 3,000 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 Akkadian races, whose language belonged to the Mongolic group. Hence the necessity for the issue

of edicts, and for the recording of inscriptions, in the three languages.

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 in Persian, Arabic, and Turkish.

In the case of decipherment of the ancient inscriptions the difficulty was, however, great, for, though in different languages, they were all written 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, high up in the face of a precipice forming the wall of a narrow defile at Behistun. It was in old Persian, Susian or Median, and Babylonian, and had been engraved by order of the great Persian monarch, Darius the First, the exploits of whose reign it recorded. 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 certainty. The task was one which required a vast amount of patience and ingenuity, for the cuneiform writing turned out to be 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, while a considerable number were ideographic or conventional representations of ideas, like our numerals, 1, 2, 3, which, as already remarked, 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 Assurbanipal, 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, all the great buildings being 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, 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 determined by 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. But far surpassing these in importance are the 26,000 tablets unearthed by Mr. Haynes from the great mounds of Nuffar, the site of the

sacred city of Nippur, whose foundations were laid six or seven thousand years B.C. Among the books recovered there are fortunately translations of old Akkadian 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 is at the present day, in ritual, and as the language of the sacred books, historical annals, and astrological and magical formulas. The ancient Akkadian writing can now be read with almost as much certainty as Egyptian hieroglyphics, and the records are accumulating rapidly with every fresh exploration. 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 Assurbanipal, 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 Akkad 1,635 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.

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 race, like the Akkads, with Mongolian affinities, and spoke a language which was a dialect of Akkadian; but, as in Chaldæa and Assyria, the kings and aristocracy appear to have been Semites from an early period. It was apparently an organised and civilised 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, then to the Roman Empire, and find ourselves on the threshold of 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 Akkadian race, who reigned at Ur over the united kingdoms of Sumir and Akkad. They were great builders and restorers of temples, and have left numerous traces 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 Larsa, 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 royal custom of laying the foundation-stone, and of depositing some memento beneath it, took the shape of placing, in a secure chamber, a cylinder recording the fact. This has given us a still more ancient date, that of Sharrukin or Sargon I. 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 revolutionised the accepted ideas of Chaldæan chronology, and carried it back at one stroke 1,000 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 3,000 years later, and who 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 misstatement. 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 Lectures* (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 there have been found and deciphered several tablets 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 not found in this record of the Babylonian era, who presumedly reigned during the interval of about 1,400 years between Khammuragas and Sargon I. The names are mostly Akkadian, and if they did not reign during this interval they must have preceded the foundation of a Semite dynasty by Sargon I., thus extending the date of Chaldæan history still further back. The probability of such a remote date is enhanced by the certainty that a high civilisation 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.

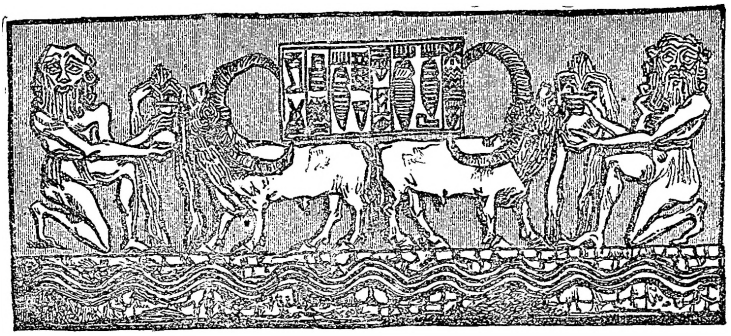
Boscawen, in a paper read at the Victoria Institute in 1886, says that inscriptions found at Larsa, a neighbouring city to Ur of the Chaldees, show that from as early a period as 3750 B.C. there existed in the latter city a Semitic population speaking a language akin to Hebrew, carrying on trade and 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. There can be no doubt that Sharrukin or Sargon I. is a historical personage. A statue of him has been found at Agade or Akkad, 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." This legend reappears in the story of Moses, the finding of whom by Pharaoh's daughter lends romance to the incident. Similar stories of rescue are told of Cyrus and other great men, the chronicler thus seeking to invest his subject with added wonder. It is probable that Sargon 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 Sumir and Akkad, 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 (Akkadian) 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, 2,000 years earlier than the campaigns of Ahmes and Thotmes recorded in the Egyptian monuments of the eighteenth dynasty.

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, which extends over a great part of the adjoining desert, 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 civilisation. That Sargon II. is historical, his library and the state of the arts and literature in his reign prove conclusively. He states in his tablets that 350 kings had reigned before him, and in such a literary age he could hardly have made that 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 the older inhabitants of Mesopotamia, known as the Akkadians, or, more correctly, the Akkado-Sumerians, the Akkadians being settled on the highlands (whence their name), and the Sumerians on the plains of that region. The racial affinities of either are not definitely known, but they belonged



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

to the Mongolian division of mankind. They had immigrated into Chaldæa at an unknown period, when they had probably long passed the barbaric stage. For they knew the use of metals; they were skilful architects, and, what was of great importance in the marshy land where canals and dams were indispensable, good engineers. They were enterprising sailors; their laws evidence advanced social organisation; their writing had become syllabic, and their literature possesses great interest for us because supplying the key to a religion which deeply influenced the Babylonians, and through them the Hebrews, ultimately affecting the whole of Christendom. That religion was a blend of lower and higher ideas—Shamanistic, that is, full of animistic conceptions mixed with sorcery and magic, and yet with vivid belief in spiritual beings, to whom psalms and prayers, which equal some of the finer utterances in the Hebrew sacred books, were offered. A number of verbal analogies, and certain correspondences in astronomical divisions and chronologies, have lent sanction to a theory of very intimate connection between the Akkadians and the Chinese in remote times. But the evidence in support of a very plausible and interesting hypothesis is at present far from complete, and it may ultimately only prove an active intercourse along old trading routes, when ideas as well as merchandise were transported from Western to Eastern Asia.

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; Larsa, 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 1877 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 Mongolian type, beardless, shaved, and with a turban for head-dress. With these statues a number of small works of art were found, of a highly artistic design and exquisite finish, representing men and animals, and also several cylinders. Both these and the backs of the statues are covered with cuneiform inscriptions in the old Akkadian 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 CHALDÆAN. FROM TELL-LOH (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 civilisation then prevailing in Chaldæa very similar to those of the fourth dynasty in Egypt, and in both cases as advanced as those of 2,000 or 3,000 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 GUD-EA, WITH INSCRIPTION; FROM TELL-LOH (SIRBURLA OR SIRGALLA). SARZEC COLLECTION. (Hommel.)

It is important to remark that in those earliest monuments both the language and art are primitive Akkadian, which must have long prevailed before Sargon I. could have established a Semitic dynasty over an united population of Akkads and Semites living together on friendly terms. The nomad Semites must have settled gradually in Chaldæa, and adopted to a great extent the higher civilisation of the Akkadians, much as the Tartars in later times did that of the Chinese. It is remarkable also that this pre-Semitic Akkadian 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 found only 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 Akkadian 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 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 Akkadian civilisation must have existed prior to the introduction of Semitic influences, and long before the foundation of a Semitic dynasty by Sargon I. Combining these facts with quite recent discoveries, there appears ample warrant for assigning to Chaldæan civilisation as old a date as that of Egypt.

This high antiquity 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 6,000 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, which has continued in use to the present day, established of the twelve constellations. 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 be only after long centuries of astonomical 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 and engraved gems found at Sirgalla also 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 8,000, and more probably 9,000 or 10,000 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 civilisation already ancient and far advanced. We have populous cities, celebrated temples, an organised 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 civilisation, from the primitive beginnings of neolithic and palæolithic origins, is a matter of conjecture. All we can infer is, that it must have required an immense time, much longer than that embraced by the subsequent period of historical record. And we can say with certainty that during the whole of the historical period of 8,000 or 9,000 years there has been no change in the established order of nature. The earth has rotated on its axis and revolved 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 of old forms, and creation of new forms, or any other traces of miraculous interference. More than this, we can affirm with absolute certainty that 6,000 years and more 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. The Negro, the Mongolian, 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.

For evolution neither implies nor involves continuous development. Its keynote is adaptation; harmony between the race and its environment; and only when this is disturbed does readjustment come into play.

CHAPTER III.

OTHER HISTORICAL RECORDS

China—Oldest existing Civilisation—but Records much later than those of Egypt and Chaldæa.

Elam—Very Early Civilisation—Susa, an old City in First Chaldæan Records—Conquered Chaldæa in 2280 B.C.—Conquered by Assyrians 645 B.C.—Statue of Nana—Cyrus—His Cylinder.

Phœnicia—Great influence on Western Civilisation—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 II., 1250 B.C.—Lists of Nations—Show advanced Civilisation and Intercourse.

Hittites—Great Empire in Asia Minor and Syria—Mongolian Race—Great Wars with Egypt — Battle of Kadesh — Treaty with Ramses III. — Power rapidly declined—but only finally destroyed 717 B.C. by Sargon II. — Capital Carchemish — Great Commercial Emporium—Hittite Hieroglyphic Inscriptions and Monuments—Bilingual key to them awaited.

Arabia — Recent Discoveries — Inscriptions — Sabæans—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, Mycenæ, and Crete—Dr. Schliemann's Excavations—Hissarlik—Buried Fortifications, Palaces, and Treasures of Ancient Troy

—Mycenæ and Tiryns—Proof of Civilisation and Commerce—Tombs—Date of Mycenæan Civilisation—School of Art—Type of Race—Crete—Mr. Arthur Evans's Excavations—City of Minos—Cretan Script—Cradleland of European Civilisation.

CHINA.

THE first country to which we might naturally look for independent annals approaching in antiquity those of Egypt and Chaldæa is China. Chinese civilisation 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. Its continuity borders on the marvellous. What China is to-day it was more than 4,000 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, organised 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. Their annals tell of an epoch of "Three Rulers," when wild and savage conditions prevailed, corresponding to those of the Ancient Stone Age in Europe. They tell also of the epoch of "Five Emperors," culture-heroes of the race. To these are attributed the arts and sciences. They taught the people (here the utilitarian character of the Chinese stamps itself) to make nets for fishing and snares for hunting, to found markets for the sale of produce, and bequeathed treatises on the medicinal virtues of plants, and the sciences of astrology and astronomy. Fu-Hi, the reputed founder of the Empire, is credited with the institution of marriage, an all-important state among a people where the family is the social unit. Chinese annals do not, however, go further back than about 3000 B.C.—that is, to a period some three or four thousand years later than the epigraphic evidence furnished by Egypt and Chaldæa. The times of the Three Rulers may survive among the barbaric hill tribes who are living at this day in the southern and western borderlands, the remnant of descendants of the races conquered by the ancient Chinese who poured down in irresistible numbers from the mountains and plateaux of Tibet to the fertile valleys of China.

Reference has been made already to some remarkable identities in words and in calendars between the Akkadian and the Chinese, but, although these must be more than coincidences, they as yet form no sufficient basis for theories of a common origin. Possible early intercourse explains much. We must remember that caravans do travel, and have travelled from 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 to the far east were great, owing to the regular monsoons and the configuration of the coast.

We must be content, however, 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. One of the most important of them is Elam, which was evidently a civilised State at a remote period, contemporary probably with the earliest Akkadian civilisation, and which continued to play a leading part in history down to the time 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 survives in the mountainous district next to the east of Elam, known as Farsistan. The original population had Mongolian affinities, speaking an agglutinative language, akin to,

though not identical with, Akkadian, while its religion and civilisation were apparently the same, or closely similar. As in Chaldæa and Assyria, a Semitic element seems to have intruded on the Mongolian 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 "Akkad," both meaning "Highland," and indicating that both races may have had a common origin in the mountains and steppes of Central Asia. The native name was Anshan, and Susa was "the City of Anshan." Elam was always considered an ancient land, and Susa an ancient city, by the Akkadians, and there is every reason to believe that Elamite civilisation must have been at least as old as Akkadian. This much is certain, that as far back as 2280 B.C. Elam was a sufficiently organised 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 1,635 years, until the city was at length taken by one of the latest Assyrian kings, Assurbanipal, 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 civilised 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 large extent fabulous. A cylinder and tablet of Cyrus himself, in which he commemorates his conquest of Babylon, were quite recently discovered by Mr. Rassam and brought to the British Museum. He describes himself as "Cyrus the great King, the King of Babylon, the King of Sumir and Akkad, the King of the four zones, the son of Cambyses 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 Akkadians), 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 Cambyses 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 would seem 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 a later and greater Kudur-Na-hangti, like the early conqueror of that name who founded the first Elamite empire some 1,800 years earlier. His religion was Babylonian, and thus we must dismiss all Jewish traditions 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 Nebuchadrezzar or Tiglath-Pileser.[1]

What a lesson does this teach us as to the untrustworthiness of the scraps of ancient history which have come down to us from traditions, but which 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 by the testimony of Cyrus himself to be in essential respects legendary and fabulous.

PHŒNICIA.

Phœnicia is another country which exercised a great influence on the civilisation 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 Akkadians. According to their own tradition, they came from the Persian Gulf; and the island of Tyros, now Bahrein, in that Gulf, is quoted 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, possessed 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, and which were further secured by the precipitous range of the Lebanon sending down steep spurs into the Mediterranean, 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 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. They established factories along the coasts of Asia Minor, Greece, and Italy, and in all the islands of the Ægean and the Cyclades. They founded colonies in Cyprus, Crete, Sicily, and on the mainland of Greece at Bœotian Thebes. They 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 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 appear to have finally reached the British Isles in pursuit of tin.

It is reasonably certain that this Phœnician commerce was a principal element in introducing not only an alphabet, but many of the early arts of civilisation, among the comparatively rude races of Greece, Italy, Spain, and Britain. It probably dates from the destruction of Tiryns and Mycenæ, about 1200 B.C., when Phœnicia established depots throughout the

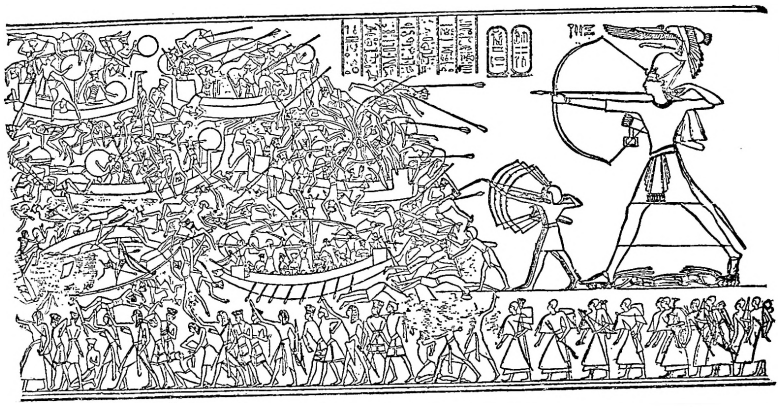
[1] Sayce, in his *Fresh Light from Ancient Monuments*, says: "Both in his cylinder and in the annalistic tablet, Cyrus, hitherto supposed to be a Persian and Zoroastrian Monotheist, appears as an Elamite and a polytheist." It is pretty certain, however, that, although descended from Elamite kings, these were kings of Persian race, who, after the destruction of the old monarchy by Assurbanipal, had established a new dynasty at the city of Anshan 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. 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. Zoroastrian Monotheism came in with Darius Hystaspes, the founder of the purely Persian second dynasty, after that of Cyrus became extinct with his son Cambyses. (It should be stated that, in the article on "Cyrus," in the *Encyclopædia Biblica*, his Persian origin is reaffirmed.)

Ægean and secured supremacy in Mediterranean waters. But through her lack of political unity, and her dependence on mercenary aid when troubles came, she finally succumbed to the powerful arm of the re-invigorated Greek. And it was between their rise and fall that the ingenious "colossal pedlars" had put the alphabet into practically its present form, and secured its adoption by the Greeks. Compared with Egypt and Chaldæa, Phœnicia can have claimed no high antiquity.

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 twentieth dynasty, about 1200 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 by some with the Numidians and modern Kabyles. There was formed 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 of the same confederation of Maritime States as in the first invasions, except that the Achæans have disappeared



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

as leaders of the Greek powers. The Phœnicians alone of the Maritime States do not seem to have taken any part in these invasions, but, on the contrary, to have lived on terms of friendly vassalage and close commercial relations with Egypt ever since the expulsion 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 Phœnicia 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 inter-

esting. They show an advanced state of civilisation already prevailing among nations whose very names were unknown or legendary. Centuries before the siege of Troy it appears that Asia Minor and the Greek mainland and islands were already inhabited by nations sufficiently advanced in civilisation 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.

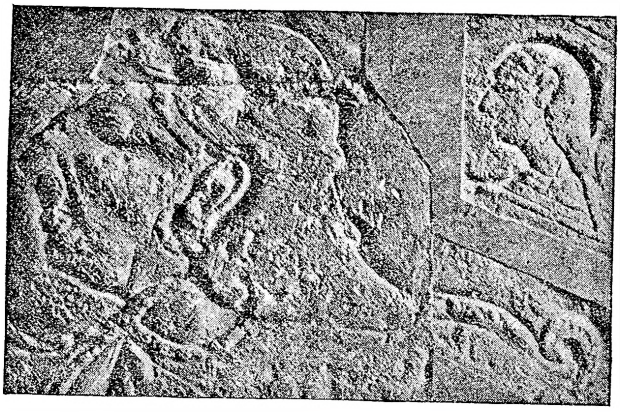
HITTITES.

The history of another great but more mysterious Empire, that of the Hittites, has been partially brought to light. It was destroyed in 717 B.C. by the progress of Assyrian conquest, after having lasted more than 1,000 years, and long exercising a predominant influence over Western Asia. The first mention of the Hittites in the Old Testament appears in Patriarchal times, 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 contumacious 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 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.

The earliest mention of the Hittites is found in the tablets which were compiled for the library of Sargon I. of Akkad, 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.

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,



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

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 as contending on equal terms in Palestine with the revival of the military power of Egypt under Ramses III., 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 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. 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 their 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 composed, with themselves, of 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 civilisation. 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 maneh 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 Akkadians. 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, are held 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 held to be a sitting figure of the great goddess of Carchemish.

Some details in the foregoing brief sketch may be corrected or expunged as further research into Hittite history yields more definite results. For, in truth, although some portly volumes on that subject have appeared within recent years, we really know no more about the Hittites than we do about the Phœnicians, which means that we know but little. We have glimpses of a Hittite kingdom which was a formidable power for centuries against Egypt and Assyria, but as to who the Hittites were, and what was their language, we can speak with no certainty. Thirty years back not a monumental remain of an empire whose high place among ancient nations is established by documents had come to light, and, now that the hieroglyphs which are indubitably Hittite have been discovered, we sorely need the unearthing of some bilingual relic which shall do for them

what the Rosetta stone did for Egyptian hieroglyphs, and the inscribed rock at Behistun for cuneiform writing.

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 1,031 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 civilisation 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 who wrote not many centuries later, the queen of a well-known, civilised, 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, and that her kingdom, or commercial relations, may have extended over the opposite coast of Abyssinia and Somaliland, 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, 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 Sabæan or Minæan kings, and as yet comparatively few inscriptions have been discovered. Some of these 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

[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."

Sea and Persian Gulf, and from the ends of these Eastern waters 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 chief, 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 civilised 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-two Minæan kings, which number will probably be enlarged by further discoveries; and the oldest inscriptions point, as in Egypt, to an antecedent state of commerce and civilisation. 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 civilised communities in an extreme antiquity; and that it is by no means improbable 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 likely as several ancient traditions point to Southern Arabia, and possibly to the adjoining coast of North-eastern Africa, as the source of the earliest civilisations. Thus Oannes is said to have come up from the Persian Gulf and taught the Chaldæans the first arts of civilisation. 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 civilisation, not in Upper or Lower, but in Middle Egypt, at Abydos, where Thoth and Osiris were said to have reigned, and 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, the king and queen of that country accompanying it 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

CHIEF OF PUNT AND TWO MEN.

Egyptian monuments is very like that of the aristocratic type of the earliest known Egyptian portraits.

Evidence points to the conclusion that the original seat of the Semites was in South-Western Asia, perhaps 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 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 Akkadian population. In Egypt the Semitic element was a late importation which never permanently affected the old Egyptian civilisation. In Syria and Palestine the Phœnicians, Canaanites, and Hebrews were probably 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 civilisation 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 more or less directly derived from that of Phœnicia, the probable varied sources of which are dealt with in the last section of this chapter. But the Minæan script, revealing a more primitive form than the oldest known Phœnician characters, has caused some philologists to ask whether these may not be derived from Arabia.

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 inscription, 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 civilised 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.

TROY, MYCENÆ, AND CRETE.

To the enthusiasm of one man—Dr. Schliemann—is chiefly due the impetus to exploration in South-Eastern Europe which has resulted in the verification of a history long held to be mythical, and in the demolition of hitherto accepted theories of the sources of Western civilisation.

Only once in his *History of Greece* does Grote refer to the city of Mycenæ, and then in an incidental way as the seat of a legendary dynasty. The Rev. Sir G. W. Cox, in his *Mythology of the Aryan Nations*, endorses Professor Max Müller's theory that "the siege of Troy is a reflection of the daily siege of the East by the solar powers that every evening are robbed of their brightest treasures in the West"; and he adds that this theory is "supported by a mass of evidence which probably hereafter will be thought ludicrously excessive in amount." The laugh is on the other side now. The *Iliad* and *Odyssey* are no longer the shuttlecocks of solar and meteorological battledores. For in 1870 Schliemann, making wise use of money acquired in trade, went to the Troad to find the bones of Priam and the cup from which Nestor drank. His credulity caused him to discover the relics for which he looked, but none the less were his achievements momentous. In the mound of Hissarlik he uncovered the traces of seven towns superimposed one above another—the lowest a settlement of the late Neolithic or early bronze period; and, immediately above this, and most important of all, the ruins of a fortress-city, the ramparts of which enclosed the remains of a palace, and which had been destroyed by fire. This, Schliemann believed, was the veritable Troy of Homer which the Achæans had looted and then fired.

Notwithstanding the destruction and probable plunder of the city, the quantity of gold and silver found was very considerable, chiefly in the vaults of casemates built into the foundations of the walls, which were covered up with *débris* when the citadel was burnt, and when the roofs and upper buildings fell in. In one place alone Dr. Schliemann found the celebrated treasure (was it Priam's own?) 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 of wealth and luxury, as proved by the skill and taste of jewellers' 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, 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 civilisation of Mycenæ.

The jealousy of the Porte, which looked on Schliemann as a spy, drove him from Hissarlik to Greek soil, where more pregnant discoveries awaited his spade. The result of explorations at Mycenæ showed that a still larger and more wealthy city existed here, and that its art and civilisation were widely diffused over the whole of the eastern coast of Greece and the adjoining islands. Specimens of that art have been found on the opposite coasts of Asia Minor, and in Cyprus and Egypt, where they were doubtless carried by commerce. The existence of an extensive trade 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. As to the Mycenæan religion, no sacred texts exist as data for ascertaining its character, but there are monumental remains that tell us much—*e.g.*, sacrificial pits or altars, tablets

showing acts of sacrifice, human and animal; rude images of women clasping children—goddesses of generation—who are varied manifestations of the great Earth-Mother, of Aphrodite, with her dove-emblem, and of gods with the ægis or the thunderbolt. From these and other evidences there may be constructed a picture, faint at the best, of the old Mycenæan faith as expressed in the worship of ancestors and of native deities—a faith which had correspondences throughout the mainland and isles of ancient Greece.

The city 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.

As a question of dates, we know that the supremacy of Mycenæ and its civilisation came to an end with the invasion of the Dorians, which is generally placed somewhere near the middle of the twelfth century B.C. The invaders, in their southward march, reached Tiryns and Mycenæ, and sacked and burnt both cities. 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. Mycenæan vases have been found in Egypt and Egyptian scarabs in Mycenæan deposits. They prove an intimate intercourse between the two countries 2500 B.C., and there was intercourse further afield. The imitation of Babylonian cylinders, the sculptured palms and lions, the figures of Astarte and her doves, show that 1,500 years before the date ascribed to the Homeric poems Assyria and Greece had come into contact. But these examples of Oriental art which had found their way to the soil of Argolis remained more or less exotic, the independent features of Mycenæan art being retained unaltered.

We are pretty safe, therefore, in supposing this Mycenæan civilisation to have flourished between the limits of 2500 and 1200 B.C. 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 civilisation.

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; while for the results of more recent explorations in Pre-Homeric Greece, Tsountas' and Manatt's *Mycenæan Age* and Mr. Hogarth's chapter on Pre-historic Greece—*Authority and Archeology*—should be read. For my present object I refer to it only 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 civilised states at a time long antecedent to the dawn of classical history. If these ancient empires and civilisations 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 3000 B.C., from its written histories; but it is singular that nearly all the other ancient civilisations 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, and their dead interred in stately tombs with large quantities of gold and silver. Yet, as Tsountas tells us, of all the finds at Mycenæ itself, only three objects bear inscriptions. These, however, as will presently appear, are of the highest importance.

This Mycenæan civilisation had not sprung, Minerva-like, into sudden efflorescence and beauty. There were long stages of development behind it; the eyes of archæologists have been opened to new documents in Ægean lands, whether walls or tombs, pottery or work in metals, gems, ivory, sculptured stone or modelled clay, and it was not long before the revelation, first made by Schliemann at Hissarlik and Mycenæ, came to be extended far beyond

the point contemplated by him or any one else in 1876.

The result is that, within the last few years, further research in the Eastern Mediterranean has brought to light the existence of factors in civilisation very much older than the Mycenæan—factors which, as already remarked, will revolutionise long-accepted theories of the origin of European culture. Egypt and Chaldæa will never lose their fascination for the student of the past, because both hold secrets which may never be wrested from their tombs and temples. In each there are numberless sites yet to explore, while in Asia Minor, notably in Elam and Armenia, undeciphered monuments of antiquity abound. But the influence of these, although great and abiding, is less direct than has been thought; their history touches us less closely than that of lands nearer home. We now know that "far into the third millennium B.C. at the very least, and probably much earlier still, there was a civilisation in the Ægean and on the Greek mainland which, while it contracted many debts to the East and to Egypt, was able to assimilate all that it borrowed, and to reissue it in individual form." And, in this matter, interest centres round the island of Crete. The discoveries made there since 1897 by Mr. Arthur Evans establish the facts of an indigenous culture and of an active commerce between Crete and Greece, Egypt, Syria, and other lands, centuries before the Phœnicians appeared in the Mediterranean. The explorations at Cnossus, or Knossos, city of Minos, "have revolutionised our knowledge of prehistoric Greece, and to find even an approach to the results obtained we must go back to Schliemann's great discovery of the royal tombs at Mycenæ." There has been disinterred a palace beside which those of Tiryns and Mycenæ sink in significance. It has great courts and corridors, innumerable chambers, chief among which is the "actual Throne Rooms and Council Chamber of Homeric kings." This apartment is enriched with frescoes, beautifully carved friezes, a marble fountain, and an alabaster vase. But what surpasses all in significance was the discovery in this same palace, which Mr. Evans speaks of as a sanctuary of the Cretan Zeus, of a number of clay tablets, somewhat like the Babylonian in form, but inscribed with two distinct types of indigenous prehistoric script, one hieroglyphic or quasi-pictorial, the other linear, this latter constituting by far the larger number. In Mr. Evans's words, these tablets "prove that a system of writing existed on the soil of Greece at least 600 years before the introduction of the Phœnician alphabet into that country," and that already at that remote date this indigenous system had attained a most elaborate development, the tablet inscriptions being the work of practised scribes following conventional methods and arrangements which indicate traditional usage. This script is "neither Babylonian nor Egyptian, neither Hittite nor Phœnician; it is the work on Cretan soil of an Ægean people, the true Eteocretans of the Odyssey."

Our alphabet comes from the Greek through the Latin, and is traceable to a Semitic source, for to those "colossal pedlars," the Phœnicians, belongs the credit of having highly perfected it. They did not, as has hitherto been held, derive it from the Egyptian hieroglyphics, but selected and modified, with consummate shrewdness, primarily for commercial purposes, various characters from divers sources.

Water is the birthplace of civilisation, as of life itself, and the original home of the Ægean or Mycænean civilisation is probably to be found in the island of Crete. It is crammed with remains of pre-Hellenic culture. It is a big stepping-stone from Greece to Asia Minor. It it in the line of communication with Cyprus, Syria, and Egypt on the East, and with Sicily and the coast lines of the Western Mediterranean. The earliest Greek tradition looks back to Crete as "the home of divinely-inspired legislation and the first centre of maritime dominion."

The subject cannot have enlarged treatment here, but the reader may pursue it in Mr. Evans's *Cretan Pictographs*, published in 1895, and in subsequent numbers of the *Journal of Hellenic Studies*, while keeping in mind the result of these discoveries in the Ægean, which, in Mr. Hogarth's words, come to this: That before the epoch at which we are used to place the beginning of Greek civilisation—that is, the opening centuries of the last millennial period B.C.—we must allow for an immensely long period of human existence, productivity going back into the neolithic age, and culminating towards the close of the age of bronze in a culture more fecund and more refined than any we are to find again in the same lands till the age of iron was far advanced. Man in Hellas was more

highly civilised before history than when history begins to record his state, and there existed society in the Hellenic area, organised and productive, to a period so remote that its origins were more distant from the age of Pericles than that age is from our own. We have probably to deal with a total period of civilisation in the Ægean not much shorter than that in the Mesopotamian and in the Nile Valleys—that is to say, some seven thousand years or more before Christ.

CHAPTER IV.

ANCIENT RELIGIONS

Egypt—Mystery investing its Religion—Book of the Dead—Origins of Religions—Ghosts—Animism—Astronomy and Astrology—Morality—Ideas of Future Life and Judgment—Triads, Solar, and other Gods.
Chaldæan Religion—Oldest Form Akkadian—Shamanism—Akkadian Trinities—Anu, Mullil, Ea—Bel-Ishtar—Merodach—Assur—Pantheism—Wordsworth—Magic and Omens—Penitential Psalms—Conclusions.

As with the Egyptian race, so with its religion, no clear and consecutive account is possible. The more smoothly the exposition runs, the more is it to be suspected. We have to be ever on guard against the danger of reading our own ideas into ancient records, and the more so when ignorant of the language, and, therefore, at the mercy of translators who are themselves not free from bias. It is easy enough to pick out passages here and there which, detached from their context, have quite a different meaning from that which they convey when taken as parts of a creed or cult; and the defect of most popular expositions of the Egyptians and of other religions is the overlooking of this fundamental principle.

As for the Egyptian, the old and new, the gross and refined, are hopelessly intermixed. The Egyptians were a conservative people, conservative in the art of which they were most justly proud, and conservative in their beliefs. Therefore the old, and, presumably, the lower, was never wholly superseded by the higher; hence the result was an incongruous amalgam, so that while, as Wiedemann says, we may speak of the religious ideas of the Egyptians, we must not speak of the Egyptian religion. We cannot label it, or place it in any class, as polytheistic, or monotheistic, or pantheistic, although it most nearly approaches this last. We find nature-worship, animal and plant-worship, ancestor-worship, and other cults. We find beliefs in sacred bulls born of virgin cows, on which, as evidence of the divine offspring they were to bring forth, a ray of moonlight descended from the deity; we find nature-gods with heads of hawks, jackals, and crocodiles, and, as if there were not enough animals in the Nile valley, an addition of fabulous monsters in the shape of the phœnix and the sphinx; we find magic and sorcery, omens from dreams and other phenomena, in full swing through all the ages; and, side by side with these, we have sacred writings rich in exalting spiritual conceptions, charged with ethical maxims, whose high, ennobling features challenge comparison with the teaching of the Hebrew prophets and of the Sermon on the Mount. We are probably near the explanation of such bewildering materials in seeing in them the representatives of the cults that prevailed in the small states or nomes which ultimately became fused into one empire. For we know that each nome had its own god, and that cities and temples were also dedicated to specific deities, while each month was presided over by a special deity. And each in his own domain was supreme, not coming into collision with others, although not excluding them. "The god of a nome was within it held to be Ruler of the Gods, Creator of the World, Giver of all good things, and it mattered little to his adherents that another deity played a precisely similar part in some adjacent nome where their own god was relegated to a subordinate place." It is in the misinterpretation of these terms of address to this or that god that the notions of the Egyptians as monotheists instead of henotheists have found currency. There was found at El Amarna, in the tomb of Ai, a high official, a hymn to the sun-god Atea (who, by the way, is always represented under the form of the solar disc, and never in human shape), which for sublimity equals the higher flights of Hebrew poetry. This, isolated from other hymns to other gods, might well have warranted the theory that the Egyptians believed in One Supreme Being. Of course, with the dominance of any one nome, with its college of priests eager to aggrandise their deity, it is obvious that the deity would come to the front, and establish a sort of supremacy, as in the case of Amen-Rá, whose prominence dates

from the eighteenth dynasty, when the Hyksos were expelled by the Theban kings. But the minor deities held their own, as minor and local deities do elsewhere, among the people, and the old cults lost none of their influence among the uneducated.

Turning to the documents which, outside the wall-paintings and contents of tombs, throw light on the religious ideas and practices of the Egyptians, the most famous, as it is the most important and venerable, is that known as the "Chapters of the Coming Forth by Day," or, more popularly, "The Book of the Dead."

Its origin and age remain matters of speculation, but its antiquity is such that the oldest copies known show that when they were made, some six thousand years ago, the exact meaning of parts of the text had become obscure to the transcribers. It first existed as oral tradition; then, set down in writing, became the subject of a series of recensions, so that the text, embodying the different ideas of different periods, typifies the religion which it more or less expounds. It contains, among a mass of trivialities, or what appear so to be to us, the hymns, prayers, and magic formulæ against all opposing foes and evil spirits, to be recited by the dead Osiris (for the soul was conceived to have such affinity with the god Osiris as to be called by his name) in his journey to Amenti, the underworld that led to the Fields of the Blessed. It had already acquired such an authority in the times of Pepi and Teta, 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 inscribed on our own gravestones.

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 2,500 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 civilisation; 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 a high intellectual and moral standard is reached that the claims of women to an equality begin to be recognised. Now, in the earliest records of domestic and political life in Egypt we find this equality more fully recognised 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."

The highly metaphysical nature of some features of the Egyptian creed is proof of the antiquity of the religion, since such elements are among the later products of every theology. Among existing races we find similar religions corresponding to similar stages of civilisation. With the very rudest races, religion consists mainly of ghost worship and animism. Mr. 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 abiding sleep of death this shadowy self becomes a ghost which haunts its old abodes and former associates, mostly with 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 preventing the return of 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 of food and implements with the corpse to induce the ghost to remain tranquilly in the grave, or to set out comfortably on its journey to another world.

Animism is another, and, probably, still older, tap-root of the lower religions. 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 civilisation rising to higher conceptions, developing, as in

some parts of India to this day, their ghosts into gods, and confining their operations to the greater phenomena of nature, such as the sky, the earth, the sun, the stars, seasons, and so forth. By degrees the unity of nature begins to be felt by the higher minds; priestly castes are established in which there is 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 highest races. 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 recognised 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.

Ethical codes are among the latest to appear. It is only after a long progress of civilisation 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.

The elevated moral code of portions of the Book of the Dead may be cited as another proof of the great antiquity of Egyptian civilisation. 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 monopolised 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 civilisation, must be removed by an enormous time from the crude ideas and revolting customs of barbaric ages.

There is one phenomenon to be noted in these ancient religions, that of degeneration. After having risen to a certain height of pure and lofty conceptions they cease to advance, become corrupted by degrading myths, by cruel and immoral rites, and finally decay and perish. Thus do they prove that subjugation to the law of birth, growth, maturity, decay, and death, which accompanies all sublunary things.

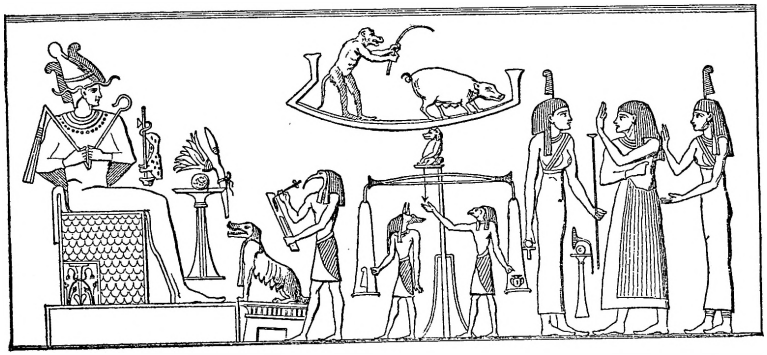
"The old order changes, giving place to new."

Environment changes, and religions, laws, and social institutions must adapt themselves thereto, or perish. Empires rise and fall, old civilisations 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, amid the many oscillations of temporary conditions, carries the human race ever towards higher things.

In the case of ancient religions it is easy to see how processes of degeneration are aided. 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 vulgarised, 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 civilisation. This is eminently the case with 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 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, which was forthwith deposited as a mummy, with its Ka or second shadowy self, in the tomb, than the soul would appear before the supreme judge Osiris, and the forty-two heavenly assessors, to whom it would have to confess the naked truth, and be rewarded or punished according to its merits.



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

The theory was that man consisted of three or more parts: the body or ordinary living man; the Ka or double, 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 simulacra 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 Mr. Herbert Spencer has conclusively shown, a natural inference from dreams, and is found everywhere, from the stone period down to the crude beliefs of existing savages. It even survives among many civilised races in the belief in ghosts, and the precautions taken to prevent the Ka of dead men from returning to haunt their former homes and annoy their relatives. 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 recognising in man a spark of this spirit which is indestructible, and migrates either into fresh forms or into fresh spheres of celestial or infernal regions, and is finally absorbed in the great ocean from which it sprang.

We find almost the precise form of this Egyptian belief among many existing savage or semi-civilised 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. 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 civilisation 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 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 6,000 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!

I return for a brief space to the Egyptian pantheon (a summary of whose contents would more than fill this chapter) to refer to the honours paid by the one deity of nome or temple to his two companion deities, usually one god and one goddess, son and wife respectively, because in this we have the formulating of triads or trinities, in which Wiedemann sees "the earlier outcome of the effort after a systematic grouping of the deities," and because it is impossible for us to see the figures of Isis and her son Horus without being reminded of the Virgin Mary and Jesus, a comparison giving emphasis to the words of Scripture : 'Out of Egypt

have I called my Son.' But the Christian Trinity is simplicity itself as contrasted with the three-in-one groups of the Egyptian creed. For its gods were mortal, and when the father died the son became the father, and became the husband of his mother, and so on, in a pretty confusion worse confounded when we arrive at the expansion of triads into Enneads or cycles of time, of which some of the temples had two sets, 'the great and the small.'"

The varying and the regular phenomena of nature alike supplied conceptions of the functions of the several gods. The different phases of the sun 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 given to kings, "belief in whose divinity was maintained throughout Egyptian history," was probably derived, however, not from Ra, but from Per-ôa = great house—a title corresponding to Sublime Porte. The Osiris myth, which was the basis of belief in a future life and day of judgment, was clearly solar. This barbaric cosmogony held its ground among the Egyptians as tenaciously as the Mosaic cosmogony among Western illiterates. To them the firmament was an ocean or a celestial Nile running through a metal sky, on either of which the sun made passage from his rising to his setting. Or the great vault was a celestial cow upheld by four gods (as in Hindu cosmogony the earth rests upon an elephant), and it was over the surface of the cow's body that the sun made his daily journey. His annual course through Spring, Summer, Autumn, and Winter, translated itself as applied to man into the ideas of birth, growth, manhood, decline, and death, to be followed by a day of judgment, a sojourn in the under-world, and a resurrection.

In fact, the Egyptian religion seems 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, star-worship being extremely rare. Nevertheless, all the heavenly bodies were believed to control the destiny of those born under them, although the fate of the individual was determined by laws which the stars and planets must themselves obey. These were ascertainable by means of horoscopes, and "in the later papyri," so Wiedemann tells us, we find "spheres" or "tables by which the fortune of a man could be calculated from certain data, such as the hour of his birth, and the like. From the Egyptians and the Chaldæans, who also held similar ideas, these practices were passed on to the Greeks, and from them to the learned men (astrologers?) of the Middle Ages, and in their last outcome —far removed indeed from their original religious nature—they still play a great part in modern books of prophecy." The 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 1,460 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.

It is to be observed 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 development of the art of writing from hieroglyphics affords strong confirmation of this view. It is native to the soil; 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 that might possibly compare in point of antiquity with the Egyptian hieroglyphics and hieratic.

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 5,000

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 date of which is supposed to be about 3580 B.C.

The Chaldæan religion went through more changes in the course of its evolution. In the case of Egypt, 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 Akkadian had become a dead language, which could be read only 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 Akkadian religion we perhaps make a nearer approach than in that of Egypt to the primitive superstitions peculiar to the Mongolian race. To this day the religion of the semi-barbarous races of that stock is "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 conjurer-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 larger 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 grey 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. From what may, speaking broadly, be called early Akkadian times, we find a belief in great gods who are personifications of the forces of nature. They are departmental deities; henotheistic, that is to say, each is supreme in the element which he represents; and, as already shown, the intense language with which he is addressed has led to the erroneous inference of One God of Gods, and consequently to misleading theories of monotheism as a feature both of Egyptian, as already noted, and of Chaldæan theology. This applies especially to the tutelary deities of the several cities, who, within their own limits, were regarded as supreme; and the same theory has to be extended to the guardian god of each individual, who, in all times of trouble and peril, sought supernatural aid, repairing to priest and temple as vehicles of help.

The Chaldæans invented a whole hierarchy of Trinities, rising one above the other, while below them were an indefinite number of minor gods and goddesses 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 Gilgamesh, which is 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 legend of a universal deluge.

The first Akkadian 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 as that expressed by the Sanscrit Varuna, the Greek Ouranos. Mull-il, the next member of this triad, is the earth-god, while Ea is the god of the abyss or underworld, 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 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 Akkadian names, but they are better known by the Semitic translations of Sin, Samas, and Ramman. The next group of gods is purely astronomical, consisting of the five planets, Mars, Mercury, Jupiter, Venus, and Saturn, personified as Nergal, Nebo, Marduk, Istar, and Nindar. The number of gods was further increased by 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 Samas the sun; and Istar (Astarte, Astoreth, or Aphrodite), the planet Venus, the Goddess of Love and War, though a great goddess in her own right, was fabled to have wooed the youthful lover Tammuz or Thammuz, at whose death she descended to the underworld, that she might bring him back. Their return symbolised the advent of spring. The worship of Istar and Tammuz spread over the whole of Western Asia; and the beautiful myth has its variant in the descent of Demeter in search of Persephone in the realms of Pluto.

But of these only Belit and Istar were admitted into the circle of the 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, according to some interpreters, he represents the idea which, some 5,000 years later, became the fundamental one of the Christian religion — that of a Son of God, 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 as, 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 Mohammedanism 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 multiplicity 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 in 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 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:—

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 god might be as intense in a polytheistic as in a monothestic religion, and as illustrating the immense interval of time

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

which must have elapsed before such sentiments could have grown up from the rude beginnings of savage or semi-civilised 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 earliest known historical date of 7000 B.C. to allow of such ideas and civilisation having grown up from a state of things which, perchance, prevailed even in the neolithic period, and still prevails among the 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 more tends 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 civilisation, 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, as 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 other nations which have taken a leading part in civilisation.

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 civilised 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 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 praise of diligence, and the injunction not to be idle, in the Egyptian and Zoroastrian creeds, contrast favourably with the behest, "Take no thought for the morrow," of the Sermon on the Mount. But in this, as in all 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 whole world kin," when we educate ourselves up to the general idea that civilised 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—Piazza 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—Proctor—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 many distant Races—Implies Commerce and Intercourse—Art and Industry—

Embankment of Menes—Sphinx—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—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 civilisation 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-towers or 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 civilisation 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, from the prevalence of dual forms which seem to have preceded those of the plural, traces of this state can be discovered in the origin of civilised languages.

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 reckon up to five or ten. Even the chimpanzee 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 that 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 Mongolian 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 to 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 Akkad from older Akkadian works. But the monuments prove still more conclusively that such sciences must have been long known. 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 through 6,000 years of unwearied 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.

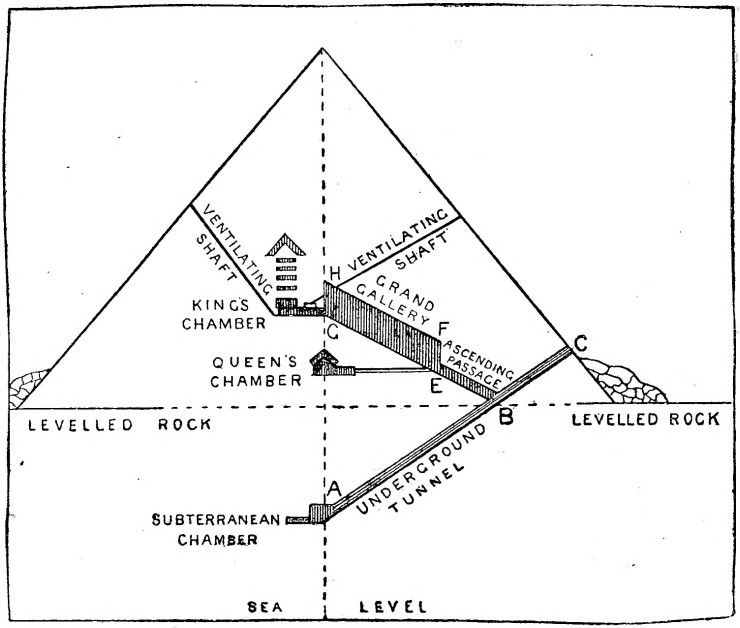
This is of course absurd. A supernatural revelation to teach a chosen people the worship of the one true God is at any rate an intelligible proposition, but scarcely that of such a revelation to an idolatrous monarch and people, to teach details of abstruse sciences, which in point of fact were not taught, 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 discovered only 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 twenty 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 sober 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. When the interior both of this and other pyramids is explored 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, and upon this matter we may, without committing ourselves to acquiescence of what now follows, refer to recent theories. Each pyramid, it is argued, is 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 showing very advanced knowledge of those sciences, and going far to prove that it may have been used, during part of the period of its construction, as a national observatory. The full details of this plan are given by Proctor 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 on the scientific facts and the astronomical and geometrical conclusions which are to be drawn from them is not to be lightly set aside.

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, with our modern instruments, would be a comparatively easy task, 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, and 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 2,328 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 3,459 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 *a 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 diagram.



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, 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, Alpha Centauri, would at that period shine directly down it. The passages therefore would have the double effect—(1) 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; (2) 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 Proctor'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 solution seems to be that suggested by Proctor, 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 almanacks. 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 Akkadians 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 range. 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. We have so many examples of the origin of corresponding ideas among peoples between whom there can have been no contact for ages, that it is perilous to theorise about the source whence these signs were derived. But we know that the oldest records and universal tradition show the primitive Akkadians 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.

Even if we admit, however, Proctor'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?

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 which confounds the national hatred of the shepherd kings, who conquered Egypt some 2,000 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.

Although some matters relating to the structure of the pyramids may thus warrant conjecture, enough is certain from the 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 fanciful coincidences and mystical theories, 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.

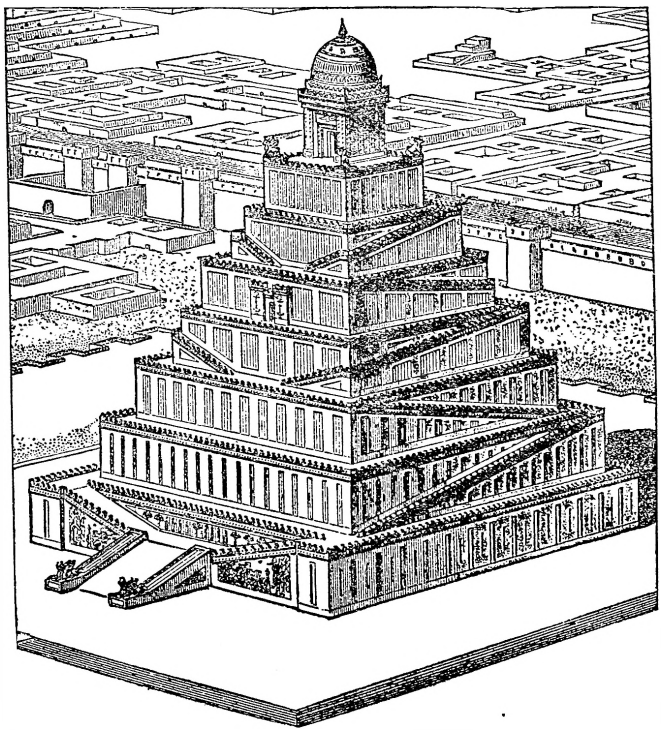
2nd. The united length of the four sides of the square base bears to the vertical height the same proportion as that of the circumference of a circle to its radius. In other words, it gives the ratio, which under the symbol π plays such an important part in all the higher mathematics. There are other 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. Proctor thinks, from the scientific knowledge which must have been possessed by the builders of the pyramid, that 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 whether 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 365¼ of these sacred cubits, or equal to the length of the year in days. The height is 5,819 inches, and the sun's distance from the earth, taken at 91,840,000 miles, which is very nearly correct, is just 5,819 thousand millions of such inches. It has been thought, therefore, that this height was intended to symbolise 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 365¼ 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 5,000 and 6,000 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.



ZIGGURAT RESTORED (Perrot and Chipiez), THE TOWER OF BABEL.

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. Babylonia was the birthplace of astronomy. Every important city had its temple, and attached to its temple its ziggurat, which 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 Nebuchadrezzar 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 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 for astronomical and astrological purposes. The number of stages appears to have had reference to some religious or astronomical fact, as three to symbolise the great triad; five for the five planets; or seven for those and the sun and moon; the number of seven being never exceeded, and the order being 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 Akkadians 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 ziggurat, which is said to signify 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. 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. Hence "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 Akkadian mythology, in which the moon-god is masculine and the sun-god feminine; while with other nations of a later and more advanced civilisation the genders, with some few exceptions, are reversed. 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 solar, which, connecting themselves with the sun's daily risings and settings, his assumed death in winter and resurrection in spring, and his passage through the signs of the solar zodiac, assumed a preponderating part in ancient religions. Traces, however, of the older period of lunar science and lunar mythology survived, especially in the week of seven days, and the mysterious importance attached to the number seven. 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 appeared to be 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 shared the common belief 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 similar among 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 present 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 identified with the same planet is meant, and so for the others. It is 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, to 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 the 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 Akkadians who inhabited Chaldæa prior to the advent of the Semites. Some of them, in fact, are from the royal library of Sargon I., of Akkad, whose date is fixed by the best authorities at about 3800 B.C. As has been said, these Akkadians were a civilised people, well versed in astronomy, but extremely superstitious, and addicted beyond measure to astrology. To some of their 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 Akkadian priestly astronomers at least 6,000 years ago.

Now for the Sabbath. The same clay tablets, older by some chiliads than the accepted Biblical date of the creation of the world, mention both the name and the institution, not as a day of rest for man, but as a day when the gods rested from their wrath, and might be pacified. The "Sabbath" was the day ruled over by the gloomy and malignant Saturn, as shown by his wider orbit, the oldest of the planetary gods, 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, reminding one of the man who

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

The king was not allowed to ride or walk on the Sabbath, and, even if he fell 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 compilers of the Old Testament dealt with the Sabbath as they did with the Deluge, the Creation, and other myths. 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, based on the legend of the rising of Jesus from the tomb, was shifted from Saturday to the first day of the week, 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." 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 Akkadian 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 superstitions of Akkadian 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 a glimpse of nature, or go to church or chapel cleanly and respectable in behaviour and attire, because there were Akkadian Zadkiels 6,000 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 Akkadians 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 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 organised 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. This is natural, for, as has been shown, the monthly changes of the moon come much more frequently, and are more easily measured, 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 phenomena presented by day and night, of the 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 civilised 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 definitely 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 amid storms and deluges fades daily 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

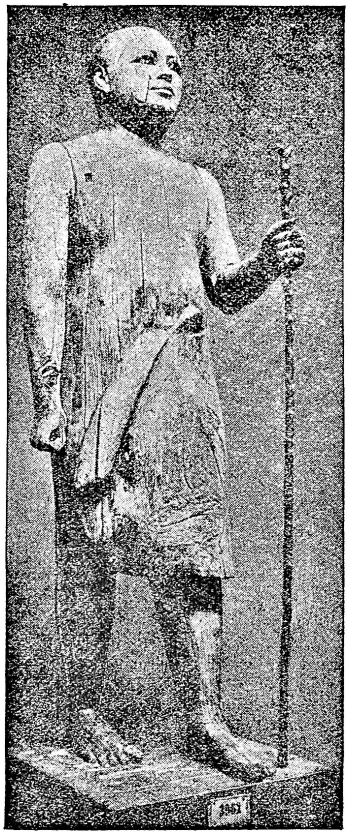
industry, the same conclusion of immense antiquity is forcibly impressed on us. In Egypt the reign of Menes, 4700 B.C., was signalised by a great engineering work, which would have been a considerable achievement at the present day. He built a great embankment, which still remains, by which the old course 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 of Egypt also date their original foundation to a period prior to that of Menes. It has been shown already that one of the most colossal and remarkable monuments, the Sphinx, with the little temple of granite and alabaster between its paws, is older than the accession of Menes.

There is abundant proof that at the dawn of Egyptian history, some 7,000 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 civilised country, were just as well understood and practised in Egypt 6,000 or 7,000 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 civilisation, 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, grace, and life-like expression of such



THE VILLAGE SHEIK, A WOODEN STATUETTE.

Boulak Museum, from Gizeh.—According to the chronological table of Mariette, this statue is over 6,000 years old. From a photograph by Brugsch Bey.

statues as that known as the Village Sheik, from its resemblance to the functionary who filled that office 6,000 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 facsimile 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 Book of the Dead 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 when originality of any sort was little better than heresy. War also and warlike arms hardly appear on these earliest representations of Egyptian life, conflicts being probably confined to frontier skirmishes with Bedouins and Libyans, such as we see commemorated on the tablet of Seneferu (p. 13).

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 Akkadian race, who had ruled there prior to the consolidation of Sumir and Akkad into one empire by Sargon I., somewhere about 3800 B.C. The remarkable thing about these statues is that they, like the statue of Chephren, are of diorite, which is believed to be found only 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 showing great proficiency both in taste and in technical execution.

The discovery of these diorite statues at such an early date, both in Egypt and Chaldæa, raises an interesting question as to the tools by which such an intractable material could be so finely wrought. Evidently they must have been of the 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 civilisation 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 in native and malleable form. 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 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 be accounted for only 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 civilised 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 sometimes occurring, as remarked above, in a metallic state, as in the mines of Lake Superior, where the Red 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 found only 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 now known are those of Cornwall, Malacca, Banca, and Australia. Of these, the last was of course unknown to the ancient world, but there is significance in the fact that "kassiteros" the Greek name for tin, is derived from "kestira," the Sanskrit name for that metal; and the island Cassitera must have been in the Straits of Malacca, whence tin may have been brought by prehistoric sea-routes to India, thence to Egypt by the Red Sea, and to Chaldæa by the Persian Gulf. This is the conjecture of one of the latest authorities in a very interesting work just published on *The Dawn of Ancient Art.* But the existence of tin in the Iberian mainland and in Britain was known to ancient traders at a remote period. In his valuable summary on the various sources of tin and on the trade-routes of the Phœnicians given in his *Origins of English History*, the late Mr. Charles Elton remarks that the "knowledge of the tin-deposits was the most valuable secret of Tyre and Carthage. The Phœnician sailors busied themselves in all known regions of the world in seeking for the precious ore. The seas were covered with their sails, and the harbours full of their ships, which they loaded with metal smelted from the tin-bearing gravels of the Malayan Cassitara." The transfer of the name "Cassiterides" (wrongly assumed to be the Scilly Isles) to the islands off the Lusitanian coast shows how their enterprise extended from the far East to beyond the Pillars of Hercules.

In the celebrated 27th chapter of Ezekiel, which describes the commerce of Tyre when in the height of its glory, tin is mentioned only once as being imported along with silver, iron, and lead from Tarshish—*i.e.*, from the emporium of Gades or Cadiz. 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. Another considerable supply of tin came from the Etruscans, who worked extensive 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 2,000 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 have been made useful only 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 throughout most of the ancient world, from the earliest monuments downwards, 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 can we fix the precise localities which supplied this tin, and the knowledge how to use it, to the two great civilised nations of Egypt and Chaldæa? Where can we say with certainty that bronze was in common use prior to 5000 B.C.? The knowledge both of bronze and of other metals, such as iron and gold, seems to have been universally diffused among the Mongolian 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 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.

We are driven to the conclusion that nations, capable of conducting extensive mining operations, 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 divers regions to the dense and civilised 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 would appear to 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? 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 civilisation,

[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.

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 have been effected only by sea. There are traces also of the maritime commerce of Eridhu having extended as far as India. Teak wood, which could have come only 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 civilisations both of Egypt and of Chaldæa; and this is confirmed by the earliest traditions of the primitive Akkadians, which represent these cities on the Persian Gulf as maritime ports, whose people were well acquainted with ships, as we see in their legend of the Deluge, which, instead of the Hebrew ark of Noah, has a well-equipped ship with sails and a pilot.

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 civilised 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 Aryan-speaking peoples, 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 from 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 civilisation 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. If, therefore, the influence of any foreign race on a relatively high plane of civilisation be excluded, we have sufficing period from prehistoric times to the dawn of history for the conversion of the aborigines, who left their rude stone implements in the sands and gravels of these localities, into the civilised 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 Myths—The Deluge—Importance of, as Test of Inspiration—More Definite than Legend of Creation—Account of the Deluge in Genesis—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 Parnapishtim—Noah's Deluge copied from it—Revised in a Monotheistic Sense at a comparatively Late Period—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 *a 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 ignorance as to the origin of stone implements was shared by the learned men of all countries, and many volumes 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 inseparablydifferent 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.

The fantastic theories of the causes of the worked flints are paralleled by those as to the origin of the remains of the great extinct quaternary animals which are contemporary with man. Everywhere we find the fossil bones of the elephant and rhinoceros explained as those of monsters and giants. 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.

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 fossils are in many cases so abundant at high levels that they could not fail to be observed, and 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 of the immensely longer palæolithic period and of the origin of man survives anywhere. 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 civilisation 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 (Jahve) 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, is obviously an allegorical attempt to explain 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 caste, 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 barbaric cosmogony 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 forbidden as incestuous. The same system prevails among most races at an equally low or lower stage of civilisation, as in Australia; and there are traces of its having existed among old civilised nations at remote periods. The animal-worship of Egypt may have been 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 many pagan superstitions. The division of the twelve tribes of Israel may 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.

But in all these various and discordant myths of the creation of man it is evident there are no echoes of 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, except 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 Akkad and the form of the oldest Akkadian hieroglyphics make it almost certain that they had migrated into Mesopotamia from the highlands of Kurdistan or of Central Asia. The Athenians also and the 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-speaking races also have no 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 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 Vedas contain no history, and the

inference that a people of Aryan speech 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 may appear 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. Then, too, 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 civilised and uncivilised. One explanation of puzzling identities is that the human mind, at the same level of culture, explains like phenomena in the same way, just as, in prehistoric times, man everywhere made shift with similar tools and weapons.

I come now to the tradition of a Deluge, which is 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 immediate 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 statements 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 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 Lyell 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 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 comparatively recent date, not nearly so remote as the historical records of Egypt and Chaldæa, and therefore must be either true or false. 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 pair 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. 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 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 2,000, and more probably 4,000, years later than that shown by the records and monuments of Egypt and Chaldæa, when great empires, populous cities, and a high degree of civilisation 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-civilised 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

[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 one of the greatest masters of English prose, but as showing that the same conclusions inevitably force themselves on all who understand the first rudiments of Modern Science.

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 cannot be excepted from 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 subside. 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 1,500 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, 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 deposited 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. W. 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 it will soon be found 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 5,000 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 3,000 years older than that assigned for Noah's Deluge; and similar records in Chaldæa going back as far.

In none of these is there any mention of an universal deluge as an historical event 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 civilisation, 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 why 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 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 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 endeavour 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. For

example, in the Hindoo mythology 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 Parnapishtim (formerly read as 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 Gilgamesh (formerly read as 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 Gilgamesh during his descent to the lower regions by his ancestor Parnapishtim, one of the God-kings, who are said to have reigned for periods of tens of thousands of years. 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., symbolise his passage through other zodiacal constellations. It forms the eleventh chapter of the Epic of Gilgamesh, corresponding to the eleventh month of the Chaldæan year, which was the time of heavy rains and floods.

Now, this deluge of Parnapishtim, 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 Akkadian 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 Parnapishtim 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 Parnapishtim takes on board not his own family only, but several of his friends and relations; and the difficulty of repeopling 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."

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. They are either 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 repeopled 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 (as this is defined in the next chapter) 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 Archbishop 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 civilisations, 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 or none of the Bible must be inspired, 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 civilisations. 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 would have been reached had the Saracens been victorious at Tours, with the result, in Gibbon's words, that "perhaps the interpretation of the Koran would now be taught at Oxford," while her pulpits demonstrated "to a circumcised people the sanctity and truth of the revelation of Mohammed."

CHAPTER VII.

THE HISTORICAL ELEMENT IN THE OLD TESTAMENT

Moral and Religious distinct from Historical Inspiration—Myth and Allegory—The Higher Criticism—Ancient History and Monuments—Cyrus—Composite Structure of Old Testament—Elohist and Jehovist—Priests' Code—Canon Driver—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—Pre-Abrahamic and Patriarchal Period mythical—Discordant Chronology—Josephus' Quotation from Manetho—Doubtful Traces of Egyptian Influence—Future Life—Legend of Joseph—Moses—Osarsiph—Life of Moses full of 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 Authentic 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 under that title. It is open to any one to hold that there runs through the whole of these writings a certain moral and religious idea, 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 mules 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 two great Monotheistic religions of the world, Judaism and Mohammedanism, and the quasi-Monotheistic (for it is in essence Tritheistic) Christianity, superseded the older forms of polytheism.

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

> "Thro' 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 one 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 which 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 rich man who fared sumptuously every day, a beggar named Lazarus, and that there are 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 recognised, and what the most liberal and learned Anglican Divines of the present day are beginning

to recognise; for we find Oxford Professors like Canon Driver 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 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.

This criticism has now been so systematised by the labours of a number of earnest and learned men in all the principal countries of Europe that it has risen to the dignity and security of a science; and, although there are still differences as to details, its leading theories are no more in dispute than those of Geology or Biology. The conclusions of enlightened English divines like Driver, Sayce, and Cheyne are practically the same as those of Kuenen, Wellhausen, Dillmann, and Renan, and any one who wishes to have any intelligent understanding of the Hebrew Bible must take those conclusions into consideration.

Although the Old Testament does not carry history back nearly as far as the records of Egypt and Chaldæa, it affords a very interesting picture of the ways of thinking of ancient races, of speculations about their origin and diffusion, of their manners and customs, of their popular legends and traditions, and of their first attempts to solve problems of science and philosophy.

It is with these historical matters 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, which has been already given, is a most instructive one, since it 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.

The historical portion of the Old Testament is singularly deficient in this essential point of confirmation. But we are somewhat anticipating matters which fall more fitly into place later on, and the first thing necessary is to have some clear idea of what this Old Testament really consists. 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 first two 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 first two 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.

The two narratives, Elohistic and Jehovistic, thus distinguished 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 between 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 the 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 the 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 crystallised 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 Dillmann 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 into 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 the "scissors and paste" method is afforded by the first and second chapters of Genesis, and the way in which the Elohistic and Jehovistic narratives are so strangely intermingled 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 Nebuchadrezzar, 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 among the other reforms introduced by Ezra a new and complete edition of the old writings was made and stamped with a sacred character.

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. Those 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 statements, 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. The Jews have been zealously, 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 was 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 crystallised 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 recognised, 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 in 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 of unsurpassed tediousness.

Now, during the period preceding the Exile all this was very different. So far from being zealous for one Supreme God, Jehovah was long recognised only as a tribal or national god, one among the many gods of surrounding nations, but *primus inter pares*, or "first among equals." 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 scandalised 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 people from other nations.

It was a cruel act, characteristic of the fanatical spirit of priestly domination, which, when these conflict with its aggrandisement, never hesitates to trample on the natural affections and the laws of charity and mercy. But it was the means of crystallising the Jewish race into a mould so rigid that it defied wars, persecutions, and all dissolving influences, and preserved the idea of Monotheism which was to grow up into the world-wide religions of Christianity and Mohammedanism. 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, 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 recognised as a 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, 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, because 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 of the principal events of each reign from the foundation of the Monarchy had been kept, 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, recognised 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 Vendidad 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 recognised 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 "even unto the hyssop that springeth out of 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 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 civilised 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 Nebuchadrezzar, 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 in 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, crystallised 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, 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 on still older materials. The very crudeness of many of the representations, and the barbarism of manners, point to an early original. 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 as 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 hence religious reformers used 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 civilisation, 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, which meet with confirmations from Egyptian and Assyrian history.

To the 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, there follows the story of ten antediluvian patriarchs, who live on the average 847 years each, and who correspond with the ten gods or demigods 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 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 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. It 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 Biblical literature to the time of the Exodus 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 both are derived from a common source, and revised at a later date —that of the Hebrew in a monotheistic sense. The cuneiform tablets discovered at Tel-el-Amarna in Egypt in 1887, evidencing the use of the Babylonian language in Canaan at a date not later than 1700 B.C., warrant the inference that Babylonian legends may have been imported thither, and that on the settlement of the Israelites in that country these legends were incorporated with their traditions, and, abiding among them, were woven into the Pentateuch when priestly and prophetic hands gave it final shape. As an example of the changes which the materials underwent, 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 Parnapishtim 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 symbolised 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."

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 was 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 in a similar formation in Catalonia described by Lyell. 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, 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 submerge 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 as 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 legendary character is obvious. 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. But it is needless to further pursue this matter, since we have admissions as to the mythical character of the patriarchal age by every orthodox scholar whose name carries weight. Animadverting on the assumptions of pseudo-concessionists of the type of Professor Sayce, Canon Driver says: "Mr. Tomkins and Professor Sayce have produced works on *The Age of Abraham* and *Patriarchal Palestine*, full of interesting particulars, collected from the monuments, respecting the condition, political, social, and religious, of Babylonia, Palestine, and Egypt, in the centuries before the age of Moses; but neither of these volumes contains the smallest evidence that either Abraham or the other patriarchs ever actually existed. *Patriarchal Palestine*, in fact, opens with a fallacy. Critics, it is said, have taught 'that there were no Patriarchs and no Patriarchal age, but, the critics notwithstanding, the Patriarchal age has actually existed,' and 'it has been shown by modern discovery to be a fact.' Modern discovery has shown no such thing. It has shown, indeed, that Palestine had inhabitants before the Mosaic age; that Babylonians, Egyptians, and Canaanites, for instance, visited it, or made it their home; but that the Hebrew patriarchs lived in it there is no tittle of monumental evidence whatever. They may have done so; but our knowledge of the fact depends at present entirely upon what is said in the Book of Genesis. Not one of the many facts adduced by Professor Sayce is independent evidence that the Patriarchs visited Palestine, or even that they existed at all."

To the like effect writes Dr. G. A. Smith in his *Modern Criticism and the Preaching of the Old Testament:* "While archæology has richly illustrated the main outlines of the Book of Genesis from Abraham to Joseph, it has not one whit of proof to offer for the personal existence or characters of the Patriarchs themselves. This is the whole change archæology has wrought; it has given us a background and an atmosphere for the stories of Genesis; it is unable to recall or to certify their heroes."

The legendary character of the patriarchal age, which may be compared with the heroic age in Greece, was demonstrated by Kuenen, Knappert, and other Continental scholars thirty years ago. "Actual ancestors are never distinctly traceable," says Dillmann—a sound statement pushed to extremes by Goldziher, who, following the late Professor Max Müller's philological methods, resolved Abraham, Isaac, and

Jacob into sun and sky myths, Jacob's twelve sons being the moon and eleven stars. Steinthal, with more warrant, converted Samson, the "shining one," into a solar hero whose labours correspond to those of Hercules. But such speculations are of slight importance, since the major fact of the unhistorical foundation of the early Hebrew narratives is admitted.

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, all of which are hopelessly inconsistent with the genealogies. Genealogies are perhaps more likely to be preserved accurately by oral tradition than by 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. But there is no 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-civilised 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 been influenced so little, if at all, by Egyptian manners and beliefs. And where the positive evidence is scanty, the negative appears to be conclusive. This is most remarkable in the absence of all belief in a resurrection of the body, future state, 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 standing 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 new-fangled 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 civilised empire as Egypt, they could have emerged from it at such a plane of low civilisation, 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 civilisation could not have exceeded that of the rudest Bedouins, while 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 that 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 romance as history; and this suspicion is strengthened by the fact that the episode of Potiphar's wife is almost verbatim the same as in 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; so that, on the whole, this narrative does not go far, in the absence of any confirmation from monuments, in assisting us to fix 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 civilisation 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 civilised Amorites and Canaanites. If the conclusions 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 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, as has been shown, without sufficient warrant, some authorities detect in the religious metaphysics of the earliest ages in Egypt. 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. As already noted, the story of his preservation in infancy, as of an infant hero or god, is a variation of the myth common among many nations. 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 further 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 recognised 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 highland flood, coming from banks of red marl. After a few days the real rise commences, the Nile resumes its usual colour, percolates 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, there follow 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, submitted 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 population of at least 2,500,000, who are said to have wandered 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 so imbued with Sabbatarian qualities as to keep fresh only for the day it is gathered, but for two days if gathered on a Friday, so as to prevent the necessity of Sabbath labour in procuring it.

Bishop Colenso points out with irresistible force the obvious impossibilities in regard to food, water, fuel, sanitation, transport, and other matters, which are 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 barrenness of the "howling wilderness." Accordingly, reconcilers have been reduced to the supposition that ciphers may have been added by copyists, and that the real number may have been 6,000, 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 statement 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. Too much emphasis cannot be laid upon the fact that, to the present time, not a single monumental notice of the Hebrews, as dwellers in the land of Egypt and the house of bondage, is forthcoming. In narrating the results of his excavations in 1896, Professor Flinders Petrie reported the discovery of the upper part of a black granite colossus of Amenhotep III., on which was inscribed an account of wars carried on by that king in Syria, apparently Northern Palestine, with the people of Israel, whom he spoiled. That was the first time that any mention of the Israelites in any form had been found in Egypt, and, obviously, it throws no light upon the statements of the Old Testament, which remain the sole, and not unquestioned, authority upon the events gathering round the reputed Exodus.

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, from old documents and traditions, these being pieced 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 verse 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" (verse 2); while in verses 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 wrath 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 David, the man after the Lord's own heart, tortures to death the prisoners taken at the fall of Rabbah, and gives up seven of the sons of Saul to the Gibeonites to be sacrificed before the insatiate deity 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.

The only safe conclusion seems to be that authentic annals of Jewish history 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 perhaps thence into Egypt, where, assuming the Exodus story to be genuine, they remained for an uncertain time and were oppressed by the national dynasty which expelled the Hyksos; leaving Egypt 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 the horde of Aztecs who conquered the older and more civilised Mayas. 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 civilisation, 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 Nebuchadrezzar—*i.e.*, for a period of some 400 years after Solomon—never seems to have lost its character of a considerable and civilised 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, organised 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 2,000 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—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, 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 7,000 years in Egypt, and probably for 9,000 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 civilisation, already existing. Other nations also 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 4,000 to 5,000 years.

Traditions do not add much to the information furnished by monuments, and fade rapidly away into myths and legends. The oldest and most authentic, those of Egypt, confirm the inference of great antiquity as to its civilisation 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 demigods, 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 1,000 years with certainty to the date of Menes; but from the high state of civilisation which had been evolved prior to his accession from the primitive conditions of the stone period whose remains are found in the Nile Valley, it is not extravagant to 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 civilisation. 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.

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 characterised 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 lies 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 and inter-glacial periods cannot be exactly defined, nor 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 lies the tertiary, with its three main divisions of Pliocene, Miocene, and Eocene, each containing numerous subdivisions, and all showing a progressive advance in forms of life, from older and more generalised types towards newer and more specialised ones, and a constant approach towards genera and species now existing. Behind the tertiary lies the secondary period, into which it is unnecessary to enter for the present purpose, for all is different, and even mammalian life is known to be present only 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 organised 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.

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.

Beginning with the recent or post-glacial period, 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, in the shape 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 civilisation 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 became 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 civilisation 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 to be obtained only by mixing the two in a 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.

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 be taken as only 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 civilisation which made the construction of such villages possible.

The civilisation coincides wonderfully with that of the primitive Aryan groups, as shown by linguistic palæontology. The discussion as to the origin of these 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-speaking families point to their having been pastoral nomads, in a state of civilisation 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 civilisation 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 1,000 feet long, 200 feet wide, and 10 feet thick. How long such masses must have taken to accumulate must be apparent when we consider that the state of civilisation 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 1,000, 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 beyond that of great antiquity.

The peat-mosses of Denmark have been appealed to as supplying 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 2,000 years, and no one can say for how much longer. 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 4,000 to 16,000 years for the formation of some of these peat-bogs as a very vague estimate, carrying us back perchance to a time when Egypt and Chaldæa must have been already densely peopled, and far advanced in civilisation.

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 found only 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, outside the British Isles (I am speaking now only of Europe) 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 large 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 began to run only 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 or the post-glacial to have 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 be obtained only 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 that 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 land now covered by the German Ocean must have been a river valley, the continent of Europe extending 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. 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 2,000 or 3,000 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 every-day 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 1,000 miles, over half a continent, retarded by friction, and surmounting mountain chains 3,000 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.

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 is, 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 period 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 America a still more massive ice-cap overflowed mountain ranges 3,000 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 3,000 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 Pyrenees and Carpathians, the Atlas and Lebanon, the Taurus and Caucasus, the highlands of Scotland, Ireland, and Wales; in the Rocky Mountains and Sierra Nevada; in 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 have 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 a clue be afforded—and authorities differ as to this—by Dr. Croll's theory, which explains the great variations in climate as due to periodic changes in the eccentricity of the earth's orbit, the periods of greatest cold coinciding with those of greatest eccentricity. But we know generally from the amount of work done and the changes which took place that the Ice Age must have lasted for an immense time. The ice, which covered so great a portion of the northern hemisphere, was not a polar ice-cap, but, as is proved conclusively from the direction of the striæ which were engraved by it on the subjacent rocks, spread outwards in all directions from great masses of elevated land. 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, 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 1,300 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, 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 have been intermixed, while 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, 1,300 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 2,000 and 3,000 feet. In Norway, also, old sea beaches are found 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 a 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 2,500 or 3,000 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 once 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 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 2,000 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 embraces only 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 the moraine mud of glaciers, deposited by the 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 like those 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. Loess is found in the valleys of the Yang-tse-Kang and the Mississippi; and Sir Charles Lyell, referring to the fossil human bone discovered 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 unearthed at considerable depths 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, the streams issuing from which carry it beyond 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 of the loess and of the *débris* 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. Sir John 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 down, 600 feet above the sea, bounded the horizon on the south? And yet this must have seen 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, geologically speaking, comparatively recent times.

Great, however, as is the antiquity shown by these relatively modern instances, they sink into insignificance compared with that evidenced by a recent discovery, which I quote the more readily because it rests on the high authority of the late Professor Prestwich, who has been foremost among modern geologists in reducing the time required for the glacial period and for the existence of man. It 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 have been deposited only before the present rivers began to run, and when the configuration of the country was altogether different. Mr. Harrison, a shopkeeper at Ightham in Kent, who is an ardent field-geologist, recently discovered what have been named eolithic, or pre-palæolithic, implements, in considerable numbers and in various localities, in these gravels of the great southern drift, at an elevation of 750 feet above the sea level. 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, the great southern drift, in which the implements are found, could have come only from a mountain range 2,000 to 3,000 feet high, which formerly ran from east to west in the line of the anticlinal axis which runs down the centre to 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 during 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. Judging from the size of the rolled stones, this water must have travelled with considerable velocity ; and it must have come from the south, because the cherts and grits are

found only there, and because the levels at which the gravels are found are in that direction. By following these levels as far as the present surface extends, which is to the southern edge of the green sand, 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 2,800 feet, or, in other words, that about 2,000 feet must have disappeared by denudation. This is the more conclusive because, as remarked above, Prestwich approached the subject with a bias towards 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 3,000 years. At this rate the time required for the removal of 2,000 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 period 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 he 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 deposit 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.

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 2,000 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, which are brought down in great masses by hydraulic jets to the gravels of the pre-glacial rivers. In a large 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. Skertchley, an eminent English geologist, who visited the district, says of these gravels: "Whatever may be their absolute age from a geological standpoint, their immense antiquity historically is beyond question. The present great river system of the Sacramento, Joaquin, and other rivers has been established; cañons 2,000 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 6,000 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 the chapter on "Tertiary Man" 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 proves that there is an abundant balance in the

bank of Time to meet any demands that may be made upon it by the kindred sciences.

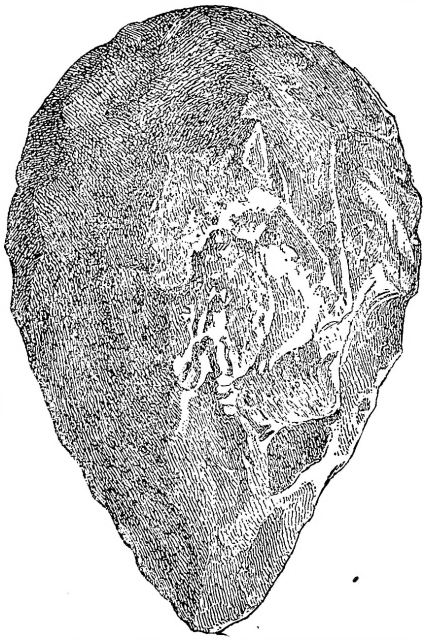
CHAPTER IX.

QUATERNARY MAN

No longer doubted—Men existed 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 Periods—Advance of Civilisation—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 Cannstadt —Cro-Magnon — Furfooz—Truchere—Skeletons of Neanderthal and Spy—Cannstadt Type oldest — Cro-Magnon Type next—Skeleton of Cro-Magnon—Broad-headed and Short Race resembling Lapps—American Type—Negroes and Negritos—Summary of Results.

THE time is past when it is necessary to go into any lengthened argument to prove that man existed throughout the Quaternary period. Little more than half a century has elapsed since the confirmation of Boucher de Perthes's discovery of palæolithic implements in the old gravels of the Somme, and now the proofs have multiplied to such an extent that they are reckoned, not by scores or hundreds, but by tens of thousands. Stone tools and weapons have been found not in one locality nor in one formation only, but in all the deposits of the Quaternary age, from the earliest to the latest, and in association with the fauna 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 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 proving facts which are no longer disputed, with showing what bearing they have on the question of human origins.

The first fact to note is that at this

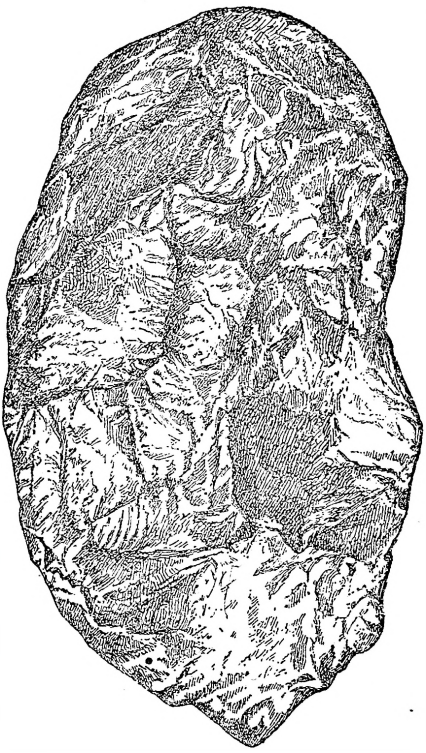


PALÆOLITHIC CELT (type of St. Acheul). From Quaternary deposits of the Nerbudda, India.

remote period man existed in considerable numbers, and was 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 material be wanting, of some hard stone of the district, fashioned by chipping without any grinding or polishing, have been found in the sands and gravels of most of the river valleys of Southern England, France, Belgium,

Germany, Spain, and 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, Egypt, Natal, South Africa, 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 America, and in Brazil, and the Argentine

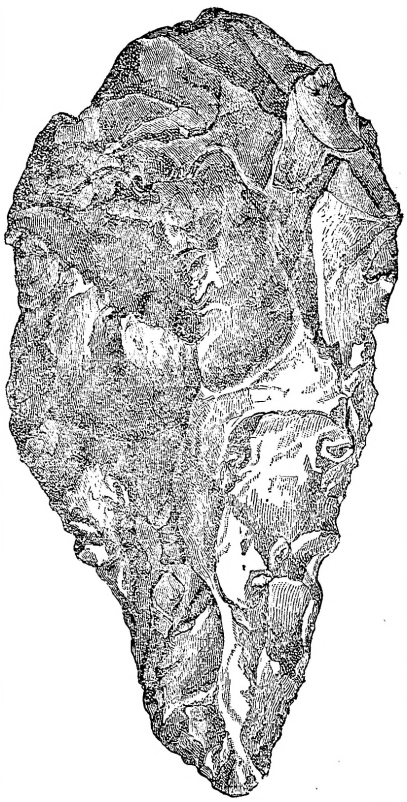


PALÆOLITHIC CELT IN ARGILLITE.
From the Delaware, United States (Abbott).

pampas in the South. And this has been the result of the explorations of little more than forty years, prior to which the co-existence of man with the extinct animals was almost universally denied; 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 vast areas of Asia, Africa, and America remain unexplored.

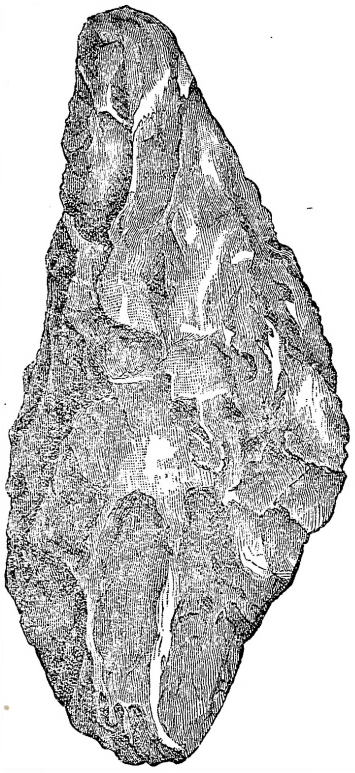
The next point to observe is that through-



PALÆOLITHIC FLINT CELT (type of St. Acheul).
From Algeria (Lubbock).

out the whole of the Quaternary period there has been a constant advance in human intelligence. 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 once ran at these higher levels, and gradually worked their way downwards, leaving traces of their floods ever lower and



PALÆOLITHIC CELT OF QUARTZITE FROM NATAL, SOUTH AFRICA.
(Quatrefages.)

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: 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 the lowest deposits 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 characterised 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 forms, as the reindeer, horse, and ox; but the three mentioned are, with relics of 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 difficult to explain. No doubt Africa and Europe were then united, and the theory of migration may be 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 into three stages: 1st, that of the mammoth and cave-bear, there

being some difference of opinion as to which came first, though they may have been simultaneous; 2nd, the middle stage of the mixed fauna; 3rd, the latest stage, that of the reindeer.

Now, to these stages there is striking correspondence in the associated character of the human implements. 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 with the other implements and weapons, the arrow-heads being barbed. And a great advance occurs in the use of bone, which seems to have been as important a civilising agent for palæolithic as metals were for neolithic man. This again may be 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 in civilisation. Bone 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 the animals by 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 perhaps for use as idols or amulets. Both drawings and sculptures are in many cases admirably executed, so as to leave no doubt as to the animal intended, especially in the case of the wild animals. 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. Portraits of the human figure are rare and very roughly done.

With the close of the reindeer age we pass into the Recent period, and from palæolithic to neolithic man. Except in the British Isles, whose geological detachment explains the gap, there is no physical break, and we cannot draw a hard-and-fast line as to where one ends and where 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 widely different races, which is such a prominent feature throughout human history, exist in the palæolithic age?

These are questions which can be answered—and that imperfectly—only by the evidence of skulls and skeletons. Implements and weapons may have altered 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 physical anthropologist rather than the archæologist or philologist.

On what are the distinctions of the human race founded? Mainly on colour,

stature, hair, and anatomical characters. These are wonderfully persistent, and have been so since historical times, intermediate characters appearing only where there has been intercrossing between different races. But the primitive types have continued unchanged; 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, 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 are practically reduced to the anatomical in any finds in Quaternary gravel or caves. Even, then, a number of causes, which will be indicated later on, combine to make human remains few and scanty, and to 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 divided.

We are confined, therefore, in the main, to Europe for anything like positive evidence of these anatomical characters of prehistoric man, and can draw inferences as to other habitable portions of the earth and other races only from implements. 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 trustworthy conclusions. At present, and as far as we can see back with certainty, the races which have inhabited Europe may be classified as tall and short, long-headed and broad-headed, and as of intermediate types, which latter, though constituting a majority of most modern countries, may be dismissed for the present, 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 remains 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.

The prognathism 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 characteristic and persistent features, and correspond generally with the type of the skulls.

The controversy as to the origin of the Aryans—a term which, strictly speaking, denotes linguistic affinities—has led to a great deal of argument as to these ethnological traits in prehistoric and neolithic times; and Canon Taylor's interesting volume on the *Origin of the Aryans*, and Professor Huxley's article on the same subject in the *Nineteenth Century* for November, 1890 (reprinted in his *Collected Essays*), 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.

While not denying the specific unity of the human race, the theory of a common Asiatic centre from which all the four main divisions of mankind—the Ethiopic, the Mongolic, the American, and the Caucasic—contemporaneously migrated, is given up as unsupported by evidence. When we first know anything of the early European races, we find them occupying substantially very much the same regions as at present. Of the European types already named, one, apparently the oldest in Western Europe and in the Mediterranean region, probably represented by the Iberians, and now by the Spanish Basques, was short, dark, and long-headed; a second,

short, dark, and broad-headed, type, was probably represented by the ancient Ligurians, and survives now in the Auvergnats and Savoyards; a third, tall, fair, and long-headed, had its original seat in the regions of the Baltic and North Sea, and was always an energetic and conquering race; while the fourth, like the third, was tall and fair, but broad-headed, and possibly not a primitive race, but the result of some ancient intermixture of the third or Northern type with some of the broad-headed races.

Now, as far back as human remains exist in sufficient numbers to enable us to form some 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 of tall and short long-heads, and tall and short broad-heads, mentioned above. 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. It is not until the neolithic period that the custom of burying the dead became general, and even then it was not universal; in many nations, even in historical times, corpses being burnt, not buried. It was connected, perhaps, 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. Cremation, as Professor Ridgeway suggests, may have originated in the idea of securing the soul from any chance of pollution by contact with the corpse. Such ideas, however, only come with some advance of civilisation, and it is questionable whether in prehistoric times the human animal had any more notion of preserving the body after death than the bodies of other animals by which he was surrounded.

The neolithic habit 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 competent scientific observer, or unless the circumstances of the case are such as to preclude the possibility of later interments. Thus the famous cavern of Aurignac had been long a palæolithic station, and 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, or part of a secondary neolithic interment, is a disputed point.

But to return to undoubted neolithic skulls, we have evidence that the four distinct European races already existed. Thus in Britain we have two 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 older, 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 short, long-headed race, who may be identified with the Iberians. 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, intermediate types between these and the older race. Later came 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 in Great Britain, although, so far as the Continent is concerned, there is evidence of continuity. It would almost seem that in these islands the old era had disappeared with the last glacial period, and that a new one had been introduced. But, although the skulls and bones of palæolithic races are wanting in Britain and are scarce everywhere, enough 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 inference drawn from these remains will be found in this work of Debierre's, and in Hamy's *Palæontologie Humaine*, Quatrefages's *Races Humaines*, and Topinard's *Anthropologie;* and it will be sufficient to give a short summary of the results, always premising that doubt must attach itself to the neolithic or palæolithic character of remains where the determination of their exact place in any deposit is unsettled.

Quaternary fossil man is divided, in the *Crania Ethnica* of Quatrefages and Hamy, into four races: 1st, the Cannstadt race; 2nd, the Cro-Magnon race; 3rd, the races of Grenelle and Furfooz; 4th, the race of Truchere.

The Cannstadt race is so called from the first skull presumably of this type, which was discovered two centuries ago in the loess of the valley of the Neckar near Wurtemberg. But the type is more certainly represented by the celebrated Neanderthal skull, which gave rise to much discussion, and which was pronounced by some to be that of an idiot, and by others the most pithecoid specimen of a human skull yet known.

A later discovery has set at rest all doubt as to the Neanderthal skull being the oldest Quaternary human type known in Western Europe. In the year 1886 two Belgian savants, Messrs. Fraipont 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. Fraipont 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 Cannstadt or Neanderthal type was widely diffused early in the Quaternary period, being detected in a skull from the breccia of Gibraltar, and in skulls

from Italy, Spain, Austria, Sweden, France, Belgium, and Western Germany; in fact, wherever 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 Cannstadt being the oldest. Hence it seems certain that the oldest race of all in Europe was dolicocephalic, and probable that it was of the Cannstadt 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 unmistakeably 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 civilised 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 Cannstadt type, though still in the early age when the mammoth and cave-bear were abundant, and the implements and weapons still very rude, we have that of the Cro-Magnon type. 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, wherein occur the types of some of the oldest and rudest stone implements. 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 appears to be no doubt of its extreme antiquity.

The skull, like that of the Cannstadt type, is dolichocephalic, but in all other respects it is different. The brow-bridges 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 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.

Co-existent with, or a little later than, this type is one of a totally different character—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 Cannstadt and Cro-Magnon.

We have thus evidence that the Quaternary fauna in Europe comprised 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 in recent times. But this affords 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 or have existed since the commencement of history; races which cannot possibly have been derived from any of the European types during 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, all of which are in the direction of approximation towards the pithecoid or ape-like type.

The size of the brain is less, and a larger proportion of it is in the hinder half; the muzzle is much more projecting, and the nose flatter; the fore-arm longer; while various other anatomical peculiarities all point in the same direction, though the type remains 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, evidencing that it is not 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 entirely different and improved races.

This will be the more evident if we consider the case of the pygmy Negritos, who probably represent the earlier, perhaps primitive, type of which the Negro were offshoots, and 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 to dense forests, high mountains, and isolated islands, by taller and stronger races, such as the true Negro, the Melanesian, and the Malay. But they had already existed long enough to develop various sub-types, for, although always approaching more to the Negro type than any other, the Negrito type differs in the length of skull, colour, hair, prognathism, and other particulars. 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. They are small and slightly built in proportion, but they are 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 earlier. It is remarkable also that the oldest human implements known get continually smaller as they get older, until those from the Miocene beds of Thenay and Puy Courny are almost too small for the hands even of Stanley's pygmies. There is evidence that some of these Negritos migrated into Europe not later than the Neolithic age, Dr. Kollmann, a Swiss anthropologist, having unearthed skeletons of about four feet eight inches in height in a neolithic deposit near Schaffhausen, while an under-sized folk is still found in Sicily and Sardinia, which islands are surviving blocks of the ancient land-connection between Europe and Africa.

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 9,000 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. 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 civilisation already long prevailing when written records began; in the case of palæolithic man, that of his existence in the same state of rude civilisation 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 civilisation, 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 X.

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—Supports Croll's Theory—Elephas Meridionalis—Mammoth—St. Prest—Cut Bones—Instances of Tertiary Man—Halitherium—Balæonotus—Puy Courny—Thenay—Proofs of Human Agency — Latest Conclusions — Gaudry's Theory — Dryopithecus — Type of Tertiary Man—Skeleton of Castenedolo—Shows no approach to the Missing Link—This 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, while the majority gradually die out in the later formations. So also the gigantic Saurians appear in the Carboniferous, culminate in the Lias, and become so nearly extinct in the Secondary 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 such as the skeletons of Spy belong?

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 or destroyed by other causes, as, *e.g.*, devoured by carnivora. 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 2,000 feet of a mountain range must have disappeared from the Weald of Kent, since the streams from it rolled down the gravels with contained 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. We have evidence of this in small patches of the older deposit being found adhering to the cave-roof, as at Brixham and Maccagnone in Sicily. In the latter place Dr. Falconer found flakes of chipped stone and pieces of carbon in 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. 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 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 Perthes. It is perfectly evident from the admitted existence of man throughout the Quaternary period, over a great part of the earth's surface, and divided into distinct types, that, if there is any truth in evolution, he must have had a long previous existence. The only other possible alternative would be the special miraculous creations of men of 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 counter-part 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 to aim at is 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. The distinction turns very much on whether the first great glaciation was Pliocene or Quaternary, and it 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 characterised 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 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, characterised 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 characterised 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.

The three advances and retreats of the great Perrier glacier also fit in well with the calculated effects of precession during high eccentricity, as about three 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 have been transported only 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 risè to a height of nearly 4,000 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 has its importance, for it involves a 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 have been made only by flint knives shaped 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 unmistakeably 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 specialised structure of the molar teeth. 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, when 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 appeared 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 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 at St. Prest, near Chartres, appears to afford 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. The river had no relation to the 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; but, in the judgment of some, it is old Quaternary. Its age might never have been disputed if the question of man's antiquity had not been involved, 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 unmistakeably 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 illogical it seems 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 generally identified. Sharp cuts could be made on them only while the bones were fresh; and the state of fossilisation, 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 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. Their conclusion is that 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

PLIOCENE.

ARROW-HEAD—ST. PREST.
(Hamy, *Palæontologie Humaine.*)

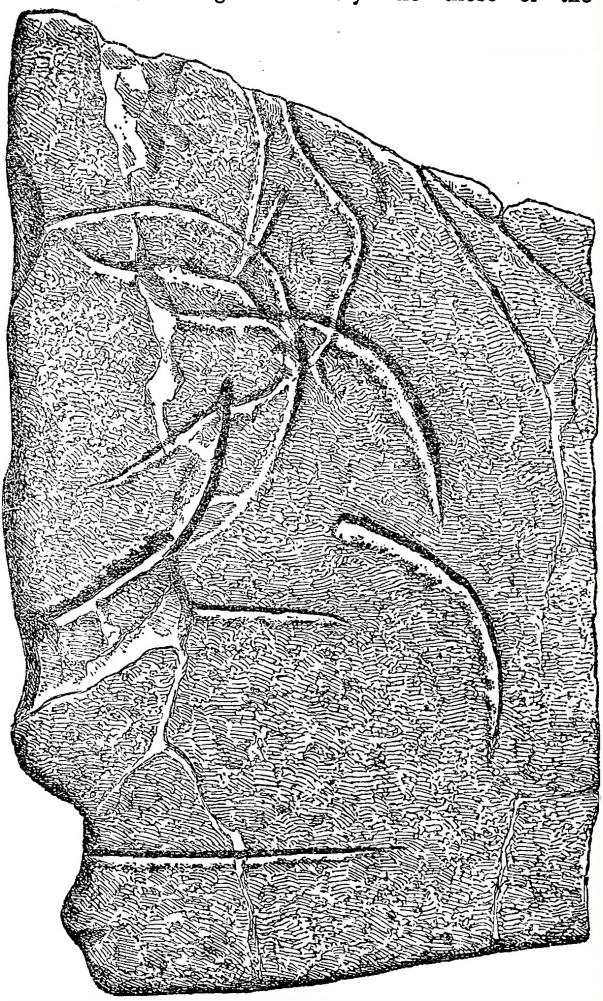
POST-GLACIAL.

ARROW-HEAD—YORKSHIRE WOLDS.
(Evans, *Stone Implements.*)

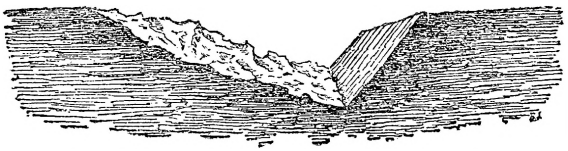
trained to scientific investigation, and armed with a microscope, to mistake a groove gnawed out by a shark or rodent for a cut made by a flint knife. No one who will refer to Quatrefages's *Hommes fossiles*, and look at the figures of cut bones given there from actual photographs, can feel any doubt 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 signalised 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 on 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 where there is a good deal of *primâ facie* evidence for Tertiary human remains, but the authenticity of which is still denied by competent authorities. Among these ought to be placed the example from Portugal, for, although a large celt very like those of the



CUTS WITH FLINT KNIFE ON RIB OF BALÆONOTUS—PLIOCENE.
From Monte Aperto, Italy.
(Quatrefages, *Histoire des Races Humaines.*)



CUT MAGNIFIED BY MICROSCOPE.

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.

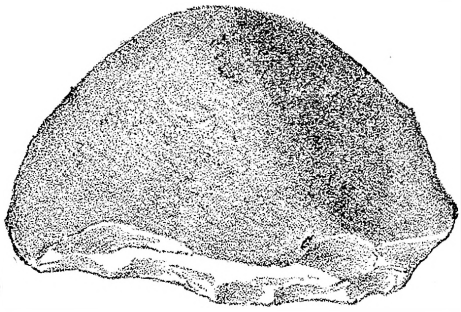
I have already discussed this matter so fully in a former work (*Problems of the Future*, ch. v. on Tertiary Man) that I do not propose to go over the ground again, but merely to refer briefly to some of the more important points which come out in the above six instances. In three of them—those of the 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 unmistakeably 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, carries 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 appears to be beyond dispute. In the central region of the Auvergne there have been two series of volcanic eruptions, the later towards the close of the Pliocene or commencement of the Quaternary period, while the earlier is proved by its position and fossils to belong to 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 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 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 doubt as to its human origin.



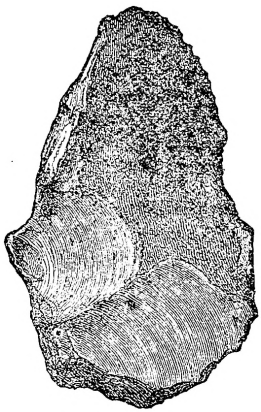
FLINT SCRAPER FROM HIGH LEVEL DRIFT, KENT. (Prestwich.)

The chipped flints from Puy Courny also afford another 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

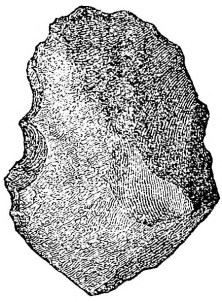
its nature is peculiarly adapted for human use. As Quatrefages says, no torrents or other natural causes could have exercised such a discrimination, which could have been made only by an intelligent being selecting the stones best adapted for his tools and weapons.

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 have been human or human-like intelligence in the Upper Miocene.

UPPER MIOCENE IMPLEMENTS. PUY COURNY.

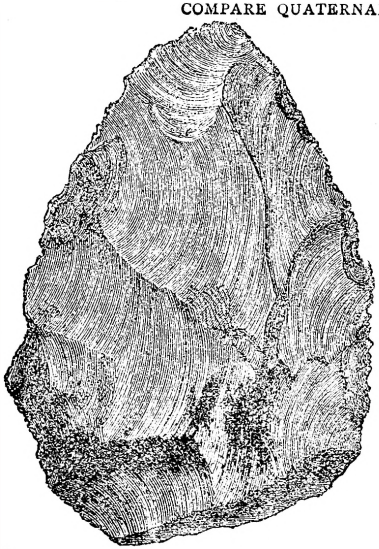


SCRAPER, OR LANCE-HEAD.
Puy Courny. Upper Miocene (Rames).
(Quatrefages, *Races Humaines*, p. 95.)

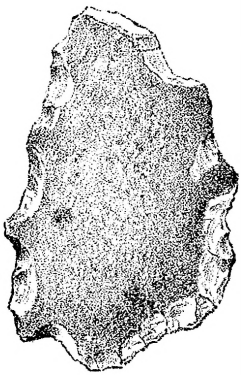


SCRAPER.
Puy Courny. Upper Miocene (Rames).
(Quatrefages, *Races Humaine*, p. 95.)

COMPARE QUATERNARY IMPLEMENTS.



WOKEY HOLE—GLACIAL.
(Evans, *Stone Implements*, p. 473.



PLATEAU DRIFT.
North Downs, Kent (Prestwich).

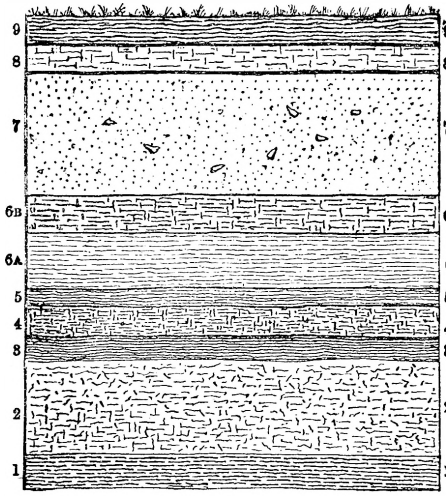
The evidence for the still older implements of Thenay is of the same nature as that for those of Puy Courny. First as regards the geological horizon. Subjoined is the section at Thenay as made by M. Bourgeois, verified by MM. Vibraye, Delaunay, Schmidt, Belgrand, and others, from personal inspection, 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 by its shells as Upper Miocene. The Orleans Sands are another Miocene deposit perfectly characterised by its mammalian fauna, in which the *Mastodon Angustidens* first appears, with other peculiar species. The Calcaire de Beauce is a solid fresh-water 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, characterised by the Mastodon, and the Lower Miocene, of which the Acrotherium, a four-toed and hornless rhinoceros, is the most characteristic fossil.

fessor 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 been on 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



9. Quaternary Alluvium.
8. Faluns—chipped flints.
7. Orleans Sands—chipped flints.
6B. Calcaire de Beauce—compact.
6A. „ Marly—no flints.
5. Clayey Marl, with Acrotherium—few flints.
4. Marl with nodules—flints.
3. Clay—chief site of cut flints.
2. Marl and clay—very few flints.
1. Marl and silex—no chipped flints.

SECTION AT THENAY.

The supposed chipped flints are said to appear sparingly in the upper deposits, to disappear in the Calcaire de Beauce, and to reappear, at first sparingly and then plentifully, in the lacustrian marls below the limestone. They are 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 Pro-

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

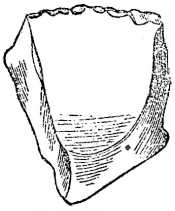
one part of the stone. The inference is strengthened if the specimen shows bulbs of percussion where the blows had been struck to fashion the implement, and if the microscope discloses parallel striæ and other signs of use on the chipped edge, such as would be made by scraping bones or skins, while nothing 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 doubt 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, after an equally careful and minute investigation, has adduced facts contradicting the conclusions of Quatrefages, Mortillet, and Hamy.

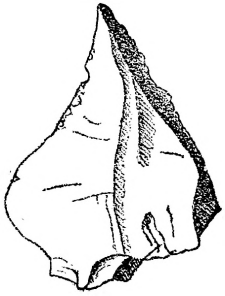
In order to assist the reader in forming an opinion as to the claim of these flints from Thenay to show clear traces of human design, I subjoin some illustrations of photographs in which they are compared with specimens of later date, which are undoubtedly and by universal consent the work of human hands.

MIDDLE MIOCENE IMPLEMENTS.

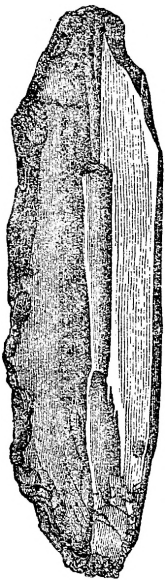


SCRAPER FROM THENAY. (Hamy, *Palæontologie Humaine*, p. 49.)

SCRAPER, OR BORER. Thenay. (Showing bulb of percussion. Quatrefages, *Races Humaines*, p. 92.)



BORER, OR AWL. Thenay. Miocene. (Congrès Préhistorique, Bruxelles, 1872.)



KNIFE, OR SCRAPER. Thenay. (Gaudry. Quatrefages, p. 92.)

These figures seem to leave no reasonable doubt that some at least of the flints from Thenay show unmistakeable 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.

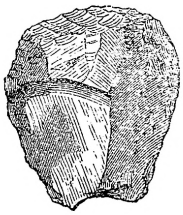
The evidence of the authenticity of these implements from Thenay is, moreover, greatly strengthened by the discovery of other Miocene implements at Puy Courny, which have not been seriously impugned, and by the essay of Professor Prestwich, confirming the discovery of numerous flint implements in the upper level gravels of the North Downs, which could have been deposited only by streams flowing from a mountain ridge along the anticlinal of the Weald, of which 2,000 feet must have disappeared by subaërial 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, to a period which, by whatever name we call it, must be enormous according to any standard of centuries or milleniums. 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.

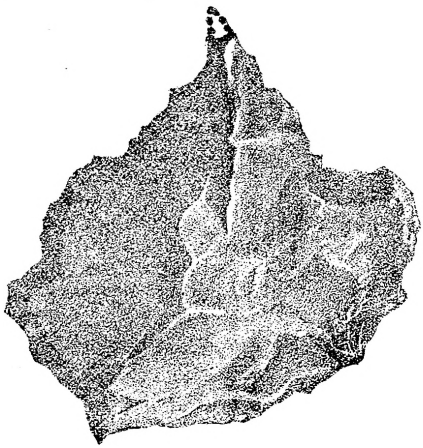
The following remarks of the Professor would apply almost as well to the Miocene implements as to those of the plateau :—

"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

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. (Congrès
Préhistorique, Bruxelles, 1872.)

[1] *Journal of Anthropological Institute*, Feb., 1892, p. 262.

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 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 recognisable, even the tools and weapons of modern savages—for example, those of the Australian natives—show, when divested of their mounting, an amount of work no 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 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."

Last, but not least, there is the discovery, made by Dr. Dubois in 1892, of part of a skull and thigh bone in the upper Pliocene beds at Trinil, on the banks of the river Bengawan, in Java. These remains, he assumed, belonged to an animal named by him *Pithecanthropus erectus*, or "upright ape-man," and they are of the greater significance as occurring in a region where it seems probable that man and ape diverged from their common pithecoid ancestor.

The positive evidence is therefore extremely strong that man 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 are found early in the Quaternary, I do not see how it is possible to avoid accepting it as an established fact.

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,[1] and he is now considered, though

[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."

undoubtedly an anthropoid ape, to be of a lower type than the chimpanzee or gorilla. The strongest argument, however, 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's *Races Humaines*:—

"The bones of four individuals—a man, a woman, and two children—were found at Castenedolo, 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 fossilised 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 concisely 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 *a 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 Cannstadt 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 principal 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 specialised 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 at all, from those 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 1,150 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 Castenedolo 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, already referred to, of anthropoid primates in the Eocene of Patagonia, should be confirmed, it would greatly strengthen the argument for the persistence 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 some anthropoid animal in those remote ages, from the repeated evidence of chipped stones and cut bones, showing unmistakeable 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.

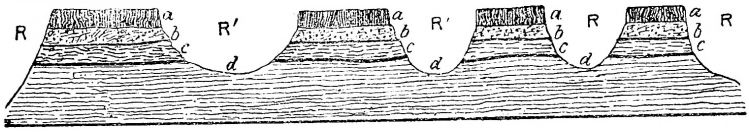
I turn now to the evidence from the New World. I have kept this distinct, for there is no such proof of synchronism between the later geological phases of this and of the Old World as would warrant us in assuming that what is true in one is necessarily true in the other. Thus, in Europe, the presence 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 synchronised 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 been made quite recently. Mr. Abbott was the first to discover implements of the usual palæolithic type in Quaternary gravels of the river Delaware, near Trenton, in New Jersey; and since then, as described by Dr. Wright in his *Ice Age in America*, they have been frequently found 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 these 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 tributary streams into a series of flat-topped hills, capped by basalt and divided from one another by deep and narrow cañons.



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.)

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 3,000 to 4,000 feet, consist of this late Tertiary or Post-Tertiary basalt, and that the Deschutes river has been cut into the great basaltic plain for 140 miles to a depth of from 1,000 to 2,500 feet, without reaching the bottom of the lava. The American and Yuba valleys have been lowered from 800 to 1,500 feet, and the gorge of the Stanislas river has cut through one of these basalt-covered hills to the depth of 1,500 feet.

The enormous gorge of the Colorado has cut its cañons for hundreds of miles from 3,000 to 6,000 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 discovered.

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, 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 characterised by fossils, to suppose that a fauna comprising the elotherium, 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 location of the find, and only knew that they had picked them out in sorting loads of the gravels, and generally thrown them aside. They 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 1,200 to 2,000 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,

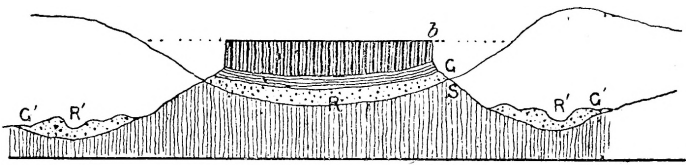
known as Table Mountain. In many places the sides of the valley which originally directed the course of the lava have been worn away, so that the walls on either side present a perpendicular face one hundred feet or more in height.

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 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 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.

[1] Professor Wright in *Century*, April, 1891.

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.



SECTION ACROSS TABLE MOUNTAIN, TUOLUMNE COUNTY, CALIFORNIA.
b, lava; *G*, gravel; *S*, slate; *R*, old river-bed; *R'*, present river-bed.
(Le Conte.)

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 that 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 ninety 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 sixty 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 forty feet. In Placer county stone platters and dishes have been found in auriferous gravels from ten to twenty feet below the surface. In Nevada county stone mortars and ground discs have been found from fifteen to thirty 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.....

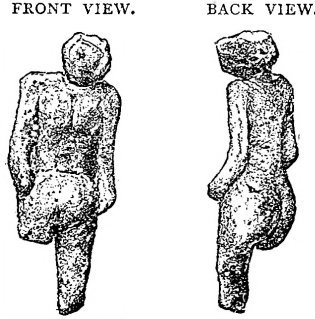
"Even these Californian remains do not exhaust the proofs of man's great antiquity in America, since we have the record of another discovery which indicates that he may, possibly, have existed at an even more remote epoch. Mr. E. L. Berthoud has described the finding of stone implements of a rude type 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 cases 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 fifteen 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 upon a stratum of coarse sand, mixed with clay balls at the top, and resting at the bottom on an ancient vegetable soil. The image was found in 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



THE NAMPA IMAGE—ACTUAL SIZE.

(Drawn from the object by J. D. Woodward.)

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, revolutionises 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 civilised 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, there appears to be no warrant for further question as to the existence of man in Tertiary times. But 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 Castenedolo 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 1,150 cubic centimètres as compared with 1,250 in Australians and Bushmen, and 1,600 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 Castenedolo 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

[1] Quatrefages and Hamy, *Crania Ethnica.*

irresistible, and without a greater number of well-authenticated confirmations we must be content to hold our judgment, as to the existence of man in the Tertiary period in either hemisphere, to a certain extent in suspense. But this extends only to the type of man as shown by these two skulls, and does not at all affect the fact that an ancestral type of man did exist in the Pliocene and Miocene periods. This 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 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.

CHAPTER XI.

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 6,000 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 Castenedolo—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 Constitution—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 races of mankind. These questions 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 6,000 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?

[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."

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. But this does not necessarily imply that the more highly specialised, and 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 be solved (or rather attacked, for in the present state of our knowledge a complete solution is probably impossible) only 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 an 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 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 anthropologists 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 civilised races have larger brains than inferior and savage ones. Thus the average brain of the European is about 1,500 cubic centimètres, while that of the Australian and Bushman does not exceed 1,200.

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-speaking race—Celts, Romans, Teutons, and Scandinavians—might almost be classified by the prominence and solidity of this feature of the face. The use of the term "Aryan" as denoting race is misleading. As Professor Keane remarks in his valuable treatise on *Man, Past and Present*, there is no trace whatever of the group of communities thus named, since this has long been merged in the countless other races on which its language was imposed. "We can and must speak of Aryan tongues, and of an Aryan linguistic family; but of an Aryan race there can be no further question, since the absorption of the original stock in a hundred other races in remote prehistoric times." Wherever the term is used throughout this book, it must be thus understood.

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 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 acclimatised 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 civilised 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 and already noted characters as tests, we find four distinct types among the earliest inhabitants of Europe, which can be traced 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 recognised 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, 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 civilisation 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. Brunette 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 the figures on Egyptian monuments enable us to say that the existing diversities of the races of mankind are not of recent origin, but have existed unchanged from the dawn of history. 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 6,000 years ago (see Illus., p. 63), 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.

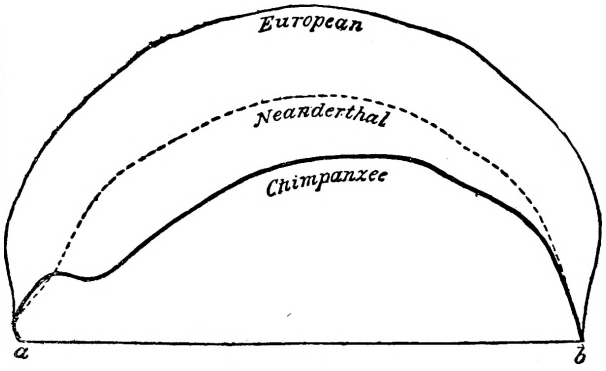
We start, therefore, with this undoubted fact, that a period of 6,000 or 7,000 years has been insufficient to make any perceptible change in the types of pure races, whether of the animal or of human species. And doubtless this period might be greatly extended if we had historical records of the growth of Egyptian civilisation 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 confidently 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 Cannstadt, of Cro-Magnon, and of Furfooz.

The Cannstadt 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 characterised 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 Cannstadt 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 civilised races. The stature was tall, the nose straight or projecting, and the chin prominent. The only resemblance to the Cannstadt type is that they are both dolichocephalic chiefly on the posterior region, and both prognathous; but the differences are so many and pro-



L'HOMME AVANT L'HISTOIRE. (From Debierre.)

found 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 Cannstadt 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 civilised 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.

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 Cannstadt 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 Cannstadt 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 sufficient 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, 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 Cannstadt, but rather to that which characterises 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 Cannstadt 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 Cannstadt, 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 Castenedolo, instead of showing, as might be expected, a still more rude and simian aspect than that of Cannstadt, show us the Cannstadt 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, 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 civilised world. The cause of this among Christians, Jews, and Mohammedans 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 generalised type in the Eocene; and it may be per-

mitted 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 generalised 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; on the other hand, the leporine cross between the hare and rabbit has no established results; and 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 by 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 brunette 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 polygeny 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 and tradition enable 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 migra-

tion 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 organised 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 both the whites and the blacks, either originate from them or give rise to them? The nearest congeners of man, the anthropoid apes and monkeys, are all catarrhine in the Old World, and all platyrrhine in South 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-points 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 from those of the present day. It was for ages the accepted belief that all mankind were descended primarily from a single pair of ancestors, who were miraculously created in Mesopotamia, and secondarily from three 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 migrations of peoples have been from west to east as well as from east to west; and that all history, prehistoric traditions, and linguistic palæontology point to the principal Aryan-speaking races as 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 whole question of place of origin 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, characterises 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, there stand 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 3000 B.C., would be an older race than the Egyptians or Akkadians, whose languages can be traced at least 2,000 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 had the gift of articulate speech at all. Some palæontologists have held that there was evidence for the oldest palæolithic race being speechless, and have christened it "Homo alalus"; but this is based on the fact that a single human jaw, that of La Naulette, lacks the genial tubercle, to which one of the muscles of the tongue is attached, and which is absent also in anthropoid apes.

It is, however, certain that from the first man had a certain faculty, like other animals, of expressing his meaning by sounds and gestures; but at what particular stage in the course of human evolution this faculty ripened into what may be properly called language is a matter of conjecture. It may have been in the Tertiary, the Quaternary, or not until the Recent period. As Professor Cunningham expounds the matter in his address at a recent meeting of the British Association: "In the solution of this vexed question we have little solid ground to go upon beyond the material changes produced in the brain. The structural characters which distinguish the human brain in the region of the speech-centre constitute one of the leading peculiarities of the human cerebral cortex. They are totally absent in the brain of the anthropoid ape, and of the speechless microcephalic idiot."

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 island sea. Thus far, Central and South-Western France, Spain, Portugal, Italy, and Algeria, to which may now be added Java, have afforded the oldest proofs of the existence of man, and of the co-existence of anthropoid ages. Darwin inclined to the view that North Africa was probably the scene of man's first appearance ; and a later 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.

The foregoing summary of the matter shows that in our present state of knowledge all theories of the place, time, and manner of human origins must remain speculations. 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 by very strong evidence for carrying them back into the Miocene. Anthropoid apes, which are similar to man in physical structure, and, in their limits, are as highly specialised 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 unmistakeable. 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 civilised 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.

In conclusion, I may remark that the 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 realised 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, 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.

must be adopted. 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, say, 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 many other existing mammals, their origin may be traced step by step backwards to some lower and generalised 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 such great specific variations as now exist, 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.

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