MODERN DISCOVERY AND THE BIBLE

By

A. RENDLE SHORT, M.D., B.Sc., F.R.C.S.

LONDON
The Inter-Varsity Fellowship of Evangelical Unions
39 BEDFORD SQUARE, W.C.1

First Edition - - - *December*, 1942
Reprinted - - - - *October*, 1943
Reprinted - - - - *December*, 1945

PRINTED IN GREAT BRITAIN

CONTENTS

PROLOGUE

In 1941 the members of the "Brains Trust" of the B.B.C. were asked at what historical event they would have chosen, if it were possible, to be present as spectators. One selected Gettysburg, another the storming of the Bastille, another the signing of Magna Carta. A lady made her choice to have had a seat at the trial of Joan of Arc. A naval officer wished he had been present when Christopher Columbus discovered land on the other side of the Atlantic. We venture to think that many listeners to the broadcast would have chosen far otherwise; they would have looked for incidents that were even more thrilling in themselves and more full of significance for the future. They would have entered as their choice the Israelites crossing the Red Sea, or Elijah calling down fire on Mount Carmel, or the trial of Jesus Christ before Pontius Pilate, or the last moments of the Crucifixion, or the first Easter morning in Joseph's garden, or the meeting of the Apostles in the upper room on Easter evening. But, it will be objected, these are Bible incidents, and they are in a different category. Exactly. They are related in a Book which is unique amongst books. If the events it describes did literally happen, the Book is by far the most important in the world. Hence, the interest and value of any new light bearing upon its reliability.

The reasons why Christians hold their faith in God, and in Jesus Christ, and in the Bible, are quite remote from the type of evidence discussed in this book. There were believing Christians long before any of our modern discoveries were made. The Hebrew Prophets, and the New Testament missionaries, did not argue that there must be a God from the facts of science or history, or at least this argument is only sparingly used. Paul does say that "the invisible things of Him since the creation of the world are clearly seen, being perceived through the things that are made, even His everlasting power and divinity". But the writer to the Hebrews declares that it is "by faith we understand that the worlds have been framed by the word of God"; he does not

argue that the earth, sun and stars prove that there must be a divine Creator. Jesus quietly assumes that His hearers will believe in God and the life to come, and His teaching is on that basis. The knowledge of Himself, He says, is a divine revelation to the soul (Matt. xvi. 17).

But many men and women with a modern education shrink back from the call. If they come to believe in God, they think, almost subconsciously, will not modern science confront their faith, and say, "I can disprove that He ever existed"? If they accept Jesus Christ as Lord of their thinking, will He not require them to accept as true a Book, the Bible, which they have been taught to regard as wholly contradicted by geology, biology, history, archæology, literary analysis, and I know not what other branches of knowledge? Has not modern learning gone over almost entirely into the other camp? So will not Christian faith lead eventually, either into an intellectual impasse, or into obscurantism—a compulsion to shut the eyes to unpleasant opposing facts for the sake of maintaining a theory? On these grounds they hold back.

This book is not concerned, or only slightly concerned, with the real reasons for belief in God, or in the historical facts about Jesus Christ, or in His Deity, Virgin Birth and Resurrection, or in the inspiration and authority of the Bible. In a former publication, now out of print,[1] these matters were dealt with at considerable length, and a number of difficulties and objections were dealt with. Since then treatises issued by our present publishers have handled these subjects, and the reader may well consult them.[2] The purpose of the present thesis is to expand certain chapters in *The Bible and Modern Research*, and to add others, attempting to explore whether it is true that the discoveries of recent years do really make orthodox Christian faith intellectually impossible for an honest enquirer.

Modern research bearing on the Bible has wandered into so many fields, very far removed from one another, that it may well be asked (and will undoubtedly be asked) what possible qualifica-

[1] A. Rendle Short, *The Bible and Modern Research.*

[2] A. Rendle Short, *Why Believe?;* H. E. Guillebaud, *Why the Cross?,* and *Some Moral Difficulties of the Bible.*

tions a mere surgeon, or indeed any one person, can aspire to possess to write with any authority on subjects so many and so various. The last thing in the world we claim is to write with any personal authority about the subject of any chapter in this book. But if we are to read only books written by experts, we shall have to find them by the score, one or two for each subject, and that is difficult. The hope is, that what follows may save the reader some of the labour. An attempt has been made here to set forth the views of real authorities, and the facts on which those views are based, with regard to modern discoveries bearing on belief in God, and in the historical and scientific reliability of the Bible. The one little qualification we do hope to be able to bring is some experience in distinguishing between real authorities and writers whose opinion is of little importance. No doubt a wider reading would have expanded our list of authorities, and perhaps brought better ones to sight. But it would have been at the cost of enlarging this book, which in wartime might well mean that it could not be printed for lack of paper. We are perfectly well aware that almost every statement, in every chapter, will be contradicted by some person or other, and that some of the objectors might have a right to be considered authorities. The fact is, that in science, and in history, there is still, in this country, room for freedom of thought and speech, and difference of opinion. We are not concerned to argue that natural science, or archæology, or any other branch of learning, *prove* the facts of the Christian religion, only that they do not necessarily disprove them. If two authorities differ, we are as free to take a choice between them as those who draw conclusions differently.

We have not interpreted the term "modern" too narrowly. It would have been misleading to ignore valuable evidence, merely because it came to light a hundred years ago. But some of the authorities quoted are really modern, and are dated accordingly in the references.

Quotations are usually from the Revised Version.

A pleasant duty remains to thank with real gratitude and sincerity a number of gentlemen who with great kindness have read and commented on the manuscript. I am especially indebted to Rev. G. T. Manley, M.A., the Rector of Little Munden,

Herts; F. F. Bruce, M.A., Lecturer in Greek in the University of Leeds; Alan Stuart, M.Sc., F.G.S., Lecturer in Geology in the University of Wales; H. J. Orr-Ewing, M.D., F.R.C.P., who has lived for years in Jerusalem; and the Rev. T. C. Hammond, M.A., Vicar of St. Luke's Church, Manningham.[1] Needless to say, no one but myself is to be held responsible for all the statements in the book, but this skilful help has been a protection against glaring mistakes. One feels that this has been a most necessary precaution, bearing in mind the wide field covered, the complexity of some of the subjects touched upon, and the limitations of a busy professional life.

The author and the I.V.F. desire to acknowledge the courtesy shown by Messrs. Marshall, Morgan and Scott, Ltd., for their permission to make extensive use of material from the author's *The Historic Faith in the Light of To-day* and *The Bible and Modern Research*, published by them and now out of print. They desire also to acknowledge the readiness with which Dr. S. M. Zwemer has permitted quotations in Chapter II from his *The Origin of Religion*, 1935 (Marshall, Morgan and Scott).

Happily, the years to come are likely to bring yet more evidence to light. Rightly and fairly interpreted, it can but strengthen what is true in our beliefs, and winnow out the false. It is our hope that the reader may be sufficiently interested to welcome the new facts as they emerge.

[1] Dr. R. E. D. Clarke has given very valuable help with the 1943 reprint.

CHAPTER I

RELIGIOUS BELIEFS OF SCIENTISTS

ONE of the most curious, and oftentimes one of the most dangerous, traits of human character is what has been called "mob psychology." Clever and determined leadership is able, at any rate for a space of years, to instil into the minds of the great majority of a closely knit population the most surprising beliefs and fanaticisms, in defiance of all reason or all generous feeling. A notable example in history is the skill with which the religious leaders of the Jews persuaded the whole multitude, who, for the past years, even weeks, had been inclined to make a hero of Jesus of Nazareth, to complete a right-about-face and cry, "Crucify Him!" The mobs were probably not entirely the same, but the result revealed an astonishing swing-over of public opinion. In modern times whole nations have been so influenced by the subtle propaganda of their leaders that all independence of opinion has been crushed out, and the people unite in believing what they are told to believe.

There was a time in English history when the leaders of the Churches enjoyed a very large measure of social and intellectual prestige in this country, and though there were incessant wrangles about religious questions, nearly everyone paid lip-service to the basic Christian beliefs. Of late years the pendulum has swung almost to the other extreme, and propaganda put about, widely accepted in a vague kind of way, to the effect that modern learning, and especially modern science, had made discoveries which destroy the foundations of these basic Christian beliefs. It is supposed that university teachers and other persons of intelligence have found out something which disproves the idea of God, which makes incredible the statements in the Gospels about Jesus Christ, which makes the doctrine of immortality impossible of belief. In order to be in the fashion it is necessary to join up with the intelligentsia and with the majority, and to regard the Christian faith as unworthy of serious con-

sideration. It has been put to the vote, and the "Noes" have it. And so the matter ends.

Fortunately, men are not all made in the same mould. *Some* independence of thinking, *some* readiness to believe testimony, still survives. To such the appeal of this book is directed.

The appeal is based on three modest propositions. The first is that majorities are by no means always right. Majorities often in the course of time have changed their opinions. The writer well remembers describing at a professional meeting a method of surgical treatment new to this country, which he had learnt from American surgeons during the war of 1914-18. Another surgeon also spoke in praise of it. At the time, however, all the chiefs of fame rose one after another to condemn it root and branch. Within a few years they were all practising it, and praising it. It is now in constant use.

The second proposition is that the science teachers and research workers, who are supposed to have made these devastating anti-Christian discoveries, are not first-class authorities on matters entirely outside their own province. They would, most of them, fully recognize this themselves; in fact, a specialist has rather cynically been described as a man who knows more and more about less and less. A famous mathematician may give an exceedingly poor opinion on current politics, or history, or cricket. It is a proverb in the medical profession that the more eminent a man is in the public service, the more likely you are to find on his bedroom mantelpiece the most futile of quack remedies. Problems about God, and Christ, and the life to come, cannot be solved by scientific research. They belong to another province altogether.

The third proposition follows from the others. As we might expect, we shall find that the views held by eminent scientists on problems relating to the Christian religion do not greatly differ from the views held by persons in any other walk of life—cobblers, or professional cricketers, or whoever else you please to examine on the subject. The idea that there is practical unanimity in an anti-Christian direction is a ridiculous error. It has come about, in this country, as the result of the writings of a few popularizers of science, such as Huxley, Tyndall and Haeckel, not to mention the names of any men now living. Anti-Christian societies have

broadcast these opinions so vigorously that they have come to be looked upon as representative of the whole, which is far from the truth. That a certain number of eminent scientists (or cobblers, or cricketers, for that matter) have been zealously opposed to the Christian faith, we are not concerned for a moment to deny. That a much larger number takes no particular interest in the subject is equally true. It is curious to notice that even in the Genesis record the origin of the useful arts and sciences, such as playing the harp and organ, or craftsmanship in brass and iron, is attributed to the godless line of Cain.

Some efforts have been made to find out what are the religious views of eminent British scientists. The hall-mark of quality in this country is election to the Fellowship of the Royal Society. Only those whose researches have really impressed their scientific brethren achieve this honour. About ten years ago a questionnaire was addressed to the Fellows, and two hundred sent in some kind of response. Many of them allowed their names to be mentioned. One question was, "Do you credit the existence of a spiritual domain?" Thirteen answered in the negative, 121 in the affirmative; 66 were indefinite. Another question was, "Do you believe in survival after death?" Here 41 were negative, 47 affirmative, and 112 indefinite. A third question was, "Do you think that the recent remarkable developments in scientific thought are favourable to religious beliefs?" This elicited 27 negatives, 74 affirmatives, and 99 indefinite answers. A fourth question, "Does science negative the idea of a personal God as taught by Jesus Christ?" was answered by 26 Fellows in the sense that science does negative this idea, by 103 that it does not and 71 gave vague answers. It is not at all surprising, however, that several Fellows expressed themselves in such terms as these: "The fact that I am a Professor of Chemistry does not enable me to express a more, or a less, authoritative opinion on any other subject, religion, politics, and so on, than any non-scientific yet reasonably educated man or woman."

It would be difficult and invidious to give a catalogue of living men who are professing Christians. Very many would probably be left out, simply for lack of information. Some who were included might reasonably object to such a publication of their

private beliefs. But there can be less objection to enquiring into the testimony of those who are no longer with us.

It will not be disputed that the Presidency of the Royal Society is a token of esteem only bestowed on the very princes of science. It is, therefore, interesting to quote the testimony of several recent Presidents of the Royal Society.

Lord Rayleigh, the chemist who discovered argon, wrote in response to an enquiry: "In my opinion true science and true religion neither are nor could be opposed." He prefixed to his published papers the quotation:

> " The works of the Lord are great,
> Sought out of all them that have pleasure therein."

Lord Kelvin, the physicist, of whom Sir William Ramsay said that to him the world owes an eternal debt of gratitude, and he it was for whom no honour that men have it in their power to bestow could be too great, wrote in answer to a question: "I have many times in my published writings within the past fifty years expressed myself decidedly, on purely scientific grounds, against atheistic and materialistic doctrines." On one occasion he said: "If you think strongly enough, you will be forced by science to believe in God, which is the foundation of all religion."

Lord Lister, the great surgeon to whom the world is indebted for making operations safe by originating the antiseptic system of wound treatment, wrote: "I am a believer in the fundamental doctrines of Christianity."

Sir George Stokes, another President of the Royal Society, was an earnest and outspoken believer. He wrote that the cardinal point in the Christian faith is belief "that in Jesus of Nazareth the divine and human natures were united in one person, so that He is rightly called the Son of God; that after His death by crucifixion He rose from the dead, and appeared in a supernatural manner to numbers of His disciples, who were witnesses to the people of the fact of His resurrection".

Sir Michael Foster and Sir William Huggins, two other Presidents of the Royal Society, were looked upon as Christians. The latter wrote: "I am neither an agnostic nor an atheist."

In 1898, Professor J. H. Gladstone, an eminent physicist and chemist, published his impressions of the religious faith of some

71 members of the Royal Society concerning whom he had reliable information. Of these, 33 were known to be Christians, 6 were sceptics, 27 were estimated to be believers in a Divine revelation, and 5 estimated to be unbelievers.

Clerk Maxwell, Professor of Physics at Cambridge, was a well-known Christian, as a perusal of his biography makes clear. During his last illness he said to a friend: "I have looked into most philosophical systems, and I have seen that none will work without a God."

Some thirty years ago a large number of leaders of science in this country were communicated with and a reply invited as to whether they considered that there is "any real conflict between the facts of science and the fundamentals of Christianity." An overwhelming number of replies were received stating that they found no such conflict. Amongst those who so expressed themselves were Sir George Stokes, Lord Lister, Lord Avebury the anthropologist (who has been President of the British Association), Sir William Ramsay (the famous chemist), Professor J. H. Gladstone (President of both the Physical and Chemical Societies), Professor Balfour Stewart, Professor P. G. Tait, Sir William Abney (President of the Royal Astronomical and the Physical Societies), Professors James Geikie, Boyd Dawkins, Edward Hull, Sir J. Prestwick and Sir J. W. Dawson (five famous geologists), Professor S. H. Vines (botanist), Professor A. H. Sayce (Assyriologist), Sir W. M. Bayliss and Professor McKendrick (physiologists), Dr. E. W. Maunder (the astronomer), Sir William Perkin and Professor Crum Brown (the chemists), and scores of others scarcely less famous. The medical profession has included many distinguished Christians, such as Sir James Young Simpson, of chloroform fame. Simpson was a Christian of the most enthusiastic and Evangelical type; he knew his Bible from cover to cover, and one of his latest utterances was, "I have unshaken confidence in Jesus only." Asked on one occasion what he considered the greatest discovery he had ever made, he astonished and disconcerted his interrogator by replying, "That I have a Saviour."[1]

Other eminent medical men who have written or spoken in defence of the faith are Sir A. R. Simpson, Sir Andrew Clark

[1] B. E. Simpson's *Life*, p. 127 (Famous Scots Series).

(President of the Royal College of Physicians), Sir William Broadbent, Sir Dyce Duckworth, Sir Thos. Barlow, Sir James Paget, Sir Donald Macalister, Sir A. Pearce Gould, Sir G. Sims Woodhead, Professor Albert Carless, and, of course, a host of others.

Many of the men whose names have been given could be described as Christians in the New Testament sense of the word, and their united testimony is in itself an adequate proof of the folly of the idea that no educated person can be a believer.

Dr. Macalister, Professor of Anatomy at Cambridge, wrote: "I think the widespread impression of the agnosticism of scientific men is largely due to the attitude taken up by a few of the great popularizers of science, like Tyndall and Huxley. It has been my experience that the disbelief in the revelation that God has given in the life and work, death and resurrection of our Saviour is more prevalent among what I may call the camp-followers of science than amongst those to whom scientific work is the business of their lives."

On the continent of Europe, and perhaps in America, the number of eminent men of science who have been Christian believers is probably smaller, in proportion, than in Great Britain. There is no need to attach undue importance to this whole question of the attitude of eminent scientists. For long ago St. Paul wrote: "Not many wise men after the flesh, not many mighty, not many noble, are called." We may be thankful he did not write, "Not *any*." Christ prayed: "I thank Thee, O Father, Lord of heaven and earth, because Thou hast *hid* these things from the wise and prudent, and hast revealed them unto babes." Justin Martyr, a Christian believer of the second century, who had been a zealous student of the sciences and philosophies of his day, was brought to the faith by the earnest words of an old man whom he met walking on the seashore: "Pray above all things that the gates of light may be opened to thee, for these things cannot be perceived or understood by all, but only by him to whom God and His Christ have given understanding."

REFERENCES

C. L. DRAWBRIDGE: *The Religion of Scientists.* Benn.
A. H. TABRUM: *Religious Beliefs of Scientists.* Hunter.
G. T. MANLEY: *The Views of Modern Science.* C.M.S.

CHAPTER II

THE TESTIMONY OF ETHNOLOGY

In our first chapter we have presented an estimate of what distinguished men of science, principally in this country, have thought and are thinking about God and the Christian religion. We turn now to examine the bearing of modern discovery on the problem of a Personal Creator.

The Victorian era witnessed a certain swing away from faith in the existence of God, though, as we have seen, there were numerous believers amongst the most eminent chemists, physicists, geologists, and members of the medical and engineering professions. The theory of evolution, propounded by Charles Darwin and A. R. Wallace, was eagerly seized upon by Tyndall, Huxley, Haeckel, and others, as a rod with which to beat the theologians. In this way they outpaced their leaders, for Darwin himself speaks of a Creator in the final sentences of his great and epoch-making book, *The Origin of Species*, and Wallace wrote his last contribution to science, *The World of Life*, principally to show that he saw God everywhere in nature. When evolution came to be commonly accepted in the schools as the explanation of the origin of living creatures, a new attack was launched upon the Christian faith by the emergence of a new theory of religion. It was argued that as there is evolution in nature, so there is in religion. Primitive man saw powers all about him which he could not understand or control, but which profoundly influenced his life: storms, floods, thunder, drought, strange animals, diseases, accidents. He saw that when men died something had gone out of them, had disappeared from sight, which had animated them and governed their actions. By combining the two observations, he concluded that the departed spirits were responsible for what appeared supernatural in the outside world. Some were friendly, some were hostile. So arose animism, the worship of spiritual beings, which, in the words of E. B. Taylor,[1] "are held to affect or

[1] E. B. Taylor, *Primitive Culture*, i. 426.

control the events of the material world, and man's life here and hereafter; and, it being considered that they hold intercourse with men, and receive pleasure or displeasure from human actions, the belief in their existence leads naturally, and it might almost be said inevitably, sooner or later, to active reverence and propitiation".

From animism it was not a long step to polytheism. Now, as in the worship of ancient Greece or modern India, there were believed to be a certain number of well-defined deities, whose lives did not differ very widely from our own, of whose relationships, loves and adventures, elaborate stories could be told. In practice, polytheism has usually been linked with idolatry; the less instructed worshipper thinks he sees his god in the image of clay, wood or stone, while the more intelligent bows down to the idol, but sees in it only a representation of an invisible but powerful spiritual being. Evolution then proceeded to branch in different directions; one road led to pantheism, another to henotheism, another to deism, and another to monotheism. Judaism, then Christianity, then Mohammedanism, trod this last road. And so we are no longer permitted to argue that the instinct of God in almost every man's soul is a primitive and true revelation; it is merely a theory evolved from a mistaken interpretation of the forces of nature.

The theory of evolution in religion certainly sounds plausible enough, but the scientific method is not to publish plausible theories until they have been tested against the facts. If the theory is true, we shall expect to find that there is no trace of monotheism in the earliest religions of which archæology can discover any information. We shall also expect to find that amongst backward peoples to-day some have halted at the stage of animism and others at the stage of polytheism, and that amongst these there is no vestige of monotheism. According to the most recent and the most exhaustive researches, both these assumptions are incorrect. This appears to be proved by the work of Dr. Wilhelm Schmidt, Professor of Primitive Ethnology and Philology in the University of Vienna. Andrew Lang had already produced evidence of belief in High-gods amongst many primitive peoples. Schmidt has investigated this belief over a very wide field.[1] He writes:

[1] *Der Ursprung der Gottesidee*, five volumes.

"There is a sufficient number of tribes among whom the really monotheistic character of their Supreme Being is clear even to a cursory examination. That is true of the Supreme Being of most Pigmy tribes, so far as we know them; also of the Tierra del Fuegians, the primitive Bushmen, the Kurnai, Kulin and Yuin of south-east Australia, the peoples of the Arctic culture except the Koryaks, and wellnigh all the primitives of North America."[1] Amongst most of these peoples the name "Father" is applied to the Supreme Being. "It is precisely among the three oldest primitive peoples of North America that we find a clear and firmly established belief in a High-god. . . . It is only now that we can produce the final proof that these High-gods, in their oldest form, come before all other elements, be they naturism, fetishism, ghost-worship, animism, totemism, or magism."[2] The Supreme Being is generally represented in primitive tradition as being absolutely good. He is called by various names denoting fatherhood, creative power, or residence in the sky. Readers of Longfellow's *Hiawatha*, or lovers of Coleridge Taylor's setting of the poem to music, will remember how these primitive beliefs are introduced in the prayers to Gitche Manito the Mighty.

Schmidt's contention is supported by a weight of evidence from all over the world. Missionaries testify to finding amongst even the most degraded peoples a belief in one supreme God. Schmidt quotes sixteen ethnologists as of the same opinion. In a paper written for the Asiatic Society by Professor Genchi Kato, of the Imperial University of Tokyo, it is stated that "the thoughtful reader will perhaps be able to agree with my conclusions, that Ama no Mi Nusho no Mikoto shows in its origin a clear trace of primitive monotheism when viewed in the light of the modern study of the science of religion" [3]

It is more difficult, but more important, to assemble the known facts about the beliefs of the earliest known races on the earth. For information on this subject we leave the ethnologists and turn to the archæologists. Concerning the history of religion in China, Dr. John Ross wrote: "The 'ghost theory' of religion would

[1] W. Schmidt, *The Origin and Growth of Religion: Facts and Theories*. Translated by H. J. Rose. Methuen, 1931.
[2] Schmidt, *High-Gods in North America*, 1932.
[3] *Trans. Asiatic Soc. of Japan*, vol. xxxvi., pp. 159, 162.

hardly have been broached, or the statement made that the spiritual form of religion known to us is the result of a long process of evolution from an original image-worship, had the story of the original religion of China been generally known. . . . We fail to find a hint anywhere as to the manner how or the time when the idea of God originated in China, or by what process it came into common use. The name bursts suddenly upon us from the first page of history without a note of warning. At this point, the very threshold of what the Chinese critics accept as the beginning of their authentic history, the name of God and other religious matters present themselves with the completeness of a Minerva."[1]

The literature of India covers a period from about 2000 B.C. to modern times, and as it is traced backwards, by common consent, the stream becomes purer and tends towards monotheism the nearer we get to its source. A. A. MacDonell[2] speaks of Rig-Vedic literature having "a monotheistic tinge". The Vedic gods, reckoned at 33, in later ages came to be counted popularly as 330,000,000. The whole process was one of degeneration from an early age downwards. Moreover, the fact that Dyaus-pitri in India, and Zeus in Greece, was counted the father of gods and men, must go back to the time before the separation of the two ethnic stocks.

In Egypt, also, there is evidence that monotheism is earlier than polytheism. To this a number of scholars bear testimony: Brugsch, Blum-Ernst, Renouf. Renouf[3] writes: "It is incontestably true that the sublimer portions of the Egyptian religion are not the comparatively late result of a process of elimination of the grosser. The sublimer portions are demonstrably ancient, and the last stage of Egyptian religion was by far the most corrupt." He quotes another French scholar, Rougé, to much the same effect.

If we turn to what is known of the religion of the dwellers in the lands watered by the Tigris and the Euphrates, the same conclusion must be reached. A. T. Olmstead[4] tells us that in the best Sumerian days the worship of Ashur approached monotheism.

[1] Ross, *Primitive Monotheism in China*, pp. 18, 23, 25.
[2] A. A. MacDonell, *Sanskrit Literature*, p. 70.
[3] Renouf, *Origin and Growth of Religion*, p. 95.
[4] Olmstead, *History of Assyria*, pp. 612, 653.

Dr. Langdon, lately Professor of Assyriology at Oxford, confirms this in the following words: "I may fail to carry conviction in concluding that, both in Sumerian and Semitic religions, monotheism preceded polytheism and belief in good and evil spirits. The evidence and reasons for this conclusion, so contrary to accepted and current views, have been set down with care, and with the perception of adverse criticism. It is, I trust, the conclusion of knowledge, and not of audacious preconception."[1] Later he says: "All Semitic tribes appear to have started with a single tribal deity whom they regarded as the Divine Creator of his people."[2] The grounds on which Professor Langdon bases his conclusion are set forth in a brief and accessible form in an article entitled, "Monotheism as the Precursor of Polytheism in Sumerian Religion."[3] He begins by reminding us that the Sumerians were probably the first people to emerge from barbarism some time before 4000 B.C. From them we obtain the earliest written information concerning the religion of mankind. They were a talented race with a real culture. At Kish, and at Erech, a large number of the oldest writings in the world were found. The facts point unmistakably to monotheism, and a Sky God as the first deity, from whom descended the vast Sumerian pantheon. For details we must refer readers to the original article.

But, it may be argued, man is far older than the written records. The ancient Egyptians, and the Sumerians, may have reached monotheism after a long evolution from animism through polytheism in prehistoric times. If only we could get back to read the mind of neolithic or palæolithic man, the evidence would be plain enough. That, of course, is entirely begging the question. To assume that a theory is correct because there is no evidence one way or the other is to depart from the realm of fact and enter that of fancy. If the reader is interested to learn what little we do know about the mentality of palæolithic man, it may be found, copiously illustrated, in the pages of R. R. Schmidt.[4] Our knowledge is principally derived from drawings on the walls of caves, scratchings on bone or ivory, or carved figurines. These are held

[1] Langdon, *Semitic Mythology*, p. xviii. [2] *Ibid.*, p. 93.
[3] *Evangelical Quarterly*, April, 1937, p. 136.
[4] R. R. Schmidt, *The Dawn of the Human Mind*, 1936.

to show a widespread belief in hunting-magic, but needless to say can tell us nothing about Stone Age man's sense of a divine being. But the care and ceremony with which he buried his dead suggests a belief in a future life.

Enough evidence has surely been brought forward to show that the theory of the evolution of religion, from animism through polytheism to monotheism, owes much to fancy and little to fact. Our minds may now be sufficiently cleared to make us willing to hear what the Bible has to say on the subject. In the Old Testament there is not a single outstanding character, with the partial exception of Solomon, who was anything but a monotheist. If the Israelites were originally polytheistic, the Bible does not show it. They may have worshipped the gods of Egypt, but their ancestors Abraham and Isaac and Jacob would have scorned to do so. In the days of the Judges or the Kings they often lapsed into idolatry, but Joshua and the conquerors of Canaan were sound enough in the worship of Jehovah. All religions are liable to degeneration. Buddhism and Mohammedanism have degenerated. The whole matter is summed up by St. Paul in his letter to the Romans. Writing of the pagan world, he wrote: "That which may be known of God is manifest in them, for God manifested it to them. For the invisible things of Him since the creation of the world are clearly seen, being perceived through the things that are made, even His everlasting power and divinity."

It may be asked, If we are not to accept the current theory of the evolution of religion, how *did* monotheism arise? To this there is no direct answer, beyond that given by St. Paul. God revealed Himself, in primitive times, to certain individuals—to Abraham, for instance. Thoughtful men rightly understood, when they looked upon the sun, the stars, the seas, and all living creatures, that these were the handiwork of a great Creator. That He had provided all things necessary for man's life showed Him to have towards those who had been brought into existence by His will the feelings of a father. That is to say, the recognition of God was due to a primitive revelation. This knowledge is one of man's fundamental concepts. He may not like to retain God in his knowledge, and may change the glory of the incorruptible God for the likeness of an image of corruptible man, and of birds, and of

four-footed beasts. But in the depths of his mind, tenanted as it may seem to a casual observer with all these foul things, there still stands the shrine, neglected, doors shut, almost forgotten, of the Unknown God. It may surely be argued that such a widespread basal conviction of the human soul, which has survived in spite of all oppositions and rebellions, cannot be a cruel deception. So modern ethnological and archæological research brings us back to God.

In saying this, however, it is necessary—in order to avoid a misleading impression—to remind the reader that the God of the Bible is a God of progressive revelation. To the basal conviction, to which reference has been made above, much remained to be revealed. In the providence of God the Hebrew people were trained by many stages of discipline, and the giving of new light from time to time, until there came His supreme revelation in the Person of Christ and, as He (Christ) promised, through the Holy Ghost to the Church.

REFERENCES

W. SCHMIDT: *The Origin and Growth of Religion : Facts and Theories.* Methuen, 1931.

S. M. ZWEMER: *The Origin of Religion,* 1935. Marshall, Morgan and Scott. The whole volume should be consulted.

S. LANGDON: "Monotheism as the Precursor of Polytheism in Sumerian Religion." *Evangelical Quarterly,* April, 1937.

CHAPTER III

PURPOSE AND PLAN IN NATURE

THE advance of knowledge in the natural sciences has been so great during the past century that no one can hope to acquire more than a mere smattering of the whole. University degrees may be taken in astronomy, or physics, or chemistry, or zoology, or botany, or geology, or physiology, more or less isolated from the other sciences. All we shall be able to undertake for purposes of our present study, therefore, is to glean a little here and there from eminent teachers in one branch of learning after another, and then seek to bring our gleanings together and to try to assemble them into one consistent whole. We shall begin with the world of non-living things, and enquire first of the astronomers, then of the physicists and chemists. Later we shall turn to the biologists, including those who have specialized in the life of earth's bygone ages.

THE TESTIMONY OF ASTRONOMY

(It would be more accurate to head this section "The Testimony of Cosmogony," but for the sake of simplicity we have used the more popularly understood title.)

Astronomy is a science which has made immense strides in recent years, and information has been gathered which would have appeared to the older astronomers for ever beyond the reach of the human mind. Much of this, interesting as it is, is not of direct interest for our present purpose. In this chapter we are particularly concerned with origins, and with the question of the habitability of other worlds besides our own Earth.

Some of the methods by which calculations used to be made as to the age of this Earth have proved fallacious. The one most in favour at present is based on the rate at which uranium is transformed by the loss of radio-active energy into lead. An estimate based on this method puts the age of the Earth, since it solidified, at 1,400 million years. Other calculations indicate that the age cannot exceed 3,400 million years. The age of the solar system

(sun and planets) is given as 4,000 million years, and of the stars as 5 or 10 million million years. Three methods of calculation agree in pointing roughly to these figures. But we quote them with all reserve. They depend on assumptions which may prove to be inadequate.[1]

It is believed that the stars, our own sun included, were formed by condensation from the collections of gases which are seen in the sky by the astronomer's telescope, and called rotating nebulæ. It is suggested that the Milky Way was once a vast nebula, now condensed into stars. Stars follow a more or less regular course of evolution: some are young; others, including our own sun, are in middle life; others are old. There is no settled opinion, however, as to the exact course followed. "It would be difficult to say what is the accepted theory of stellar evolution to-day."[2] It is, however, widely believed that the stars classified as red giants or blue giants, pouring out energy lavishly, are young. It is further believed that those classified as white dwarfs are old. Whatever the course followed, it is plain that stars continually pouring out light and energy into space must be reducing themselves to coldness and to ultimate inertia. The materials of which the stars are composed appear to be much the same as those found on the Earth, and they obey the same physical laws. No elements are known to occur in them which are not found on the Earth. In the spectrum of Sirius, for instance, hydrogen is very abundant. Elements that are common here are common in the stars, and vice versa.

There is reason to believe that the stars, like our Sun and the planets, are all in motion, and that they possess a regular, directed motion. When we bear in mind that a stationary object remains stationary until some outside force impels it to move, it is clear that there must be some cause, yet to be discovered, to account for the motion of all the heavenly bodies. They could not have started their travels of their own accord. "The ultimate realities of the universe are at present quite beyond the reach of science, and may be—and probably are—for ever beyond the comprehension of the human mind."[3] The same author, Sir J. Jeans,

[1] According to the more modern expanding universe theory, the age of the stars may be the same as that of the solar system.

[2] A. S. Eddington, *Stars and Atoms*, 1927, p. 109.

[3] Sir J. Jeans, *The Universe Around Us*, 1929, p. 329.

writes elsewhere: "Everything points with overwhelming force to a definite event, or series of events, of creation at some time or other, not infinitely remote. The universe cannot have originated by chance out of its present ingredients, and neither can it always have been the same as now."[1]

How did the Earth have its origin? There is general agreement that the Earth, like the other planets, was at the first thrown off by the primitive sun, but efforts to explain how this happened have led theorists into considerable difficulties. The hypothesis put forward by Laplace, that the speed of rotation was so great that a ring of matter was flung off by centrifugal force, is mathematically unsound. The proposition that holds the field at present, first suggested by Chamberlin and Moulton, and elaborated and vindicated by Sir James Jeans in 1919, is to the effect that long ago a star chanced to draw so near to our Sun that it raised a great tide on the surface, and an immense filament of gas was pulled off, which later condensed into planets revolving around the sun. Collisions, or "near misses", between the stars must be excessively rare, and such an event as has just been described must be regarded as due to something utterly out of the ordinary. Not one star in ten million is likely to be attended by a ring of planets.[2]

Our Moon, likewise, seems to owe its origin to a very strange, if not a unique event. There are mathematical reasons for believing that it has been steadily receding from our Earth. It is thought that the huge hollow of the ocean-bed of the Pacific may represent the cavity left by the departure of the Moon. But it is difficult to see why such a disruption should take place. The Moon is much larger, relatively to the size of our Earth, than the other planetary moons. "The mechanism of its birth is unexplained."[3]

One suggestion has been made that a planet came too close to the Earth, and pulled the Moon out of its mass. If this is correct, it must be classed as an event of an extremely unusual character.

The planets, our Earth included, must have passed through a definite cycle of changes. When the Earth began to solidify and

[1] Jeans, *Eos, or the Wider Aspects of Cosmogony*, p. 55.

[2] This is the usual opinion. Recently (*Nature*, 1942, **149**, 695) Jeans has suggested that if primitive suns were very large and closely packed collisions might be more frequent. But this is very hypothetical.

[3] R. L. Waterfield, *A Hundred Years of Astronomy*, 1938, p. 385.

to cool down; quantities of gases would be evolved, mostly carbon dioxide and water vapour. The surface would be covered with thick cloud, and beneath this would be a primeval and universal ocean. As further contraction took place, the surface would be contorted, and the primitive continents and mountains ridged up. The rocks, at first, would be crystalline, as having solidified from a molten magma. Eventually the clouds would clear sufficiently, under the influence of the Sun's rays, for the sun and stars to become visible from the Earth's surface.

It used to be regarded as an obstacle of faith that other planets were thought to be inhabited, as well as the innumerable planets revolving around countless stars. The human family on this Earth would thus be merely one amongst so many that the Almighty would not be likely to take any particular interest in it. Modern scientists no longer think along such lines. The stars are immensely too hot to support life. We have already seen that the planetary system revolving around our sun owes its origin to an event so rare that planetary systems are probably not at all common.

Nor does it seem at all likely that animal life, or human life, can exist elsewhere in our own solar system. Let us consider what is requisite.[1] The necessary elements must be present, especially carbon, to build up protoplasm. Water is also necessary, and no other fluid would do. The temperature, therefore, must not fall for long periods below 0° centigrade (the freezing-point of water), nor must it ever exceed the boiling-point. Hence the rotation period of the planet must be short, to avoid nights too long and cold, or days too long and hot. The Moon is also of great value here. The sweeping of the tides helps to maintain an equable temperature. Further, there must be an atmosphere, and this can only be held to the surface if the planet is not too small. Land and water must be present, and in suitable proportions. The distance from the Sun must not be too small, or the temperature will rise too high; it must not be too great, or the Earth will freeze. The Sun's radiated heat must keep constant, or there will be violent fluctuations of temperature on the Earth.

[1] Largely based on R. E. D. Clark, *The Universe and God*, 1939. See also F. T. Farmer, *Journ. Trans. Victoria Inst.*, 1939, p. 38; and B. P. Sutherland, *ibid.*, 1941, p. 165.

When we consider that this radiation is produced by the conversion of three or four million tons of matter per second, this constancy is amazing. Professor Eve writes: "If it had not happened, it would be deemed impossible."[1]

To support animal life, the atmosphere must contain oxygen. Hydrogen, which is present in some planetary atmospheres, must be absent, as otherwise free oxygen could not exist side by side with it. When we think of all these requisites, it becomes apparent that only a most extraordinary coincidence of circumstances could fit a planet for any life at all, or at any rate for life as we know it.

Mercury has almost no atmosphere. Venus has an atmosphere rich in carbon dioxide, but no oxygen. Jupiter has dense clouds and an atmosphere, but it seems to contain ammonia and marsh gas and hydrogen, not oxygen. The remoter planets are too cold to allow of the possibility of life.

The greatest interest has been aroused in the possibility of life on Mars. Some readers may remember Mr. H. G. Wells' dramatic story *The War of the Worlds*, and his picture of the headlong flight of the population of London under terror of invasion by the Martians. It is thought quite probable that there may be vegetation on Mars, but it is very unlikely that there is any animal life. The changes in temperature are excessive, falling to about minus 80 degrees by night. Water is present, as the white polar snowcaps show, but it is said to be scarce. Most important of all, according to recent investigations, the atmosphere contains little, if any, oxygen.

Sir James Jeans sums up present opinion, or at any rate the opinion of most of the more responsible astronomers, in these words: "Primeval matter must go on transforming itself into radiation for millions of millions of years to produce a minute quantity of the inert ash on which life can exist. Then by an almost incredible accident this ash, and nothing else, must be torn out of the sun which has produced it, and condense into a planet. Even then, this residue of ash must not be too hot or too cold, or life will be impossible." And again: "The old view that every point of light in the sky represented a possible home for life is quite foreign to modern astronomy."[2]

[1] *Nature*, May, 1936.
[2] Sir J. Jeans, *The Universe around Us*, pp. 331, 333.

Sir J. Arthur Thomson has written: "There is no use in speculating over the presence of life on any planet where water is not present in liquid form. Man's imagination does not rise to picturing any kind of embodied life radically differing from the protoplasmic plants and animals that we know."[1]

Let us sum up this section by drawing a few conclusions bearing on our subject. The universe is very old, but it had a beginning, obeys certain laws, and must originally have been set in motion. Science has no explanation to offer as to its origin. The planet, Earth, on which we live, only came into being on account of an almost incredibly rare accident. The origin of the Moon, also, was due to some extremely unusual event. No other planet is known where all the numerous conditions are present which make life possible, or, at any rate, life as we know it. And, finally, life did begin here, in some very mysterious manner.

Is all this due to Chance? Ought we not rather to conclude that to attribute everything to an incredible succession of chances is to undermine science itself, which seeks to discover some cause for events and laws, not a series of very improbable and disconnected happenings? The old Book starts with the words, "In the beginning, God created the heaven and the earth." And, that being accepted, how greatly is our conception of the vastness of God's handiwork enlarged by modern astronomy! Time was when the Sun seemed to be the greatest of His creatures, but now it becomes evident that the distance of the Sun from the Earth is trivial compared with the enormous distances of space; the Sun is only one amongst an almost endless succession of the heavenly bodies; and our solar system, old as it is, is but an infant amongst the stars grown old.

"Lift up your eyes on high, and behold Who hath created these things, that bringeth out their host by number; He calleth them all by names by the greatness of His might, for that He is strong in power; not one faileth."

The Testimony of Chemistry and Physics

After our consideration of the vast and the distant, our attention is now to be directed to the almost infinitely minute.

[1] J. A. Thomson, *Biology for Everyman*, p. 915.

It has been known for a long time that a certain number of "elements" can be isolated chemically, which have constant physical and chemical properties, and which combine in a regular way with other elements to form compounds which are usually utterly different from the elements themselves. The number of atoms combining together follow a mathematical law. As everyone knows, two atoms of hydrogen, a gas, unite with one atom of oxygen, also a gas, to form water. One atom of sodium, a solid, unites with one of chlorine, a gas, to form common salt. There are millions of such compounds possible; many of them have been prepared artificially.

The elements are made up of tiny particles called atoms, so called because they were not thought capable of being split into anything smaller. A single atom of oxygen weighs 0·000,000,000,000,000,000,000,0264 gramme.

The researches of Rutherford, Bohr and others have shown that the atom itself consists of a central positively charged nucleus surrounded by a variable number of electrons or negative charges. In 1913, H. G. J. Moseley, unhappily killed by a Turkish bullet at Gallipoli, proved that if the numerical value of the charge on an electron is taken as unity, the "atomic number" can be identified with the magnitude of the positive nuclear charge. The "atomic number" is also the number of the so-called planetary electrons surrounding the nucleus. There are 92 elements possible, one with each atomic number from 1 to 92. All but two of these are known and named. Hydrogen, with one revolving electron, has the atomic number of 1; uranium of 92. As Sir J. Jeans said a few years ago in a Rede lecture[1] at Cambridge, "The universe appears to have been designed by a pure mathematician."

The more the elements and their properties are studied, the more evident does it become that they are governed by mathematical laws. We may mention the beautiful periodic arrangement of the atoms which we owe to Mendelef. Bohr showed that it results from the regular addition to each atom, beginning with hydrogen, of an electron for each element in the outer rings of the electrons, and when a ring of eight is completed, another is started outside

[1] *The Mysterious Universe*, 1930.

that one. The number of elements in each series can be expressed mathematically as follows: 2 : 8 : 8 : 18 : 18 : 32, etc.; or, as otherwise expressed, 2 ($1^2 : 2^2 : 3^2 : 4^2$, etc.). At regular places in each series the elements exhibit similar properties; thus lithium, sodium and potassium, all alkaline bases, occupy parallel places, and each series ends with an inert gas, helium, neon, argon, etc.[1]

Although the atomic architecture for each chemical compound is unique, yet all compounds which are able under appropriate circumstances to form crystals do so in one of six regular systems (seven are suggested by some authors). A crystal, of course, always takes up a regular geometrical form; for instance, fluor-spar is a cube, and quartz forms six-sided prisms with a point.[1]

The properties of the elements which enter into the structure of plants and animals show an amazing fittedness for that purpose. This is notably true of carbon. Crude coal looks unpromising enough, but carbon is capable of entering into such an enormous variety and complexity of compounds that organic chemistry is usually separated from inorganic in the schools, and is worthy of special textbooks and special study. Further, some of the more complicated of these carbon compounds have the property of being flexible. Carbon is capable of endless combinations with oxygen, hydrogen and nitrogen. There is no other element, besides carbon, which would be chemically suitable for the bodily framework of living things, either plant or animal, unless life should take some form utterly different from that which we know. And carbon is present everywhere in a readily available form, as carbon dioxide in the air. This is utilized by plant life, and the plants furnish carbon in suitable form to the animals that feed on them. Thus the one element has appeared in the world which could make life possible.

Let us return to the consideration of water. It forms more than half the body weight of most animals and plants. It is not readily decomposed; it dissolves many substances; it makes dry substances cohere and become flexible; with salts in solution it con-

[1] For this section, the author is indebted to Mr. Alan Stuart of Swansea.

ducts electricity. This is a very important property in the animal body. Then alone, or almost alone, amongst fluids known to us, it reaches its greatest density when cooled, not at freezing-point, but at 4° centigrade. This has two important consequences. One is that lakes and ponds freeze at the top, and not from the bottom upwards. Fish life thus has a chance of surviving a very hard winter. Another consequence is that, by its expansion on freezing, water disrupts the rocks (also, alas, our household water-pipes), and thus breaks them down to form soil, carves out cliffs and valleys, and makes vegetation possible. Water has the highest heat of evaporation of any known substance. This, with other special properties, reduces the rise in temperature when a water surface is heated by the sun's rays.

In Biology, the fitness of living things for the part they have to play is attributed by many scientists to Natural Selection. But here we have these remarkable evidences of Purpose and Design in the inorganic world, where natural selection can play no part.

Attention may further be directed to the remarkable fact that pioneers in engineering, physics and chemistry have often been indebted to nature for their inventions. The aeroplane has been put into the air within the lifetime of some of us, but birds and insects showed the way long ago. The hollow girder was an invention with great mechanical advantages, but bones have always been built on that principle. It is not so long ago that the achromatic lens was discovered, but the lens of the mammalian eye is achromatic. Drugs have often been obtained first from plants, or from animal glands, and long afterwards they have been prepared in the chemist's laboratory. A number of the most recent additions to our pharmacopœia were introduced in this way. It is as though a Master Mind had gone on before the human mind. If in our first section we had occasion to admire the vastness of God's handiwork, our attention is now directed to His ordering of the inconceivably minute.

Evolution or Creation

It is a matter of history that the widespread acceptance of the Theory of Evolution, after it had been announced by Charles Darwin and A. R. Wallace in the mid-Victorian period, largely unsettled the minds of educated people as to belief in God. For the parents of this generation, to gaze over a field of ripe corn, or to sit in a summer garden and feast the eyes upon the variety of lovely flowering plants or trees, to watch the gaily painted butterflies flit past, and to hear the songs of thrush, blackbird and nightingale (or, for those who preferred books to gardens, to read a treatise on zoology), was enough to convince them that God had made all these things. The theologian and the systematic zoologist and botanist all agreed that God made every species separately, and this was held to be confirmed by the fact that, as a rule, cross-breeding between species does not take place in nature. Then came the "Theory of Evolution", eagerly advocated by men like Huxley and Haeckel, who held definitely anti-Christian views. It came to be believed that Darwin's theory of Natural Selection accounted for all living things, so that it was intellectually unnecessary to believe in a Creator. This position now calls for examination.

The Origin of Life on the Earth.

There is an obvious flaw in the argument at the beginning, in that the theory offers no explanation for the first appearance, or appearances, of life on the earth. As we have seen, Darwin recognized this, and in his *Origin of Species* spoke of the Creator breathing life into a few forms, or into one. But his followers went further, and launched theory after theory to bridge the gap between living and non-living. At one time the general public, if not the men of science, saw no difficulty, because they believed in the theory of spontaneous generation; that is to say, that minute forms of life habitually come into existence from non-living material. It was popularly believed, for instance, that lice bred from "dirt". This theory was demolished by Pasteur. In 1864, lecturing at the Sorbonne before a distinguished audience, with his experimental flasks and test-tubes before him, he spoke these dramatic words: "And therefore, gentlemen, I would point to

that liquid and say to you, I have taken my drop of water from the immensity of creation, and I have taken it full of the elements fitted for the development of inferior beings. And I wait, I watch, I question it, begging it to recommence for me the beautiful spectacle of the first creation. But it is dumb—dumb ever since these experiments were begun several years ago; it is dumb because I have kept it from the only thing which man cannot produce—from the germs which float in the air—from life, for life is a germ and a germ is life. Never will the doctrine of spontaneous generation recover from the mortal blow of this simple experiment."

He spoke truly. The modern science of bacteriology, and our control of epidemic disease, would be impossible if germs could arise *de novo* when there were none pre-existing.

The observation is confirmed by another of a different sort. Some sixty years ago the island of Krakatoa perished in a mighty volcanic explosion, and it was reduced to a burnt-out, lifeless stump. Many years afterwards it was revisited, and a few plants, insects and birds were found there. But none of these had arisen on the spot. They were all such as could readily have come across the sea, by drifting, by flight, or in the form of seeds carried in the earth on stranded trees, or in a bird's claws.

With the elimination of the doctrine of spontaneous generation, the problem of the first appearance of life on the earth became acute. At one time it appeared to be solved, and in a manner highly satisfactory to the Darwinians. In 1868, some mud dredged from a depth of several miles below the surface of the ocean was examined microscopically by Huxley and others, and was found to exhibit movements. It was concluded that it was alive, the most primitive of living things, and was duly christened as *Bathybius haeckeli*, in honour of the German scientist. About eight years after, however, it was conclusively proved that *Bathybius* was an artefact, and the movements could be produced any day by treating deep-sea mud with alcohol. Huxley manfully acknowledged his mistake.

A very little knowledge of biological chemistry is sufficient to show us what an enormous natural miracle it would be for the slime or mud of a primitive lake or sea to generate anything living.

All life, as far as we know, requires a certain chemical basis, including water, an admixture of inorganic salts, usually some carbohydrates, and proteins, which are complicated organic compounds, called amino-acids, strung together into a vastly more complicated whole. Nothing is known as to how such proteins could be built up. Heat is much more likely to destroy than to create them. Some of the rocks of to-day owe their origin to past living things; limestone, for instance, is packed with calcareous organisms that were once alive. But even if matter came together, in some primitive mud or slime, having the same mechanical composition as dead amœbæ or bacteria, the greater miracle would still have to take place—that of endowing it with life, and life of a kind that would perpetuate itself for ever on the earth's surface, or in the seas or lakes. Various more or less fantastic suggestions have been made by enthusiasts as to how the gap can be bridged. The most recent that has come under the writer's notice is by R. Beutner,[1] who solemnly invokes the aid of lightning. We have all heard of lightning as a life-destroying agency; it is curious to hear of it as producing life! To such straits are the theorists reduced!

Dr. J. Gray, a leading experimental zoologist, giving the presidential address to the zoological section of the British Association in 1933, took as his theme the mechanical view of the origin of life, and decided against it. He said: "The spontaneous origin of living from inanimate matter must be regarded as a highly improbable event, and as such can be assumed not to have occurred."[2]

We conclude, then, that science is still unable to put forward any satisfactory explanation as to how life arose in the first place. We must either accept the Bible doctrine that God created life, or go on making improbable speculations.

Natural Selection

Life having once appeared, however, it is maintained that the problem becomes more tractable. It is thought that plants and

[1] R. Beutner, *Life's Beginning on the Earth*, 1939.
[2] *The Times*, September 8, 1933.

animals in all their teeming varieties, whether they be fossil forms in the rocks or living to-day, and man himself, can be accounted for without resorting to the theory of a divine Creator, or without the introduction of any purpose or plan, by a self-working, self-developing scheme of organic evolution. The active principle is so-called "Natural Selection". This briefly represents the Darwinian hypothesis. Others who are dissatisfied with "Natural Selection" invoke Bergson's "Creative Evolution", or Lloyd Morgan's "Emergent Evolution". These latter theories, however, to the ordinary mind, seem merely to give a name and description to a process, without affording any rational explanation of that process. Parker[1] writes: "Whenever and wherever it became necessary that the higher tracts of the earth should be peopled with semi-terrestrial and terrestrial forms, then I suppose these leaps of life to have taken place. The morphological force—the indwelling spirit of protoplasm—actually did perform these wonders; thus we have still living in abundance reptiles that crawl upon the earth, mammals that march and gallop over it, and fowls that fly in the firmament of heaven." The phrases "morphological force" and "indwelling spirit of protoplasm" sound impressive, but what do they explain?

Darwin's Natural Selection, on the other hand, is an intelligible theory that might conceivably work. In its essence, it accounts for the appearance of new species, genera, orders, and so on, by the effect of a differential mortality on animals or plants that exhibit chance variations. Certain variations are favourable, and the fortunate possessor survives and passes on his fortune to his offspring. Other, less successful, variations lead to death. All depends, not on direction or purpose, but on chance. The arguments in favour of Darwinism are too well known to all educated persons to-day to require detailed description. Those usually quoted are the variations of plants and animals under domestication, the phenomena of island life, successions of fossils in the geological record, the study of mimicry, the law of recapitulation, and the occurrence of vestigial remains.

Let us examine the facts that have come to light, mostly since Darwin's day, and see if Natural Selection can be accepted as an

[1] Parker, *On Mammalian Descent*, p. 29.

adequate explanation for the origin of new species, and whether all animals, or all plants, seem likely to have been derived from a common ancestor.

Let us make it plain at the outset that we are not disposed to argue that species, or genera, were created at the beginning of time exactly as they are now, and that no changes or variations have taken place. It seems that large variations have as a matter of fact occurred. It is very likely, indeed, that the lion, the tiger and the wild cat all come of one stock. Also that the thrush, the missel-thrush and the blackbird are close blood-relations. The list might be widely extended. We are quite prepared to accept the probability that the numerous species of sunbird, the Drepanidinæ, found on the remote Sandwich Islands are descended from a common ancestor, no longer recognizable, which reached the islands from the mainland long ago. The giant tortoises of the Galapagos Islands, with a different species on each island, can no doubt be explained similarly. There is a species of lizard, *Lacerta simonii*, which is said to be confined to a single rock in the Canary Islands! We are also ready to allow that the special fauna of Australasia, where we find Monotremes (*e.g.*, duckbill platypus), the Marsupials, shellfish (Terebratula, Trigonia), and air-breathing fish (Ceratodus), can be explained by assuming that the country was cut off from the rest of the world shortly after Mesozoic times, so that these animals, which are allied to those fossils found in the Mesozoic rocks (Triassic, Jurassic, Cretaceous) of Europe and Asia, were protected from the competition of other mammals and of the gastropods of Cainozoic time, and so have survived. This, the popular, theory is not, however, without its difficulties; for instance, no marsupials have been found fossil in south-east Asia, nor in Patagonia, though the hypothetical land-bridge by which they entered must have been through the East Indies, or through South America.

Having conceded so much, let us add that we do not believe Natural Selection is an adequate explanation for the origin of species, and we regard the evidence for the contention that all living animals, or plants, are derived from one ancestor, or a very few ancestors, as totally insufficient. We believe that it has not been shown that there is a satisfactory alternative explanation for

animal and vegetable life, if we refuse to believe in a Creator. How the above interpretations accord with the Bible account of the creation we shall consider in a later chapter.

Scientific discovery has made great strides since Darwin's time, spurred on largely as a result of his fascinating generalizations. He assumed for his theory the transmission to the offspring of characters newly acquired by the parents. This is called the Lamarckian doctrine. It is now regarded as a heresy. First challenged by Weismann, it has failed to secure reliable experimental support. Professor Kammerer is usually quoted as having furnished the best evidence for the Lamarckian hypothesis by converting yellow into black salamanders and vice versa, but the interpretation is regarded as very doubtful, and some of Kammerer's published results were proved to be so unsatisfactory that their author committed suicide at Vienna in 1926. Professor T. H. Morgan writes: "Finally, the most complete disproof of the inheritance of somatic influence is demonstrated in almost every experiment in genetics. . . . It is surprising that this critical evidence is seldom referred to by the advocates of the inheritance of acquired characters. Here, then, in the only field of heredity where we have really scientific evidence, the facts are positive and unquestioned, and contradict thoroughly the claim that the germ cells are affected specifically by the character of the individual."[1]

If Darwin had realized that characters acquired by the parent would not be passed on to the offspring, it is doubtful if he would have launched the theory of Natural Selection. It has been argued, and experimentally demonstrated, that Natural Selection, so far from advancing the production of new varieties, is much more likely to keep the line pure and restore the normal. If from a handful of "pure line" beans the smallest are chosen from which to raise a crop, the resulting beans will be normal, not small (Johannsen). Similar results have been obtained with a water-flea (Agar) and paramœcium (Jennings).[2]

Another new light that has been thrown upon the science of

[1] Art. "Lamarckianism," *Encyclop. Britann.*, XIV. Edition.

[2] For these facts, see MacBride, *Evolution in the Light of Modern Knowledge.*

biology since Darwin's time is the great importance of Law, as opposed to Chance, in the development of new varieties and new species. "It was Bateson who showed us that there were difficulties in Darwinism, and that the problems of evolution were far from settled" (D'Arcy Thompson).[1] He rediscovered old Abbé Mendel's experiments with tall and dwarf peas, and proof that variations are not due to chance, but obey a definite mathematical law. "The great growth of our knowledge of genetic constitution, derived from Mendelian experiments, so far from clearing up the question of the origin of species, has only shown that our old Darwinian conceptions are unproven, and that all is again in the melting-pot."[2] Bateson pointed out that the reason why such amazing variations can be secured with domesticated animals and cultivated plants is because they are usually hybrid in origin. For instance, the modern dog is derived from the wild dog, the wolf and the jackal. Almost the only widely varying cultivated flower that comes of a pure stock is the sweet pea.[3]

One of the most destructive criticisms of pure Darwinism, based on this point that Law, not Chance, has been abundantly at work in nature in the past, comes from Dr. Leo Berg, a professor in the University of Leningrad. His book, called *Nomogenesis*, or *Origin by Law*, was published in English in 1926. He summarizes some of his conclusions in contrast to those of Darwinism, as follows:

Darwinism.	*Nomogenesis.*
(i) All organisms have developed from one or a few primary forms—*i.e.*, in a mono- or oligophyletic manner.	(i) Organisms have developed from tens of thousands of primary forms—*i.e.*, polyphyletically.
(ii) Subsequent evolution was divergent.	(ii) Subsequent evolution was chiefly convergent (partly divergent.)
(iii) Based on chance variations.	(iii) Based on laws.
(iv) To which single and solitary individuals are subject.	(iv) Affecting a vast number of individuals throughout an extensive territory.
(v) By means of slow, scarcely perceptible, continuous variations.	(v) By leaps, paroxysms, mutations.

[1] Introduction to Berg's *Nomogenesis*.
[2] Scott, *Extinct Plants and Problems of Evolution*, 1924.
[3] Bateson, *Nature*, 1914, pp. 635-642.

The evidence for Berg's conclusions is enormous, and ranges so widely over Zoology, Botany and Palæontology that to do it justice here is difficult. One of his main points is the abundant evidence in nature for what is called Convergence—that is, two totally unrelated forms of animals or plants may come to present a strange similarity. Everyone, Darwin included, has had to make some allowance for convergence; Berg sees it everywhere. The deduction, of course, is that resemblance is no proof of relationship or inheritance, a deduction which cuts away the root of all the tables of ancestry of living things. Only a very few of Berg's illustrations of convergence can be given:

(i) The spermatozoon of vertebrates, *e.g.* toad, is, down to minute details, like a a free-swimming, lowly form of life called Trichomonas. But no one imagines that vertebrates are descended from Trichomonas.

(ii) The extinct (Mesozoic) plants called *Bennettitales* show a sort of flower, with male and female elements and pollen, but they are Gymnosperms, allied to modern Cycads, and cannot possibly be ancestors of modern flowering plants.

(iii) Common wheat exists in several varieties, bearded and beardless; white, red or black-eared; winter and spring. But just the same varieties are found of other wheats, spelt, rye and barley. This must be an inherent law of the grain; it cannot be chance.

(iv) The Dipnoi (air-breathing fish living in mud or water) cannot be the ancestors of frogs, toads, etc., but they share with them the paired lungs, the partitioned auricle (of the heart), and many other characters. That both Dipnoi and Amphibia should "by means of accidental variations of characters" change over from breathing by gills to breathing by lungs is "a miracle no naturalist ought to credit" (Berg).

(v) The octopus has eyes just like a vertebrate, with cornea, iris, ciliary body, lens and retina; but it is not an ancestor. Lowly vertebrates have no eyes (Amphioxus) or a very elementary eye (the hag). Darwin himself was staggered at his own proposition that so complicated a structure as the eye was brought about by accidental variations. Is it credible that chance has worked this miracle also, both in the octopus and in the vertebrate? Two animals are known that have eyes like an old gentleman's bifocal

spectacles, the upper half to see in air, and the lower in water, but one is a fish and the other is a beetle.

(vi) Three types of fish—the electric eel, Torpedo and Malapterurus—can give powerful electric shocks, but they are quite unrelated.

(vii) The claws of a lobster and of a scorpion are on the same pattern.

(viii) The glow-worm, the firefly and certain deep-sea fish, are luminous in the dark.

(ix) One of the most remarkable examples of convergence is furnished by the marsupials (pouched mammals of primitive type) of Australasia. There are forms that mimic most of the common types of the mammals of Europe, Asia and Africa. There is a volplaning opossum like the flying squirrel or flying lemur, the flesh-eating Thylacine like a wolf, another marsupial like a rat, another like a jerboa, another like a shrew, another like a mole, and another like a bear!

Nor is it only in outward form that convergence is seen. The crocodile, like the bird, has a four-chambered heart. The extinct flying lizard, the pterosaur, had air-filled bones, and the foramen admitting the air situated just where it is in birds.

Other modern writers besides Berg are impressed by convergence. Bower points out that both plants and animals are bisexual, but it is scarcely credible that they have a bisexual common ancestor. Osborn calls attention to the strange parallelism between extinct reptiles and modern mammals; the huge dinosaurs with horns (Triceratops), like a rhinoceros; ichthyosaurus, like a whale; pterosaurs, like a bat; flesh-eating cynodonts with teeth like a dog; iguanodon, walking on its hind legs and tail like a kangaroo; the turtle, armour-plated like an armadillo or the extinct glyptodon. Surely all this must be law, not chance? There is a special support for this view when we find that each of these types require, not one, but many coincident modifications—*e.g.*, the heavy-headed rhinoceros must have massive legs and a strong neck; the flesh-eating Thylacine, the wolf and the extinct cynodont must have the agility to hunt their prey. Many examples of convergence, besides those mentioned by Berg, will occur to the reader. The frog, the squirrel, and many other totally uncon-

nected forms, hibernate in the winter, which habit necessitates several complicated physiological adjustments to prevent starvation.

The trump card of the advocates of Natural Selection is mimicry for purposes of protection. Berg shows that the argument has been greatly overstated. Nearly all the alleged cases break down on strict enquiry, and prove to be examples of convergence. Does anyone, for instance, really suppose that a bird is deterred from eating a mosquito for fear it may get stung? If not, of what advantage is it to other insects to resemble it, as some do? Or take Wallace's classic case, the butterfly *Papilio polytes*. It now appears that the mimics and the mimicked are not found in the same locality. The "imitated" forms, amongst insects, are usually not worth imitating; they are often eaten by birds quite readily. And are birds such fools as to be so easily taken in? It will be remembered that Darwin found that ants always detected and killed strangers put in their nests, while accepting their own kind even when steeped in asafetida. Some harmless snakes in Central America are black-red-yellow like the poisonous Elaps. This was described as an admirable example of mimicry, until it was discovered that they were all nocturnal.

Berg's next main point is that attempts to derive animals (or plants) from extinct common ancestors almost invariably break down. He gives numerous instances of such attempts. It is nearly always found out that the supposed common ancestor is in some way more complicated than its alleged descendants. Thus, all the varieties of modern ferns used to be derived from the so-called ferns of the Coal Measures, but we know now that these were seed-bearing plants, much higher up than our modern spore-bearing ferns.

The number of classes and orders of plants and animals described by naturalists is constantly increasing, because authors realize the impossibility of deriving one group from another. Thus, in Darwin's time there were six sub-classes of fishes, now there are at least ten. Here, again, Berg's conclusions are powerfully supported by distinguished scientists, and especially by the experts on fossil plants. Thus, speaking of alleged ancestors of plants, J. Ramsbottom[1] states that "in the fungi the fossil

[1] J. Ramsbottom, *Nature*, 1940, 145, 637.

evidence is quite unreliable, and the so-called phylogenetic trees from time to time published for this group are based on such superficial evidence as to be sheer nonsense." According to D. H. Campbell,[1] the very great difference in the reproductive organs of liverworts and algæ forbids the assumption of any but a very remote connection between them. He says that the mosses are one of the most sharply-defined and specialized groups of plants known to us, and their relationship with other forms must be remote.

Scott[2] remarks that in the Chalk (Cretaceous) Angiosperms (flowering plants) "appear suddenly, in their full strength, like Athene sprung from the brain of Zeus. We know nothing of their evolution." Seward believes that the Mesozoic plants were entirely new formations, not descended from Palæozoic forms at all. "Persistence of a type, and from time to time the apparently sudden influx of new types, rather than a steady progressive development, are amongst the outstanding features of the history of plant evolution."[3]

This is confirmed by a Swedish botanist, Heribert Nilsson: "We know of no ancestors for the Angiosperms. In the older Chalk an astounding change in the whole vegetation system appears. The Mesozoic flora still occurs in the lowest strata. In the uppermost appears a wholly different, extraordinarily varied, well-developed plant-world, a dominant angiospermous one. Some of our genera, as Quercus, Platanus, Autocarpus and Cinnamomum have been identified here. . . . The flora of the Chalk is richer, but not more primitive, than that now living. It is spread over the whole world. Far from a wider development, a selective reduction of this has occurred."[4]

The Testimony of the Fossils

[For Geological Table, see p. 62.]

The testimony of Palæontology (the study of fossils) is perhaps the most decisive open to us, as throwing light on the origin of

[1] D. H. Campbell, *Mosses and Ferns*, 1915, p. 564. [2] *Ibid.*, p. 57.
[3] Seward, Hooker Lecture, 1922, *Journ. Linnæan Soc.*, xlvi.
[4] H. Nilsson, *Hereditas*, 1938. For this section see A. P. Kelly, *Journ. Trans. Victoria Inst.*, 1941, p. 118.

species in past geological time. Darwin lamented over lost evidence because of the imperfections of the geological record, and this is still partly true. But, on the other hand, very many fossiliferous strata have been thoroughly explored in a vertical direction. The upper beds, of course, are newer than the lower. Many of our modern plants and animals can be traced far back in geological time. Living genera of mammals can be found in Miocene formations, and living species in the Pliocene. Of 147 species of Pliocene plants, all found, that is to say, before the Ice Age, and including the violet, buttercup, blackberry, coltsfoot, etc., all but 30 are still growing in this country (Clement Reid). The walnut, oak, plane and maple go back immensely further, as far as the Chalk (Scott). The nautilus is found in the Palæozoic rocks, of vast antiquity, and a shellfish (Lingula) may be found to-day almost unchanged from its ancestor in the earliest fossiliferous beds (Cambrian). A shark, *Scapanorrhyncus owsteni*, is found in the Upper Cretaceous, and is living to-day. Occasionally, especially in the Oligocene of the Colorado district of the U.S.A., skeletons of allied species can be recovered from a vertical succession of beds, and a continuous series of slight changes in a definite direction made out—*e.g.*, a reduction of toes, as in the alleged ancestry of the horse, or increasing complexity of the teeth. A few series of ammonites have been described, behaving in the same way. An example often quoted is a lower Jurassic oyster, Gryphæa, where the shell becomes more and more coiled as the animal's history lengthens out. These changes, as we follow a species upwards into newer strata, are all in a determined direction, although they usually advance by leaps. Osborn remarks that this is the greatest contribution which Palæontology has made to Biology and Natural Philosophy, and that it was "unknown to the master-mind of Darwin in 1845-58".

These series in which the changes are slight and gradual, however, are unusual. What is far commoner, and amongst fossils the all-prevailing and dominating picture, is that we find in a particular stratum hundreds of forms almost exactly alike; then, some distance above, this particular species or genus has been replaced by another, quite different, but sufficiently related to suggest that there has been a mass-transformation of the one into the other.

This is sometimes called Waagen's law. For instance, in the geological formation with which the writer is most familiar, the Carboniferous Limestone, a brachiopod (shellfish) named *Productus bassus* is found in the lowest beds; it is followed by *Productus martini* higher up, then by *Productus cora*, then by *Productus gigantea*. In the lower beds there are various species of a coral, *Zaphrentis*; these give place in the middle Carboniferous to *Caninia*; later *Lithostrotion* appears, and finally *Dibunophyllum* and *Lonsdaleia*. Sometimes the older and the newer are found side by side on the same horizon. It is a matter for speculation which of all these were directly derived from the earlier forms by mass-transformation, and which are entirely unconnected.

Grand'Eury, who worked for many years at the fossil plants of the French coalfields, and who began by expecting to find a continuous variation, says that his researches "suggest the idea that their mutations have acted in the manner of metamorphoses, or even, perhaps in opposition to the well-known axiom, by leaps". Zeiller, another distinguished palæo-botanist, came to the same conclusion.

Some observations in life to-day point to the same phenomenon. In Southern Europe, chub, roach, etc., have fewer rays in the fins than in northern waters, for no obvious reason. The red grouse of Scotland, the only bird peculiar to the British Isles, seems to take the place of the willow grouse of Norway. Again, time may witness widespread changes in species; for instance, musk appears to be losing its scent the world over. New varieties suddenly appear. The black variety of the Peppered Moth, which not long ago was first seen near Manchester, has now in most parts of England ousted the type form. Examples of mutation suddenly appearing are the turnspit dog, the ancon sheep, blue and yellow budgerigars, and the Shirley poppy.

A very important piece of palæontological evidence has often been commented on, notably by Berg,[1] by Dewar[2] and by Willis.[3] This is the almost invariable absence of ancestors showing how the Kingdoms, the Classes, and the Orders may have been

[1] L. Berg, *Nomogenesis*.
[2] D. Dewar, *Difficulties of the Evolution Theory*.
[3] J. C. Willis, *The Course of Evolution*.

evolved from some simpler and older type. Genuine links between one and another of widely different forms are very hard to find. We have already noted the remarks of eminent botanists (Scott, Seward) on the absence of ancestors of the Angiosperms and of the Mesozoic flora. New classes and orders suddenly appear, usually in great variety, with no known fossil ancestors, which is quite contrary to what we should have expected on the Darwinian hypothesis. Dewar writes: "In the Ordovician appear suddenly—

(i) The Crinoidea (Sea-lilies). Not a single Crinoid fossil has been found in the Cambrian, but in the Ordovician we find Crinoid fossils representing no fewer than fourteen families and three of the four orders that constitute the class.

(ii) Four of the five orders of the Bryozoa or Polyzoa represented by nineteen families.

(iii) Ten new families of Pelecypod Molluscs.

(iv) Nineteen new families of the order Nautiloidea.

(v) Fourteen new families of the Trilobita."

So, too, the Ammonites suddenly appear in the Devonian (nineteen families), and the Insecta (twelve orders) in the Carboniferous. This list might be greatly extended. No fossils can be found showing by what line the Vertebrates arise from Invertebrates. No fossils can be found to show us the ancestry of the Insecta. The origin of Amphibia, of Ichthyosaurs, and of mammals, is equally uncertain, for lack of evidence.

Amongst the Mammalia, it is the so-called Perissodactyla (odd-toed hoofed animals, including the horse, tapir and rhinoceros families) that have furnished the most complete series of fossil forms and have been most extensively studied. Over 160 species of extinct horse have been described, the great majority being from the Tertiary formations of North America. The older textbooks of Zoology and Palæontology were enthusiastic about evidence for gradual evolution to be derived from these studies. Very complete ancestries of the horse have been published by a number of zoologists, and one or other of these may probably be a true history. But even the earliest, quite small animals were unmistakably horses. The textbooks went on to find in the small generalized mammals of the Lower Eocene (early Tertiary), called Condylarthra, and especially in one of

them named Phenacodus, the direct ancestors, not only of all the Perissodactyla, but of the Artiodactyla (pigs, deer, cattle, etc.) as well. This was regarded as an outstanding argument for the Darwinian theory. What has happened here is characteristic of what has happened when common ancestors have been advanced for other widely differing types of animal. Professor W. K. Gregory, a leading American authority on the subject, wrote in the XIVth edition of the *Encyclopædia Britannica*, articles "Ungulata" and "Perissodactyla": "It was formerly believed that these (the Perissodactyla) were in turn derived from *Phenacodus*, but more recent palæontological research has shown that *Phenacodus* was a specialized side-branch of its own order. The direct ancestors of the Eocene Perissodactyla remain unknown." And again: "The Perissodactyla as an order probably originated in the northern hemisphere, perhaps in basal Eocene times, from some as yet undiscovered relatives of the Eocene Condylarths or Proto-Ungulates. By Lower Eocene times the group was well represented in Western North America and Western Europe, and was beginning to diverge into numerous families." That is to say, the supposed ancestors were not ancestors at all; the real ancestors remain undiscovered.

J. C. Willis[1] sums the matter up thus, though his special experience is of botany rather than of zoology: "One does not find to any serious extent in the fossil record species which represent real intermediates between existing and fossil species. One finds, rather, examples of species that have some of the characters of one, some of another."

Certainly, there is a bird, Archæopteryx, found in the Upper Jurassic, which has been described as in the line of development from reptiles to birds, because it had teeth and a long tail. But it is already a bird, with wings, feathers, and entirely bird-like feet. Scientists are still left guessing, for lack of evidence, from what group of reptiles the oldest birds were formed, how they developed the power of flight, how they acquired feathers, and how they became warm-blooded. "There is a great gap between the birds of the Eocene and the toothed birds of the Cretaceous, and a greater one between these and the Jurassic Archæopteryx, while

[1] J. C. Willis, *The Course of Evolution*, 1940, p. 12.

the point at which birds diverged from reptiles and assumed feathers is still unknown."[1]

The conclusion seems inevitable that a very gradual evolution, by slight changes such as Darwin visualized, may probably have taken place to produce new genera and species, but there is a notable lack of evidence for the production of new Classes or Orders in this way. They appear suddenly, with no evidence, as a rule, or only the slightest evidence, as to their origin.

The Testimony of Embryology

But the Darwinians will reply that the Law of Recapitulation supplies the evidence. Every animal during embryological life repeats the story of its evolution during past time. The mammals begin life in the womb as a single cell; then they acquire a notochord as the first vestige of a backbone, and gill-slits and gill-arches; their hearts are single or two-chambered, and all mammals look much the same during early embryonic life. Therefore they must be descended from a single-celled ancestor like the Amœba, and have passed through a fish stage, then have been primitive generalized mammals, before they branched off into the hundreds of modern varieties.

But the Law of Recapitulation, in spite of Haeckel's enthusiastic and sometimes none-too-honest advocacy of it, is one of those happy simplifications which in biology and physiology are so attractive to propound, but so seldom accord with the facts. That the affinities of an animal may occasionally be shown better by its embryonal stages than by the fully grown form is unquestionable. Thus, some toothless whales have teeth in the fœtal state. Sacculina, apparently a very lowly parasite, is proved by its larval stage to be a degenerate Crustacean. But the evidential value of the recapitulation theory is greatly clouded by what Balfour calls "falsifications of the records". The alleged ancestral stages in various life-histories seldom correspond to any real proved ancestor. For instance, the earliest known Crustacean is the Trilobite, found in the Cambrian, which is segmented, but the embryo (Nauplius) of the modern Crustacea is not segmented. How absurd it would be to conclude that because a butterfly

[1] Zittel, *Textbook of Palæontology*, vol. ii., p. 452.

passes through the stages of caterpillar and of chrysalis, therefore, at some remote geological period, the ancestors of butterflies were motionless, unsexed, not feeding, composed of a creamy mass of cells showing no organs at all (except in the tiny embryonic area) like a modern chrysalis! Another of the difficulties of the recapitulation theory is instanced by Garstang,[1] who remarks that before it can leave a trail for a new species derived from it to recapitulate, an animal has first to follow up the track of its own development (ontogeny) and then to add something more, which is absurd.

The theory does not fare any better, but rather worse, at the hands of the botanists. "The so-called Law of Recapitulation might be assumed to apply less stringently in plants than in animals, and detailed comparison shows that this is actually the truth."[2]

Professor V. L. Kellogg[3] says: "The proof that man is descended from a fish because he has gill-slits at one period of his development is not of the sort to rely on too confidently. The recapitulation theory of Fritz Müller and Haeckel is chiefly conspicuous as a skeleton on which to hang innumerable exceptions. . . . The recapitulation theory is mostly wrong." H. Bergson said: "It has been necessary to reject the almost classical theory of the specificity of embryonal gills."[4] Professor A. Sidgewick, in the article on Embryology in the *Encyclopædia Britannica* (Edit. XIII.), writes in a similarly cautious strain. Milne Marshall wrote in 1894: "The development of the embryo is indeed a history, but a history of which entire chapters are lost, while, in those that remain, many pages are misplaced and others so blurred as to be illegible." And Nordenskiöld has written: "Time has dealt hardly with Haeckel's ontogenetical theories."

A noteworthy point is that the human embryo is never ape-like; so we must conclude either that the Law of Recapitulation is wrong, or that man is not descended from an ape!

The truth of the matter appears to be that just as all the higher

[1] Garstang, *Journ. of Linnæan Soc.*, September, 1922.
[2] Bower, *Evolution in the Light of Modern Knowledge*, 1925, Art. "Botany," p. 166.
[3] Kellogg, *Darwinism To-day*, pp. 18, 21.
[4] Bergson, *L'Évolution Créatrice*, 1910.

animals share to some extent in basic physiological functions (they breathe oxygen, they have lymph, blood, heart, muscle, nerve, etc.), so they are all built on the same plan in the earliest fœtal stages, not to recapitulate their past, but to supply blood, oxygen and nourishment to the growing embryo in the most efficient but the most economical way. On this subject the writings of Vialleton[1] should be consulted. The dividing ovum gives origin to a mass of cells so arranged as to present the largest surface to the maternal fluids. The cartilage or fibrous tissue of the notochord requires a smaller blood supply than bone would need. The "gill-slits" are not slits at all in mammals; they are grooves between the arches that support the bloodvessels necessary to supply blood to the forepart of the body, including the developing brain. In fish, these grooves become perforated and gills are formed; in the mammalian embryo they are not perforated, and there are no gills. If the Recapitulation Law proves anything, therefore, it proves that mammals are not descended from fish. The single-coiled tube heart is provided because a heart is necessary, and this form is the simplest. It is all a matter of physiological needs, not of reminiscences of Palæozoic times.

That vestigial remains may throw a light on the affinities of an animal, and possibly on its descent, is undoubted, but it is remarkable how often so-called vestigial organs prove to have some function, either in adult or fœtal life. Dewar and others have pointed out that these structures are retained because all vertebrates, or all mammals, are built on a common general plan, and good use can be made of them even in a modified form. The pelvic bones of the whale have been looked upon as relics of the days when the animal's ancestors walked on the land, but, as Dewar writes, "the gradual transformation of a land animal into a whale or sea-cow appears to be physically impossible, because the tail could not act as a propeller by vertical motion until the pelvis had been so reduced in size as to render locomotion on land impossible. If such a transformation occurred gradually, there must have been a long period when the ancestors of these aquatic forms, while yet poor swimmers, were unable to use the

[1] Vialleton, *Morphologie Générale*, Paris, 1924.

hind limbs for locomotion. How could such creatures hold their own in the struggle for existence? There are no known animals, living or extinct, intermediate between the whales and the sea-cows on the one hand and any land mammal on the other."[1]

Criticisms of the Theory of Natural Selection

Several real difficulties of the theory of Natural Selection are still to be mentioned. One is that the characteristic differences between species so seldom seem worth while for the animal to preserve. If the thrush, the missel-thrush and the blackbird all had a common ancestor, in what way are the specific differences of these three birds of value to them, and why are they worth preserving? "The non-utility of specific characters is the point on which Natural Selection, as a theory of the origin of species, is believed to fall" (Scott). Berg gives pictures of excrescences in insects which can serve no useful purpose, but must rather be a handicap. Again, even when the perfected organ is of value to its possessor—*e.g.*, the electrical organ to an electric eel—it is impossible to see how the earliest stages could have been of any survival value, assuming, as Darwinism does, that these stages were gradual. It is easy to understand the usefulness to the elephant of its trunk, when it is long enough to reach to the ground, but it would be nothing but a nuisance merely to have a very long nose. It is easy to see the value of the eye, complete with cornea, lens, focusing muscles, retina, blackened choroid to shut out extraneous light, muscles to move the eyeball about and eyelids to protect it, when all are present, but what could be the survival value of the countless little stages that go to build up a perfect eye?

Let it not be supposed that it is only a few obscurantist theologians who see difficulties in Darwin's theory of Natural Selection. A large number of biologists, probably a minority, but a very important minority, have grave doubts about the theory. They do not doubt that a large measure of evolution—that is to say, derivation by descent—has taken place. But they fail to find either in natural selection or any alternative theory an adequate explanation for the development of new species. The books

[1] Dewar, *Difficulties of the Evolution Theory*, p. 61.

referred to at the end of this chapter may be consulted for their reasons. We shall finish this section with a few characteristic quotations, all from first-class authorities.

Professor F. Balfour Browne, giving a presidential address to the British Association in 1935, said that Darwin and Wallace had attributed the origin of species to Natural Selection, but "I come here hoping that absolute faith in that theory is no longer the only hall-mark of a balanced mind, because a long experience of the habits and structure of water-beetles has led me slowly but surely to the belief that Natural Selection plays a much smaller part in the origin of species than has been claimed for it." In the discussion which followed, Professor E. W. MacBride agreed with the president that the theory of Natural Selection did not account for the evolution of all species. In his opinion it accounted for the evolution of no species. It was simply a dishonest truism, and signified merely that "the survivors survived".

Sir Arthur Keith, an eminent Darwinian, writing a review of a recent book,[1] says: "The strange thing about the problem of evolution as it now stands is this: biologists are agreed that all living things change and have changed, but they differ altogether as to how evolutionary transformation is effected. The authors . . . have brought together the latest observations on the part played by Natural Selection in the scheme of nature, and find that only three out of thirty investigations have ended in a verdict for Natural Selection. . . . The manner in which new and useful qualities and structures are produced in the realm of nature still remains our chief enigma."[2]

The authors of this book, Robson and Richards, say of natural selection: "There is so little positive evidence in its favour, so much that appears to tell against it, and so much that is as yet inconclusive, that we have no right to assign to it the main causative rôle in evolution."[3] And again: "The element of design and purposefulness has to be explained."[4] Or again, in the words of Professor D'Arcy Thompson: "How species are actually produced remains an unsolved riddle; it is a great mystery. Here

[1] G. C. Robson and O. W. Richards, *The Variations of Animals in Nature*, 1936.

[2] Sir A. Keith, *British Medical Journal*, July 4, 1936.

[3] Robson and Richards, p. 316.

[4] *Ibid.*, p. 375.

at least is a conclusion that few men of our time will venture to dispute."[1] And again, with the great authority of H. F. Osborn: "Darwin's law of selection as a natural explanation of the origin of all fitness in form and function has lost its prestige."[2]

When we ask for alternative theories to replace Darwin's hypothesis, here are two examples of what we are offered. Very recently, J. C. Willis, an eminent American botanist, has revived an old proposition called Differentiation, or Divergent Mutation. A new family, it is maintained, appears suddenly for the first time, and evolution and Natural Selection then come into play, and split it up into numerous genera and species. The oldest families of plants and animals, therefore, as a rule, have the largest number of species and the widest geographical range. What brings the new family into the world is not explained. It looks very much like a fresh creation.

Henri Bergson, the eminent French philosopher, wrote: "To sum up, if the accidental variations that bring about evolution are insensible variations, some good genius must be appealed to—the genius of the future species—in order to preserve and accumulate these variations, for selection will not look after this. If, on the other hand, the accidental variations are sudden, then, for the previous function to go on, or for a new function to take its place, all the changes that have happened together must be complementary. So we have to fall back on the good genius again, this time to obtain the convergence of simultaneous changes, as before to be assured of the continuity of direction of successive variations."[3]

Surely we may conclude that the more we think of the immense complexity of life in the animal and vegetable world, and the marvels of physiological function, the more obvious it becomes that there must have been an intelligent design at the source of it all. It cannot have been blind chance. We think of the mammalian ear, with its vibrating membrane like a drum to receive sound-waves, the little chain of ossicles to multiply the power of the waves fifty-fold, the basilar membrane and hair cells set to

[1] D'Arcy Thompson, Introduction to Berg's *Nomogenesis*.
[2] H. F. Osborn, *The Origin and Evolution of Life*, p. xv.
[3] H. Bergson, *Creative Evolution*, p. 72.

resound to a musical note as the strings of a piano do, and to convert those vibrations into nervous messages But all this is comparatively simple compared with the changes that take place in a muscle when it contracts, or in a nerve cell and its connections when a message is transmitted. The apparatus for hearing is far better understood than the very complicated series of chemical processes that are controlled by substances circulating in the blood which we call hormones. The processes of growth, from a single fertilized ovum, up to the formation of a perfect animal, defy our imagination; we can see the structures as they develop, but how explain the functions of the body cells that pursue their predestined course with such unfailing accuracy?

Can any better explanation be given than in the words of the anonymous psalm-writer, who cried: "O Lord, how manifold are Thy works! In wisdom hast Thou made them all"?

The Testimony of Beauty

There remains another problem in nature to be accounted for before we can conclude that a materialistic explanation will cover all the facts. How are we to regard the beautiful in nature? The fresh green of springtime; the gold and russets of autumn; the infinite variety of colour and scent in plants, cultivated or wild; the brilliant hues of many butterflies and moths and their caterpillars; the plumage of some birds, such as the grey wagtail by the mountain stream, or the cock chaffinch in the spring meadows, and the song of others, blackbird, thrush, blackcap or nightingale; the "dawn chorus" of a host of birds in early summer? How shall we account for the purple of the hills in the evening against a glowing sky; or a woodland covered with snow; or the combination of deep blue sky and sea, yellow sands and white curling waves on the shore?

Natural Selection may (or may not) be adequate to explain how strictly useful characters can be preserved, but it cannot be invoked to explain the beautiful. Gaudy plumage may make a bird conspicuous to its enemies. The spreading tail feathers of the wild peacock would be a serious handicap if the bird was chased by a fox.

Darwin saw the difficulty, and introduced his theory of sexual selection to meet it, as far as the animal world is concerned. It has, of course, been known for a long time that bright colours and scent are of value to plants, because they attract insects in search of honey, and so aid cross-fertilization. This is an unquestioned fact. What it fails to explain is the extraordinary variety and beauty of the colouring. Why would not one or two conspicuous shades do just as well? Some flowers are self-fertilizing, but they may be brightly coloured also.

Darwin's theory of sexual selection propounded that animals during the mating season put on their gayest colours, or sing their brightest songs, because these attractions are pleasing to the other sex, and a dingy bachelor, or an indifferent songster, would be treated with disdain and leave no progeny to inherit his dullness. The theory is seldom defended nowadays. It presumes too much in the way of æsthetic taste. It is not so much amongst the more intelligent mammals, but amongst butterflies, moths and birds, that the beautiful colours are met with. Are butterflies and moths so fastidious? And, even so, the theory would fail to cover the case of their caterpillars. Some of these—the Pale Tussock or the Gold Tail Moth, for instance—are of extraordinary beauty, but, of course, they are asexual. Birds are usually faithful to one mate for years, and the sexes are usually in about equal numbers, so there would appear to be a good chance even for the bachelors with attractions of a very low order.

An attempt has been made to mend the theory by pointing out that the brightest colours are usually seen in the most vigorous birds or insects. The coloration depends on chemical substances in the blood, which are abundantly present at the mating period. Thus the most brilliant specimens would be the most likely to leave descendants. All this is likely enough, but it leaves us without an explanation as to *why* sexual vigour should show itself in the form of bright and variegated colouring, or in splendid song. At present we can only accept it as being a part of the multiform panorama of nature.

Let us compare this with the world as it might have been—colourless, scentless, silent. The sky might be black, and the sunsets grey. There need be very few animals, and only such

plants as are strictly necessary. Man might have had no ear for music, and no colour sense. Why is the world as it is, and why are we made capable of enjoying it? Is there any adequate reason but this, that the world as we see it was made by God for His own pleasure, and for our use and education? The iron and the copper, the coal and the oil, were buried in the earth long ago, ostensibly for human use. The perfection in design, even of the tiniest creature, shows His painstaking care. The infinite distances of the stars, and the antiquity of the sun, show His far-spreading presence and His eternity. The raging of the tempest impresses us with His might. The caterpillar, pupa and butterfly are illustrations to us of the resurrection of the dead and the life everlasting. Let it not be said that this is to make the universe anthropocentric. There may be many other reasons why God made the world as it is which pass our comprehension. But we should try to understand, and give Him praise for, those things that concern our welfare as His creatures on His earth. The reader will, however, discern lurking here the sinister shadow of dysteology, purpose gone wrong. What little we have to say on this subject follows in an appendix.

Conclusions

Let us sum up as briefly as may be the contents of this long chapter, and the conclusion that may be drawn from it.

The universe—sun, moon, stars, planets—is of vast size and immense age, but it had a beginning, and moves on towards an end. Those phenomena in it which have a bearing on man and his life on the earth show a succession of events so improbable in themselves that they cannot be due to chance. The universe is governed by mathematical laws. The chemical elements, each a little universe in itself, also fulfil their functions in obedience to mathematical laws. Life, as we know it, would have been impossible but for the remarkable properties of the carbon compounds. No reasonable explanation has been offered as to how life originated in the world. The Darwinian hypothesis of the evolution of species amongst animals and plants under the guidance of natural selection, although it is the explanation usually taught in the schools, has many critics, and it is widely

felt that the origin of species is still an unsolved mystery. That there have been changes and developments, in definite directions, within the limits of the species, the genus, and of the family, is probably true enough. That all plants, or all animals, sprang from one stock, or even that the different families or orders had a common ancestry, is pure assumption, and proved neither by palæontology nor by the law of recapitulation. Materialistic science has no adequate explanation to offer for the beautiful in nature.

In the words of Bishop E. W. Barnes, who is a theologian of the modernist school of thought, and an ardent advocate of evolution, "The idea that in evolution we have a self-acting mechanism by which from inanimate matter man, with his emotional and mental life, has been produced, seems to me unworthy of serious consideration. Further, we have discovered no reason to believe that the evolutionary process, even in its higher stages, results from some urge within the organism. The natural conclusion from the evidence now available is that God exists apart from His creation; that He is primarily transcendent, and only immanent to a very limited degree in so far as His creatures share His nature and share His plan."[1]

The Bible asserts that God, the Father Almighty, is the Maker of heaven and earth, and of all things visible and invisible. This is not a proposition capable of mathematical proof. It is by faith (Hebrews xi. 3) that we understand that the worlds were framed by the word of God, so that "what is seen hath not been made out of things which do appear". But the alternative propositions all put a great strain upon credulity; they rest upon a tissue of extreme improbabilities.

Nor is anything to be gained by substituting a proposition of gods instead of God. The laws of physics and chemistry, and of biology, are just the same in Patagonia as in Paris. The most distant stars appear to be all of a piece, chemically and physically, with our own solar system. The animals and plants of past geological time, and the processes of nature, were very like what we study to-day. Everywhere everything shows the work of one Hand and one Mind. A conflict of creators would have wrecked the world and the universe long ago.

[1] E. W. Barnes, *Scientific Theory and Religion*, p. 519.

Nor will a merely impersonal God satisfy the indications. A Mind has been at work, with purposes to foresee and to bring to pass, working by laws, and with materials, that we can up to a point understand; it is a Mind that works along the same lines as our own minds, but on a vastly higher level. And mind is not something that floats about in space. It is not inherent in a block of granite. It is connected with a personality, with plans, executive ability, likes and dislikes. So it is not surprising that the Bible quotes God as saying, "Let Us make man in Our image, after Our likeness."

And, finally, let it not be supposed that we think we see the handiwork of God only in the gaps which cannot easily be bridged by some naturalistic explanation. He does not necessarily, or even usually, work by sudden, big moves. He may take time, much time, over an operation; He may use and modify, according to His wisdom and purpose, some pre-existing material. Christ saw Him as clothing the grass—probably He meant the wild flowers—of the field; as taking an interest in the fall of a sparrow. There would appear to be just as much need for a Supervisor in nature as for a Creator.

In the eyes of some the discoveries of modern science have detracted from belief in God. For the rest of us these same discoveries have immensely enlarged our conceptions of Him. We see Him active, not six thousand years ago merely, but thousands of millions of years ago. His hand stretches out to stars so distant that our arithmetic cannot find figures for them. The imagination staggers both at the vastness and the minuteness of His work. The beauty and the infinite variety of nature show Him to us as the superlative Artist and Craftsman. "O Lord my God, Thou art very great. Thou art clothed with honour and majesty."

REFERENCES

1. Authors.

E. W. Barnes, Sc.D., D.D., LL.D., F.R.S., Bishop of Birmingham.
W. Bateson, M.A., F.R.S., Trustee of the British Museum.
L. Berg, D.Sc., Professor of Geography, University of Leningrad.
F. O. Bower, D.Sc., LL.D., F.R.S., Professor of Botany, University of Glasgow.
Sir J. Jeans, M.A., F.R.S., Secretary of the Royal Society.
H. F. Osborn, D.Sc., LL.D., President of the American Natural History Museum.

A. C. SEWARD, Sc.D., M.A., F.R.S., Downing College, Cambridge.
D'ARCY THOMPSON, C.B., F.R.S., Professor of Natural History, University of St. Andrews.

2. BOOKS.

L. BERG: *Nomogenesis*. Leningrad, 1926. Described by J. B. S. Haldane (*The Causes of Evolution*) as "in my judgment far the best anti-Darwinian book of this century".
R. E. D. CLARKE: *The Universe and God*, 1939.
D. DEWAR: *Difficulties of the Evolution Theory*, 1931.
A. S. EDDINGTON: *Stars and Atoms*, 1927.
SIR J. JEANS: *The Universe Around Us*, 1929.
R. O. MACFIE: *Science Rediscovers God*, 1930. The main argument of this chapter is here demonstrated in a very readable and well-informed book.
G. C. ROBSON and O. W. RICHARDS: *The Variations of Animals in Nature*, 1936.
A. R. WALLACE: *The World of Life*, 1910. A stout defence of Theism, by the co-founder of the Evolution Theory.
R. L. WATERFIELD: *A Hundred Years of Astronomy*, 1938.
J. C. WILLIS: *The Course of Evolution*, 1940.

APPENDIX TO CHAPTER III

THE PROBLEM OF IMPERFECTION

In our chapter on Purpose and Plan in Nature we have found reason to believe that the most adequate explanation of the origin and development of all living creatures, as well as of the world in which they live, is that they are the craftsmanship of God. To this conclusion there is what appears at first sight to be a crushing retort. The objector will ask, " If God made the world, why did He make it so badly?" God and Nature seem to be at strife. She is red in tooth and claw with ravine.[1] Pain and fear and death call for an explanation, so does the existence of animals that live by preying on their weaker neighbours, and of snakes, and of disease germs such as tubercle bacilli, or malarial parasites. There is a wasp that stings a caterpillar in the head ganglion of the nervous system so as to paralyse without killing it, in order that its body may form fresh food for the larvæ that hatch out from the wasp's eggs. There is ugliness in the world, as well as beauty.

The answer belongs rather to philosophy than to the lines of

[1] See the two striking cantos *lv.* and *lvi.* of Tennyson's *In Memoriam*. They are too long to quote, and too good to abbreviate.

investigation dealt with in this book, and it will only be relevant to indicate, very briefly, in what direction it may be found. In any case, we are not concerned to argue that it is possible to obtain a full knowledge of the character of the Creator by studying science.

In the first place, the difficulty has been greatly exaggerated, and especially the amount of pain and dread in the animal world. Dr. A. R. Wallace[1] has a reassuring chapter on the subject, in which he concludes that animals feel much less pain than one would suppose. Appearances are deceptive. A man with a broken back may draw his foot away from a pin-prick which he does not feel. A frog with its brain destroyed makes the most convincing and determined efforts to push away a piece of acid paper from its belly, yet it cannot consciously feel it. Animals have not sufficient power of foresight to suffer from dread of the future as human beings do. We too readily argue an animal's feelings from our own. To be captured by an enemy is not necessarily the most painful way of going out of the world, and if there were no death, the animal population would soon become enormous and there would be nothing for them to eat. On the other hand, there is bound to be a defensive reaction against imminent danger, or extermination would shortly follow, so every animal fights, or flies, or feigns death, when attacked.

Suffering and death amongst animals present a problem which cannot be dissociated from the age-long question as to why evil is allowed to vex and destroy mankind. If we touch upon this subject, it is not to supply an answer, but to show how large are the issues raised. The problem to be solved would be quite different if it were not for the Christian revelation that God is a God of love. If we knew nothing about Him except what we can deduce from Nature and from History, which is very little, we should have to form our estimate of Him from the phenomena, and take Him as we find Him. As it is the Christian revelation that raises the question as to how to reconcile the love of God with His apparent policy of non-interference in a very imperfect world, it is useless to look anywhere else for a solution of the problem. We must find it in the Bible, or not at all. If we were to pursue the subject, we

[1] Wallace, *The World of Life.*

should find ourselves discussing man's rebellion against God's laws, and the trouble resulting therefrom; and a great anti-God force lurking in the background, always spoiling His work; and God's marvellous intervention, by sending His Son into a hostile world to redeem it; and the Christian virtues that shine most against a dark background; and the promise of the final triumph of good.

We can only speculate when the anti-God force began to spoil. God saw the world designed by Him as "very good", but "the creation was made subject to vanity". It groans and travails in pain until now. But it shall be delivered from the bondage of corruption into the liberty of the glory of the children of God.[1]

The problem of evil receives its fullest treatment in the Bible in the Book of Job, where the main lines the answer will follow are indicated, but always something is left for the Christian revelation to add. Here, in an atmosphere of primitive life in the Arabian desert, we read of the good man in adversity, stripped suddenly of his wealth, his children, his health, and his good repute. The veil is drawn in heaven, and we see the origin of Job's misfortunes in the malice of Satan, but always there is a barrier set by God by which the mischievous power of the adversary is to be limited. We are provided with three explanations of Job's sufferings: first, by his three friends, that they are a direct punishment for his sins; secondly, by Elihu (apparently) and the author of the book, that sorrow brings a gracious blessing to follow, so that Job's latter end is better than his beginning; and thirdly, by the Almighty out of the whirlwind. God does not fully explain Himself, but He asks us to trust His infinite power and wisdom. It is left for the New Testament to open to us the glories of the life to come, and the triumphant love of God shown in the life, death and resurrection of Jesus Christ.

REFERENCE

C. S. Lewis: *The Problem of Pain.*

[1] Romans viii. 19-23.

CHAPTER IV

THE CREATION-NARRATIVE OF GENESIS

THE subject-matter of this chapter presents a consideration of the origins of the Earth, the Sun, Moon and Stars, also of vegetable and animal life (as far as we are able to understand the order of events from modern scientific research), and how they accord with the account of those origins in the Creation-narrative in the first chapter of Genesis.

Some reader will certainly object, Why waste time on such a question? Surely by this time modern theology has concluded that Genesis and science will not mix, that the Creation-narrative is merely folklore, or a kind of religious poem in the form of prose, derived from similar accounts in Sumerian and ancient Babylonian sources? New discoveries, and new and brilliant theories, having overcome initial resistance, have a way of carrying all before them like a flood, and of invading territory that does not rightfully belong to them. There was a cocksureness about the assertions of the Victorian scientists and discoverers which seemed to many to demolish the testimony of Scripture, and of Jesus Christ Himself. Now that the wave of cocksureness has receded, those whose faith in the Word of God so carried away find themselves stranded on the shoals of a scientific dogmatism that is already old-fashioned. We do not for a moment suggest that theology had nothing to learn from science. It had, and it still has.

The point will not be argued here, but an attentive reading of the Bible, Old Testament or New, should convince anyone that the various books make claims for themselves, and for the writings that precede them, which lift them entirely above ordinary secular literature. They claim a divine supervision, which constitutes the Bible, as a whole, the Word of God. It is, further, incontestable that Jesus Christ Himself used and quoted the Old Testament, including the early chapters of Genesis, in a manner which showed

His acceptance of their divine authority.[1] Many educated persons to-day fear that to recognize this will lead to an intellectual impasse, that it will not be possible to reconcile the teachings of Christ with the findings of science; that as the latter are sacrosanct and no breath of suspicion can be thought to rest upon them, "ways" must be found to evade the testimony of Jesus and the Apostles to the sacred writings. We contend that all these "ways" or devices do in fact detract very gravely from the respect rightfully due to Him, and also that the impasse so dreaded is not nearly so threatening as it seemed thirty years ago.

Let us commence, then, by summarizing the relevant facts, or hypotheses, of the natural sciences passed in review in the previous chapter, and then let us set over against them the Creation-narrative in Genesis.

We have seen that the solar system, and the Earth, are of immense antiquity, but they had a definite beginning. The primitive atmosphere would be like a steam-bath of water vapour and gases. The Earth, after solidifying, would emit great quantities of water vapour and carbon dioxide, so that it would be covered with a universal ocean, and swathed in dense masses of clouds. By degrees the clouds would diminish sufficiently to transmit light from the sun, and as the Earth rotated on its axis, there would be, for an observer on the Earth's surface, an alternation of day and night, though the sun was not yet visible. Only infra-red rays would get through. At first the ocean and cloud would be continuous; later, an atmosphere would separate them. Further earth-contraction, due to cooling, would ridge up the massive mountain systems, at first composed of volcanic rocks, so that land and water would now both be present on the Earth's surface. Rain, sun, frost and storm would pulverize some of the rock surface to form soil on land, and mud and sand under the sea. When, at last, blue rays of light from the sun would penetrate, the time would arrive when life could first appear, and there are convincing reasons for believing that vegetable life appeared before animal. Oxygen, both in the atmosphere or dissolved in water, is necessary

[1] See, for instance, Mark vii. 10, 13, xii. 36; John xiii. 18; Matthew v. 18; John x. 35. For references to the Creation-narrative, Matthew xix. 4, 5; Mark x. 6, 7.

for animal life, and it is derived from the action of chlorophyll in plants. Primitive seaweeds are found in the very oldest fossiliferous strata. Nearly all our fossils in these oldest rocks are marine forms, and therefore the chances that land plants will be found are slender. Fossil plants are known from the Devonian rocks, older than those in the Coal Measures, with all their internal structure wonderfully preserved and capable of microscopical study. Some of them were highly developed and specialized, and included large trees, though, of course, others (*e.g.*, Rhynia) were relatively simple. The ferns and club-mosses of the Coal Measures are seed-bearing, and much more highly developed than the ferns and lycopods of to-day.

After the first plants had appeared, a further clearing away of the dense clouds must have been taking place, and the Sun, Moon and stars would become visible to an observer on the Earth's surface. There is some evidence that in Cambrian times the light was dim. Trilobites usually have very large eyes, or none at all, like deep-sea fish. A few, admittedly, have eyes of moderate size.

The first appearances of various forms of animal life are shown in the following table:

GEOLOGICAL TABLE OF FIRST APPEARANCES OF LIFE.

Pleistocene	(Ice Age).	Man.
Tertiary	Pliocene.	Living species of mammals. ? Man
	Miocene.	,, genera ,, ,,
	Oligocene.	,, families ,, ,,
	Eocene.	,, orders ,, ,, Snakes.
Mesozoic	Cretaceous.	Flowering plants (Angiosperms).
	Jurassic.	Birds.
	Triassic.	Mammals (marsupials; *Micrōlestes* allied to the duckbill platypus). Aquatic reptiles (Ichthyosaurus), etc.
Palæozoic	Permian.	Reptiles.
	Carboniferous.	Giant amphibia (Labyrinthodonts); Insects.
	Devonian.	
	Silurian.	Land-plants. Fish.
	Ordovician.	Fish-like vertebrates (Ostracoderms).
	Cambrian.	Trilobites. Brachiopods. Seaweeds.
Eozoic Azoic	Pre-Cambrian.	Invertebrates. ? Seaweeds.

What, in terms of years, all this represents is quite uncertain. It is clear that the Eocene is immensely older than the Ice Age. The Palæozoic formations are so ancient that the whole of Tertiary time is small in comparison.

In spite of remote antiquity, fossils are often so well preserved that it is difficult to believe that they were not living yesterday, except for the hardness of the stone in which they are embedded. Let the reader hunt for shells in the clays at Barton-on-Sea (Eocene), or pick up the leaves of extinct plants in the Eocene clay beds at Bournemouth, or examine the sharks' teeth from the chalk, or the fish-teeth from the Rhætic (a Triassic formation) in some geological museum, and this will at once be made plain to him. Complete skeletons of long extinct reptiles or sea-lizards (Ichthyosaurus) have often been found. The teeth of the cave-lion, or cave-bear from our bone-caves, come from animals which have long been extinct in this country, but they are very like those of living beasts, and one may even see the gnawed bones of animals which they killed. There is no doubt whatever that the fossils represent creatures that really lived, long, long ago. Even their footprints have been found, on rocks consolidated from some ancient seashore mud. The insects found in the Coal Measures (Carboniferous), or preserved as fossils in amber, are astonishingly like those now living.

Let us now turn our attention to the Creation-narrative in Genesis. It will be necessary to find the exact meaning of the Hebrew words, because the English of King James' translators did not possess the terminology of modern science, and sometimes gives rise to needless confusion.

"In the beginning, God created the Heaven and the Earth." The phrase "in the beginning" is sufficiently elastic to cover any remoteness of antiquity the astronomers may demand. [The date, 4004 B.C., which appears in the margins of some Bibles, is no part of the original text, being the result of calculation. It will be considered later.] Notice that the creation of the Heaven is put before that of the Earth. The word *bara*, translated "created", was supposed by some of the older generation of theologians to mean "to create out of nothing", but its use in other parts of the Old Testa-

ment[1] does not support this theory, and in the second chapter of Genesis[2] it is said that man was formed, not out of nothing, but from the dust of the ground. The word really means bringing something new into existence, without particularizing as to the material, if any, that was used for the purpose. The word is always used of a work of God, not of man. The main and distinctive teaching of our verse, of course, is that the creation of the heaven and the Earth is attributed to God; not to gods, but to God.

"And the Earth was waste and void, and darkness was upon the face of the deep." This statement would represent well the time when, according to modern theory, the covering of water vapour was so thick as to exclude the Sun's light, and the Earth's surface was featureless and empty.

"And God said, Let there be light. . . . And God called the light Day, and the darkness He called Night." The bringing about of order is now beginning. The Earth is rotating on its axis, and, as seen from its surface, light penetrates the cloud-covering, but the Sun cannot as yet be seen. (It is probable that Jupiter is at this stage now.)

"And God said, Let there be a firmament (literally, an expanse) in the midst of the waters, and let it divide the waters (above) from the waters (below)." That this is the meaning is plain from the verses that follow. That is to say, the universal ocean is no longer covered with a universal blanket of steam or dense cloud, but an atmosphere develops.

"And God said, Let the waters under the heaven (that is, of the universal ocean) be gathered together into one place, and let the dry land appear." The further contraction of the Earth now ridges up volcanic rock into continents. There is a theory that the Eastern bulge of South America once fitted into the hollow of West Africa, and that the Old and New Worlds once formed one continent, which afterwards broke into two and drifted apart. That, however, is very speculative.

"And God said, Let the earth put forth grass, the herb yielding seed, and the fruit tree bearing fruit." Nothing is said here about

[1] See, for instance, Psalm li. 10, cii. 18, civ. 30; Isaiah liv. 16. The root meaning seems to be "to cut off from" (Gesenius).

[2] Genesis ii. 7.

seaweeds; Genesis deals only with the major divisions. We have already seen reason to believe that animal life was not possible until there was vegetation to supply oxygen to the atmosphere. The word *deshe*, translated "grass", means something green, and no doubt covers all kinds of green plants of a lowly type. It is noteworthy that the Coal Measure ferns were seed-bearing. Seed-bearing plants are therefore very old.

"And God said, Let there be lights in the firmament of the heaven. . . . And God made the two great lights, the greater light to rule the day, and the lesser light to rule the night; He made the stars also." The record does not say that He now made the Sun. "He set them in the firmament of heaven." Sunlight had filtered through the clouds, to divide day and night, from a much earlier period, but the clouds now cleared sufficiently to allow the Sun, Moon and Stars to be seen from the Earth's surface. All through the Creation-narrative the observer is regarded as being on the Earth's surface.

"And God said, Let the waters bring forth abundantly the moving creature that hath life, and let fowl fly above the earth in the open firmament of heaven. And God created the great sea monsters, and every living creature that moveth, which the waters brought forth abundantly after their kinds, and every winged fowl after its kind." Here we have the beginnings of animal life, beginning, it will be observed, in water, not on land. This accords with the geological record. No notice is taken of trilobites or shellfish; here, again, as with plants, the narrative only deals with the obvious. Fish appeared first in the Ordovician, and became abundant in the Silurian. The great amphibians, called Labyrinthodonts, of the Carboniferous, as well as the Ichthyosaurs and Plesiosaurs (Triassic, Jurassic), would aptly be described as sea monsters. A difficulty has been alleged about the "winged fowl", because birds do not appear in the geological record before the Jurassic, later than the mammals, which would seem to be too late for our narrative. This difficulty is more apparent than real. The Hebrew word *oph*, translated "fowl", comes from a root meaning "to fly", and is used to cover insects—for instance, the locust.[1] Numerous insects flourished in Car-

[1] Leviticus xi. 20-23.

boniferous times. There are some remarkable pictures of them in Zittel's *Textbook of Palæontology*. Many of them were of the cockroach type.

After the aquatic animals, the land became furnished with life. "And God said, Let the earth bring forth the living creature after its kind, cattle, and creeping thing, and beast of the earth after its kind, and it was so." Our geological table shows that creeping things—that is to say, reptiles—first appeared in Permian times, and mammals in the Rhætic, at the top of the Trias. Mammals did not become really abundant until Eocene times.

The final act of creation was to bring man into the world. "And God said, Let Us make man in Our image, after Our likeness." Fossil man appeared on the Earth much later than the mammals, certainly during the Ice Age, perhaps during Pliocene times.

These considerations bring to light a perfectly amazing accordance between the Creation-narrative and the discoveries of modern science. When we remember the wild guesses as to the ultimate nature and origin of the Earth that were current amongst other ancient people, the accuracy of Genesis stands out in solitary grandeur. Geology is a young science; the classification of the strata is not much older than a hundred years; we may be sure the author of the Creation-narrative derived none of his information from fossil-hunting. Neither guesswork nor intuition taught him to arrange events in the correct order. This narrative bears the marks of a divine inspiration.

This conclusion will be contested, and from both sides. It will be contested by the traditionalists, and also by those who see little, if any, difference between the Bible and any other ancient book. We shall proceed to examine these objections.

The exponents of traditional theology used to tell us that the world was made 4,004 years before Christ, in six literal days of twenty-four hours each. The mention of "evening" and "morning", they said, demonstrates that literal days are intended. When our museums became filled with fossils, and everyone became convinced of the vast age of the geological strata, the theory was amended, notably by the great Scottish divine, Dr. Chalmers, about 1814. It has been suggested that a great catastrophe took place after the fossils had been laid in the rocks,

and all life perished. A new creation then took place, 4,004 years before Christ, in six literal days, and the animals and plants that fill the world to-day date from that great creative work. Each species was made out of nothing, by a separate creative act. This "Catastrophe Theory" is said to find confirmation from an interpretation of a verse in Isaiah,[1] where we are told that the Lord did not create the world void, but formed it to be inhabited. But surely this refers to the finished Earth, when it was ready for human habitation. It is further supported by a misleading translation of Genesis i. 28, where the word "replenish" conveys the impression that the Earth had been full, then had been emptied, and needed to be filled again. But the Hebrew word, *male*, merely means "to fill". It is further claimed in support of the theory that the phrase "The earth was waste and void" could be translated "The earth *became* waste and void." But this is not the natural meaning of the passage, and it is not given by the Authorized or Revised Versions nor by the (often very valuable) Revised Version margin. The Catastrophe Theory would never have been launched except as an attempt to meet the facts of geology. But we venture to affirm that no geologist of standing is likely to be satisfied by it. As we have seen, many species of animals and plants which are still living can be found fossil in the Tertiary formations.

The theory also accords ill with what we know of the phenomena of island life, and with the existence in Australia of a fauna allied to that of the Mesozoic age. There is no geological evidence of such a catastrophe as the theory supposes. The Great Ice Age by no means obliterated all forms of life throughout the world. We must ask those who support this theory, Did the Sun, too, perish, and was it recreated on the fourth day?

The opinion that the week of creation was 4,004 years before Christ depends on the calculations of Archbishop Ussher, and is nowhere expressed in the Biblical narrative.[2] The calculation depends on the assumption that the genealogies of the Old Testament do not omit any names, and that the time periods run

[1] Isaiah xlv. 18.

[2] On this subject see W. H. Green, *Bibliotheca Sacra*, April, 1890; M. G. Kyle, *Journ. Trans. Victoria Inst.*, 1925, p. 125; Orr, *The Bible under Trial*, p. 157.

consecutively. Any student of Biblical genealogies, or of Biblical chronology, knows that these assumptions are not correct. A comparison of the tables in 1 Chronicles with those of the historical books shows that names are omitted in some lists. The Matthew genealogy of our Lord omits the names of several kings of Judah. The Hebrew, Septuagint and Samaritan versions disagree as to the figures for the years in the genealogies. Elsewhere in the Pentateuch, Moses is particularly given to adding up his totals (see Gen. xlvi. 27; Num. i. 46; iii. 39; xxvi. 51; xxxi. 32), but not so here. However the ages of the Patriarchs are to be interpreted, it is pure assumption to calculate the date of creation from them. The unassailable chronological statement stands in the opening words of the narrative, "In the beginning, God created the heaven and the earth."

As for the "days" of creation, it has been recognized from the time of Augustine,[1] long before any scientific difficulties were felt, that these must be "days of God", not days of man. The "days" were counted before the Sun appeared. In Genesis ii. 4 the creation of heaven and earth is crowded into a "day". The word "day" is much less definitely used in the Bible than in English, and often means a period of time of undefined length. "Are Thy days as the days of man?" (Job x. 5). The mention of "evening" and "morning" certainly constitutes a difficulty. Why should the evening be mentioned before the morning? That the Jews calculated their days from sundown to sundown is true enough, but the Jewish usage may be based on this passage. It seems probable that it is a symbolical way of saying that there were periods of alternate activity and quiescence on the part of the Creator. Or the suggestion of Kurtz may be correct, that the author had a revelation of the drama of creation spread over a series of nights and days. No explanation so far given is entirely satisfactory, but the astonishing coincidence of the scientific order and of the Biblical order of creation seems to indicate that the Biblical days correspond to periods of geological time. What, then, is the significance of the seventh day of rest? Surely this, that man was God's last and greatest creation, and no further completely new and different type of animal has since arisen on earth.

[1] Augustine, *De Civit. Dei*, xi. 6-7.

The traditionalist further contends that every one of the approximately 800,000 species of animals (more than half of them insects) known to modern science was the subject of a special act of separate creation, and that these animals have not since transgressed the bounds of their species. In support of this contention, it is maintained that different species will not interbreed, or if they do, the resulting hybrid will be sterile. It is further contended that the Hebrew word *leminehû*, translated (Gen. i. 11, 12, 21, 24, 25) "after its kind", indicates that there was a creation of each species separately. Though it is true that cross-breeding is very exceptional in nature, crosses do occur, the mule being a well-known example. There was recently a lion-tiger cross in the London Zoo. Nor are cross-breeds always sterile; the dog-wolf "cross" is often fertile, and many garden flowers and fruits are the result of a successful cross. If we compare the use of the word *leminehû* in Genesis with that in Leviticus xi. 15, 22, 29, the meaning appears to be "in all their varieties". The Hebrews had no knowledge of species as they are defined to-day, and the expression "after its kind" is far too vague to bear such a precise meaning. The literal translation of the word is "according to its likeness".

The reconciliation of the Creation-narrative with the conclusions of modern science which is set forth in this chapter is largely based on the writings of two famous geologists, Sir William Dawson and Professor Dana. It is likely to be opposed, not only by the traditionalists, but also by those who see no great difference between the Old Testament and any other ancient book. These will maintain, first, that the Bible is intended to teach religion, not science, that the Creation-narrative is merely folklore, and that it is entirely contradicted by another Creation-narrative in the next chapter of Genesis. We shall probably be told that the reconciliation is an example of "special pleading".

That the main purpose of the narrative is to show God as the Creator, that the terms used are popular and even symbolical and not those of exact science (how could they be, in such an ancient writing?), we heartily agree, but that the information conveyed is incorrect we as heartily deny. Why should the author attempt to set forth an order of creation at all? How could he possibly have arrived at the correct order if he was not gifted with a divine

revelation? Where else in ancient literature, or in non-Christian literature written before the birth of geology as a science, is such a successful delineation of the order of creation to be found?

It is often declared that the second Creation-narrative contradicts the one we have been considering, and certainly it gives an entirely different account of events. But the two narratives are supplementary, not contradictory. The second narrative commences where the first leaves off. It tells in one sentence of the creation of the heaven and the Earth, omits all reference to the origin of wild plants and animals, and comes at once to a rainless, barren, uncultivated region, where God created man, and planted a garden for him to cultivate.

One question remains. What appears to be the truth about the creation of animals and plants? Are they all derived from a single ancestor, created by act of God, and gradually moulded by His directing wisdom into the countless forms that have existed in geological time, and that exist to-day? Or were there a number of new beginnings? Was older material used, or were the new creations directly "from the dust of the ground"? We submit that on a right understanding of the Creation-narrative in Genesis there is no need for any controversy between science and religion about these questions. If science sets up a godless, materialistic process instead of a Creator, it has to be opposed, but not when it asks or answers such questions as these. No final answer can be given in the present state of our knowledge. Darwin spoke of the breathing of Life into "a few forms, or one". Berg[1] speaks of tens of thousands of original forms. We have seen that though intermediate forms and ancestors can be found in the fossil state for species, genera and families, they are almost invariably missing when we look for some link between the great natural orders—that is to say, creatures that are thoroughly unlike one another. Nor does the argument from embryology prove much as to an animal's ancestry. In the Creation-narrative, the word *bara*, "to create", is not used again and again for every new introduction of life. It is used three times only, for the creation of the heaven and the earth, for the first animal life mentioned, and for man. There is, therefore, abundant room for difference of opinion, both

[1] L. Berg, *Nomogenesis*.

amongst the scientists and amongst the theologians, concerning these questions.

That which must be firmly held by Christians who honour the Bible as the Word of God is the fact that God is the Creator of the heaven, the Earth, and all living things, whatever methods He may have used; that the Creation-narrative of Genesis is a true account; and that man is a special creation of God, though this does not necessarily mean that God created him out of nothing at all.

REFERENCES

DANA: *Bibliotheca Sacra*, 1885, p. 201.
SIR WILLIAM DAWSON: *Origin of the World according to Revelation and Science.*
ELLICOTT: *Commentary on Genesis.*

CHAPTER V

THE PROBLEM OF MAN'S ORIGIN

THE significant difference between the Christian view and that of scientific paganism as to the origin of man is that the latter looks upon him as a slightly improved ape, produced by a self-working process of evolution, whereas the former sees him as made by God, in the image of God, and responsible to God. Put in this way, the difference is very far-reaching indeed, in respect of character and behaviour. The slightly improved ape will probably show all the beast-like characters of greed, lust, selfishness and aggression, made all the more formidable by man's intelligence and use of tools. He will be constantly at war with his fellows. The God-made man will be, to some extent at any rate, controlled by God's laws and authority.

The advocates of the pagan theory will advance in support thereof the undoubted resemblance of man's bodily structures and physiological functions to those of the great apes; the argument from embryology according to which every animal, man included, is supposed to reproduce during embryonic life its ancestral history; certain recent discoveries of fossil forms which have been interpreted as bridging the gap between man and the apes; and a comparison between the intelligence of an ape and the intelligence of the lowlier races of mankind, very flattering to the former. Some congenital abnormalities seen in children are also held to be throw-backs to the animal ancestor. Let us consider these arguments seriatim.

That man's anatomical structure is very similar to that of the apes, and that his physiological functions also are very like, is too obvious and well known to be worth emphasizing. Man is an animal, and all the higher animals are built on the same general plan. So much has been said about the resemblances that most people are scarcely aware of the differences. The human brain is far larger and more developed. Man alone walks with a fully

erect posture; the nearest in this respect amongst the apes is the gibbon. This erect posture necessitates a whole series of anatomical modifications. The apes have a hairy coat, a projecting muzzle, a low, receding forehead, and a foot quite unlike ours; the great-toe is opposible like a thumb. A statement has been quoted by a number of writers that the foot of the "highland" gorilla is shaped like that of a human being. This rests on a misleading photograph taken by the American traveller Akeley, and is quite untrue.[1] Man has no vibrissæ (tactile hairs); every other mammal possesses them. The apes have no hymen. No doubt it will be replied that these are merely the ordinary differences between one species and another, but, as we have seen in a former chapter, the trend of modern zoological research inclines to the opinion that resemblances may often be the result of parallel development, called Convergence, and be no proof whatever of common descent or blood-relationship. The eminent anatomist Professor Le Gros Clark, who on the whole writes in favour of the theory of descent from an ape ancestor, frankly acknowledges the difficulties and pitfalls of the hypothesis. He says: "In the evaluation of the genetic affinities anatomical *differences* are more important as negative evidence than anatomical *resemblances* are as positive evidence. It becomes apparent that if this thesis is carried to a logical conclusion, it will necessarily demand a much greater scope for the phenomenon of parallelism or convergence in evolution than has usually been conceded by the evolutionists. The fact is that the minute and detailed researches which have been carried out by comparative anatomists in recent years have made it certain that parallelism in evolutionary development has been proceeding on a large scale, and is no longer to be regarded as an incidental curiosity which has occurred sporadically in the course of evolution. Indeed, it is hardly possible for those who are not comparative anatomists to realize the fundamental part which this phenomenon has played in the evolutionary process."[2] Professor Wood Jones, another eminent anatomist, goes further, and maintains that it is easier to make out a case for the descent of apes from man than for the descent of man from apes, because

[1] R. I. Pocock, *Brit. Med. Journ.*, April 4, 1942.
[2] Le Gros Clark, *Early Forerunners of Man*, 1934.

in a number of particulars human anatomical structure is more primitive than that of any of the anthropoids.

We have been incessantly informed that the blood of man and of the apes is indistinguishable. It is quite true that they both react alike to certain tests, such as the precipitin reaction, though even in this case a much higher concentration is needed for ape's serum. There are, however, differences. By the use of anti-erythrocyte sera, Landsteiner and Miller[1] were able to show in 1925 that human and ape red blood corpuscles are not identical and can be distinguished from one another, though the test does not distinguish between a white man's blood and a negro's. Zuckermann[2] has shown that the white blood-cell count is different; basophile leucocytes, very scarce in human blood, are 3 per cent. of gorilla's white cells, 15 per cent. in the orang-outang, and 20 per cent. in the chimpanzee. Landsteiner and Miller sum up by saying that their observation "is in agreement with the accepted view that man has not evolved directly from any of the existing species of primates, as was formerly supposed, but that the Catarrhina, anthropoids and man have all sprung from a common stock". That would be to push the ancestry of man back to the remote past. The common ancestor would have to be quite a primitive animal. Both Wood Jones and Le Gros Clark write to the same effect. The latter says: "Whilst, however, we may accept the thesis of man's descent from 'lower' forms of life, there is by no means a consensus of opinion among the biologists as to the precise route by which the human family arrived at its present status, or what may have been the real nature of its immediate progenitor." In his view, the common ancestor of man and the apes must have been very far back, and quite a small animal, no bigger than a gibbon.

As we have seen in a former chapter, the argument that the line of descent can be read from the course of fœtal development usually breaks down in practice. It is commonly taught that, as the human fœtus has gill arches, and is often somewhat hairy, therefore man must be descended from a fish-like ancestor, and

[1] Landsteiner and Miller, *Journ. Experiment. Med.*, 1925, pp. 841, 853, 863.

[2] Zuckermann, *Functional Affinities of Man, Monkeys and Apes*, 1933.

at a later stage from a hairy animal, and then from an ape. But though the human embryo shows visceral arches, it never shows gills or gill-slits. The embryo is at no time in the least ape-like; for instance, it never shows the protruding muzzle and slope-back forehead or the opposible thumb-like great-toe. If man's predecessor formerly had a hairy coat, it is difficult to see how Natural Selection could be served by losing such a useful covering. We have already explained that the reason why man, like other mammals, passes through certain stages in fœtal life is because the developing organs need an adequate blood-supply, not because the ancestry has dictated a constant pattern. If the Law of Recapitulation is strictly true, man's ancestors were neither fish nor apes.

It is regrettable that quite illusory arguments for the ape-ancestor theory are still quoted from book to book. The Bishop of Birmingham in his very learned treatise *Scientific Theory and Religion* (p. 465) allows himself to make the extraordinary statement that new-born babies carry the great-toe under the foot opposed to the other toes as in the apes. Evidently he is better acquainted with physics and chemistry than with the human infant.

The common human deformities, such as hare-lip, cleft-palate, club-foot, supernumerary fingers or toes, webbed fingers, spina bifida, and a score of others, are in no way characteristic of any possible ancestor. The statement is often copied from book to book that babies may be born with a tail. It is safe to say that of a thousand babies with congenital malformations, not more than one in the thousand will show the alleged tail, and when it does occur, it will usually be a fatty or sacro-coccygeal tumour, and quite unlike the tail of a monkey. Apes, of course, have no tail. The very rare occurrence of a genuine bony tail is therefore of no value whatever as an argument for animal ancestry. In over forty years of surgical experience in large hospitals, the writer has never seen an example of this particular deformity, though these hospitals during that time have served literally millions of the population.

The trump card brought forward by the advocates of the theory of man's origin from an extinct ape has been the discovery of

certain fossil remains which have been supposed to bridge the gap between man and the anthropoids. The illustrated London papers, and the textbooks on evolution, have come out again and again with purely imaginary pictures of great hairy apes, walking erect, with more or less human features, and feet like a man's, according to the artist's fancy, and these have been supposed to represent the "missing link". Serious teachers of anatomy protest vigorously against these impositions. Professor Wood Jones wrote: "The missing-link pictures must be deleted from our minds, and I find no occupation less worthy of the science of anthropology than the not unfashionable business of modelling, painting and drawing these nightmare products of imagination, and lending them in the process an utterly false value of apparent reality." The most famous of the "missing-link" discoveries was made in 1894, by Dubois, at Trinil in Java, and was called *Pithecanthropus erectus*. Dubois went to Java with the advertised intention of finding a missing link. The remains consisted of the top of a skull, three teeth and, at a distance of some 15 yards, a femur. To these is to be added, possibly, a piece of jaw. The beds in which the bones were found have been considered to be late Pliocene, or more probably Early Pleistocene (Ice Age). The femur would do very well for a human, and it is a pure matter of opinion whether it came from the same animal, or even the same species, as the skull. The skull has been variously described as that of a large extinct ape (by Virchow, Bumuller, Kollman, M. Boule and others) or as a genuine intermediate between man and ape (Dubois, Sir Arthur Keith). Quite recently, and rather surprisingly, Dubois[1] has changed his opinion, and decides that the skull was that of a large extinct gibbon. The reason for this change is that he has investigated some femora from Java which apparently belong to the same species, and finds that their internal structure is not human, but apelike. "The strongest evidence of the gibbon-like appearance of Pithecanthropus and of its near relationship to this group of anthropoid apes is given by the

[1] G. G. McCurdy and others, *Early Man*, 1937. Dubois, pp. 28, 315. G. H. R. von Koenigswald, of Java, says there are substantial reasons for believing that the skull and the femur did not come from the same animal (p. 29). Stone flakes have since been found at Trinil, indicating early human occupation.

volume of the cerebrum . . . entirely confirms the opinion of Marcellin Boule, prominent sixteen years ago, that *Pithecanthropus erectus* may have been a large gibbonoid species." So Pithecanthropus retires from the contest.

Another claimant for the place of the missing link has been so-called Neanderthal man, of whom a number of variants, perhaps worthy of being regarded as distinct species (Galilee man, *Homo heidelbergensis*, *H. rhodesiensis*, *H. soloensis*, and others), have been discovered.[1] But Neanderthal man, in spite of his great brow-ridges and slouching gait, was no missing link. His brain was as big as ours; his teeth were truly human; he used tools, lit fires, and buried his dead. *Homo soloensis*, found in Java, had a brain-capacity equal to that of an Australian aborigine.

A better case can be made out for two other fossils—*Eoanthropus dawsoni*, found at Piltdown in Sussex in 1911-12, in strata which may be Late Pliocene or Early Pleistocene, and for early Chinese man, *Sinanthropus pekingensis*. The fragments that stand for Eoanthropus are a skull, much broken, but apparently with a brain-capacity equal to that of modern man, and a jaw found near it, which, though very incomplete, is thought to be ape-like. But there is no proof that the skull and the jaw came from the same creature. A piece of worked elephant bone was discovered not far away, suggesting genuinely human activity.

Sinanthropus is worthy of more serious consideration. A number of specimens of this species have now been found. The skull is shaped like that of Pithecanthropus, but the brain-capacity is that of a small human. The jaws and teeth are intermediate between man and the ape. The period was Early Pleistocene. Worked flints, bones and antlers, and evidences of fire, have been discovered in association with the remains, so that Sinanthropus must be looked upon as genuinely human.

The so-called Tauungs skull is now thought to come from a young anthropoid ape (Keith).

How difficult it is to interpret all these discoveries may be realized from two facts. One is, that fossil human remains of the

[1] For full descriptions, see Sir A. Keith, *The Antiquity of Man*, 1925. Also his *New Discoveries Relating to the Antiquity of Man*, 1931; and McCurdy, *Early Man*.

same type as modern man, *Homo sapiens*, have been found at least as old as any of these alleged missing links, so that man would appear to be as old as his ancestors! Another is, that a skull has been found in a twelfth-century Norwegian graveyard at Gardar in Greenland, which would have done very well for an intermediary between man and ape. It was no doubt afflicted with disease, perhaps acromegaly. This naturally raises the question whether other finds may not also be pathological.

We may sum up this section by concluding that some strange forms of man have existed in the world, but that a genuine ape-like ancestor has not been found. In Sir A. Keith's words, "The fossil forms which represent this stage in the evolution of anthropoid and of man have not yet been found; their existence is inferred."[1]

We turn, then, to the mental differences between man and animals. It is easy to minimize the gap by relating stories of ape intelligence and comparing it with the beast-like stupidity of the lowest types of mankind. This is altogether misleading. The outstanding characteristic of the human mind is not how low it can fall, but how high it can rise; but for this rise to be achieved the child must be taken at an early age, and educated. Dr. Oliver in 1932 tested the intelligence of school children in Kenya; the boys in one school were Africans, and in the other of European descent. The intelligence of the natives taken as a whole was only 85 per cent. that of the Europeans, but it must be remembered that African children are usually much handicapped by chronic ill-health from malaria, yaws, or worm infections. Some 14 per cent. of the natives surpassed the European average. Australian aborigines have played cricket well enough to find a place in teams against English touring sides. An Australian aborigine is a distinguished mathematician. It is puerile to talk about apes being almost as intelligent as a man. As a matter of fact, when allowance is made for anatomical differences, it may well be that a dog or a horse may be as intelligent as an ape. Efforts have been made to bring up a baby chimpanzee exactly as if it were a human infant, but naturally the ape remained an ape, and the child a child.[2]

[1] A. Keith, *New Discoveries Relating to the Antiquity of Man*, p. 51.
[2] Kellogg, *The Ape and the Child*, 1934.

There will be wide agreement with the scientific correspondent of *The Times*,[1] who, commenting on Sir Charles Sherrington's address to the Royal Society, wrote: "In short, these newer results of science reinforce the dogmatic statements of Western theology, and, it may be added, the common belief of the majority of mankind, that there is a vital difference between men and animals. Our quality of exhibiting reasonable and responsible conduct becomes more distinctive." Professor H. F. Osborn,[2] the greatest authority in America on fossil vertebrates, wrote: "Hence the idea of man's ape ancestry is a myth and a bogy, due to our previous ignorance of the real cause of human evolution." And again: "It is our recent studies of the behaviour of the anthropoid apes, as contrasted with the behaviourism of the progenitors of man, that compel us to separate the entire ape stock very widely from the human stock." Or, to quote an eminent French authority, Professor Marcelin Boule, man can have "been derived neither from the anthropoid stem, nor from any other known group, but from a very ancient Primate stock that separated from the main line even before the giving off of the Lemuroids".[3] The earliest known fossil Primates *are* lemuroids, so this pushes the ancestry back into the region of the hypothetical.

Enough has been said to show that the popular idea held fifty years ago that man is only a slightly improved ape by no means represents modern scientific opinion. A few words may be said as to the antiquity of the human race.

We do not believe that the Biblical genealogies are intended to enable us to calculate the date of man's first appearance on the earth. That being so, it is no difficulty to us to be told that Egyptian civilization probably began four thousand years before Christ, and that there were kings in Accad (Mesopotamia) at least a thousand years before that. Nor is it a stumbling-block to faith that fossil remains of man have been found far back in the Pleistocene. The Ice Age is supposed to have ended about 9,000 years ago (De Geer), but the Early Pleistocene deposits might well

[1] *The Times*, March 16, 1925.
[2] Osborn, *The Times*, May 3, 1927.
[3] M. Boule, "L'homme fossile de la Chapelle-aux-Saints," *Ann. de Paléontologie*, 1912.

be hundreds of thousands of years old. Drawings in caves, obviously made by human hands, and often representing animals now extinct in Europe, such as the mammoth and rhinoceros, as well as the horse, deer, bison, wolf, bear and many others, are not uncommon in France and Spain, and date from various periods in the history of the men of the old Stone Age (Palæolithic). Such a considerable body of evidence—*e.g.*, chipped flints, worked bones, cave-paintings and fossilized skeletons—is now available that it has been possible to divide the cultures of Palæolithic man into seven stages, beginning in the Pliocene, and more than thirty substages. Some of these were associated with a cold phase, such as the Magdalenian, with Arctic fox, reindeer, mammoth, and grizzly bear; and others with warm interglacial periods, with elephant, rhinoceros and hippopotamus bones.

Successive "cultures" do not necessarily, or even probably, mean different species of mankind, nor need they follow one another in the same order everywhere. It is arguable that when they were discovered by Europeans, the Eskimos, or the Tasmanians, were still in the Stone Ages.

The Bible student will want to ask, Where do Adam and Eve come in, or do we cease to believe in that story? We wish to enter a protest against the modern readiness to discard everything in the Bible which does not immediately fit in with the passing ideas of our own day. Again and again, as we shall see, what has been thought incredible has proved to be historical. That the story of the Fall of Man may be presented to us in a pictorial form, suitable for the comprehension of a primitive people, may possibly be true, but the doctrine of man's Fall from innocence to sin, and the doctrine of the Tempter, are both of them basic for Christian teaching as set forth in the New Testament.[1] So, too, the Christian doctrine of marriage is based by Christ on the union in the Garden of Eden.[2] It is, further, a matter of importance that the whole human family is descended from a single pair, and is all of one.[3]

Must we, then, look upon Adam as the father of the flint-

[1] See, for instance, Paul's argument in Romans v. 12-21; 1 Corinthians xv. 22.

[2] Matthew xix. 4-6.

[3] Paul, in Acts xvii. 26. The "one blood" of the A.V. is a mistake.

chippers of the old Stone Age? Maybe. But another suggestion seems more probable, arising from the Biblical definition of man. When the Bible speaks of Adam as the first of men, it must be allowed to define what it means by man. The simplest definition is given by St. Paul:[1] man is spirit, soul and body. That is to say, there is a body, such as the animals share, a mind, and a spiritual nature, capable of eternity. When the Genesis writer said that God made man in His own image, surely he was not thinking merely of features and fingers, but rather of intelligence, purpose, will-power, foresight and craftsmanship, and above all of spiritual values, of a sense of right and wrong, of moral qualities, and a capacity for eternal life.[2] It is by no means certain that Neanderthal man, or even the men of the old Stone Age, whose skulls were as large as ours, are to be regarded as man in the Bible sense of the word. They may have been pre-Adamic, and Adam verily was a new creation, with spiritual qualities that they lacked. What sort of material the Creator used to make man, whether the dust of the earth directly, or the pre-existing body of a beast, we leave an open question. When a later chapter of Genesis speaks of Cain founding a city, the dwellers therein may conceivably have been members of a more primitive type of man. When the sons of God married the daughters of men, this also may refer to a mixture of human races, the posterity of Seth being the sons of God. We are aware, however, that another school of interpretation looks upon them as fallen angels.

The Genesis story of the origin of woman certainly sounds strange in the ears of those brought up in the atmosphere of modern science. According to the Darwinian theory, human beings, few or many in number, would have been derived from ape-like ancestors by a multitude of tiny improvements. But we have seen that other biologists believe that when entirely new animals or plants appear, it is by sudden big changes, or even that a new start is made. The reader may remember how Berg, for instance, sets his thesis over against orthodox Darwinism thus:

[1] 1 Thessalonians v. 23.

[2] See Ephesians iv. 24: "The new man, which after God is created in righteousness and true holiness"; Colossians iii. 10: "The new man, which is renewed in knowledge after the image of Him that created him."

Darwinism.	*Nomogenesis.*
Evolution was . . . by means of slow, scarcely perceptible, continuous variations.	Evolution was by leaps, paroxysms, mutations.

We have further seen that the real common ancestor of two widely differing families or orders is scarcely ever met with in the fossil state, which supports Berg and those who think with him, as against Darwin. If mankind appeared suddenly on the earth, and was quite unlike any other living creature, we can know so little as to the means by which this was brought about that it ill becomes us to say that the Bible account of the origin of woman is impossible. Obviously, a single new creature will leave no descendants; a male and female must arrive together, if a new race is to be begotten.

Whether the Hebrew word translated "rib" in Genesis, which is otherwise rendered in some forty other passages, really means a rib is uncertain. But in difficult questions like these, where probably different opinions will be held, let us not allow the trees to cause us to lose sight of the wood. Nothing, outside the teaching of the New Testament, has contributed so much to the right understanding of marriage, and therefore to human happiness (in spite of a few misfits), as this ancient writing. The woman was to be "bone of his bone, flesh of his flesh". They were to be no more twain, but "one flesh". What therefore God hath put together, let not man put asunder. How much the world would have lost if the Genesis writer had stated that the first man and woman were quite separately developed, and from apes. The woman, as it has been wisely remarked, was not taken from man's head, to lord it over him, nor from his feet, to be trampled upon, but from his side, to be a helpmeet for him.

A comment on the story by an eminent conservative Christian scholar may be appended. "When we find that the creation of man is described figuratively, he being moulded as on a potter's wheel, we expect the making of woman also to be expressed under a figure. If you think of it, it could be expressed in no other way. An Eastern would naturally conceive a mystery here; and the Old Testament was written by Easterns, for Easterns. It is as necessary to translate the conceptions of the Bible as to translate its words. What passed in the deep sleep of our first parent is hidden

in the secret wisdom of God. And the man (for that is the meaning of Adam), without trying to probe the mystery, embraces the spiritual meaning which alone he was intended to receive: 'This is now bone of my bone, and flesh of my flesh.' "[1]

Scientific discovery in regard to the origin of man has taken a direction that is difficult and surprising to the theorists, as the anthropologists allow, and we are compelled to confess a good deal of ignorance on the whole subject. The reverent Bible student must await further light, and in the meantime hold steadfastly to the doctrines of man's divine creation, his distinction from the beasts that perish, his fall into sin, and the divine institution of marriage.

REFERENCES

LE GROS CLARK: *Early Forerunners of Man*, 1934.
WOOD JONES: *Man's Place among the Mammals*, 1929.
SIR A. KEITH: *The Antiquity of Man*, 1925; *New Discoveries Relating to the Antiquity of Man*, 1931.
MCCURDY: *Early Man*, 1937.
G. F. WRIGHT: *The Origin and Antiquity of Man*, 1913.

---

[1] D. M. McIntyre, *The King's Writ*, October, 1930, p. 210. I am indebted to Rev. G. T. Manley for this quotation.

CHAPTER VI

THE BIBLE AND MODERN MEDICAL KNOWLEDGE

A CONVENIENT form of transition from Chapters I-VI, in which we have considered the bearing of scientific discovery on the Bible, to those in which we shall turn to archæological research, will be provided by a brief study of the sanitary and medical knowledge of the Hebrews. Some kind of background will be valuable. The customs of primitive people living to-day would furnish some kind of criterion as to what we might expect of the Hebrews twelve or fourteen hundred years before Christ, but the best background available is what we know of the theory and practice of the healing art amongst the Egyptians of the same period. Fortunately, two medical treatises have come down to us, as well as various fragments, from about 1600 to 1500 B.C., more or less contemporary with Joseph. These are the oldest books, not mere fragments, in the world, and they are compilations of much older texts. Naturally the translation presents exceptional difficulties, but it is clear that the books supply a great contrast.

The Edwin Smith papyrus deals mostly with wounds and injuries. The descriptions are clear, and the methods of treatment sensible; the method of reducing a dislocated jaw is the same as that used to-day. The Ebers papyrus deals with medical diseases, and here we are in a different world altogether. A supernatural force is regarded as causing most of the ailments, and the remedies are a curious mixture of medicines, charms, incantations and charlatanism. This evidence is confirmed from other sources. Egyptian mummies sometimes show fractures well set and well splinted; there is a reference to the treatment of a broken arm in Ezekiel xxx. 21: "Son of man, I have broken the arm of Pharaoh, King of Egypt, and lo, it hath not been bound up to apply healing medicines, to put a roller to bind it, that it be strong to hold the sword." On the other hand, very many trephined skulls have come down to us from Neolithic times, and it seems certain that the hole was made to allow a devil to escape, who was supposed

to be causing headaches or fits of insanity. The holes are much too small to relieve pressure. It is not to be expected on ordinary grounds that a small secluded nation like the Hebrews, lately come out of the desert, would have any better ideas of health and disease than were current amongst a great settled civilization like that of Egypt.

It is the more surprising, therefore, to find in the Old Testament the observations of disease so accurate, and the sanitary science so much in accord with modern knowledge. [For our present purpose, it is not important whether critics date the Law from the time of the Exodus, or, with much less probability, during the Babylonian captivity.] A modern medical officer of health has as his principal concerns the right choice of food, the purity of water supplies, personal cleanliness, the disposal of sewage, the provision of healthy homes and the control of contagious diseases. We find then that meat foods, which might theoretically be obtained from hundreds of animals, wild or tame, are in practice to be restricted to a very small number, and two tests are given which are well within the competence of a primitive people: the beasts suitable for human food must both part the hoof and chew the cud. The remarkable thing is that modern man, after centuries of observation and experiment, has come to approximately the same conclusion. True, we eat the pig, the rabbit, the hare, but it is recognized that these animals are liable to parasitic infection, and that they are only safe if cleanly fed and the flesh well cooked. A primitive people would be well advised to avoid them. Of fish, that which has fins and scales is wholesome; other water animals are to be refused. Here again we approximately agree, though we rather neglect fresh-water fish nowadays. No easy classification of birds suitable or unsuitable for food is possible, so a catalogue has to be given, and once again modern experience and the Levitical law agree. Of insects, the locust alone is allowed. The writer well remembers seeing piles of locusts, dried, offered for sale in the market-place of an oasis in the Algerian desert, and the boys picking off the wings and legs and eating the bodies. A most important provision is added, that any beast that dies a natural death is unsuitable for food (Deut. xiv. 21). To-day, if a butcher exposed an animal, which had died

of disease, for sale in his shop he would be prosecuted under the Food and Drugs Act, because there is the possibility of conveying some germ infection or parasite. The law is the more noteworthy because thereby a considerable source of food supply is cast away as useless. Whence had the Biblical writer this insight, two or three thousand years in advance of his day?

Water supplies must be clean, and it was recognized that a polluted source might lead to disease and death. The elders of Jericho were able to lead Elisha to the fountain that was the cause of an epidemic of miscarrying and death in their city. If a dead animal—for instance, a mouse—was found in a vessel full of water, the water must not be drunk. Large pools or running water, on the other hand, were to be regarded as safe (Lev. xi. 29-36). The importance of a clean water supply is one of the major discoveries of the modern public health services. It was only about fifty years ago that it became recognized that typhoid fever in this country, cholera in India, bilharziosis in Egypt, and many other diseases, were spread principally by polluted water. In a country like Palestine, where fuel is scarce, it was not a practical proposition to lay down the law that all water was to be boiled. Even in England to-day it is not likely that such a law could be enforced. Other means of maintaining its purity had to be found.

Closely connected with the protection of the wells and springs is the safe disposal of sewage. Water-borne and fly-borne diseases, such as dysentery and enteric fever, have been the scourge of armies in the field even more than of stationary populations. In the South African War the loss of life from these diseases was greater than from wounds. It was not till the Great War of 1914-1918 that effectual precautions were put into practice. Yet all through the centuries the remedy was ready to hand, if the generals had troubled to read their Bibles, and to observe the directions given for the disposal of excreta by burial (Deut. xxiii. 12-14).

There are numerous incidental notices on the subject of personal cleanliness. The Jews were a washing people. The priests of the Tabernacle were provided with a laver for the numerous ceremonial washings. Bathing was the accepted symbol of new life, in the preaching of John the Baptist, and of the Lord Him-

self. The scribes and Pharisees had a perfect mania for incessant ablutions.

Perhaps the most important of public health problems is the control of contagious diseases. We hear mostly nowadays of the epidemics that sweep our schools, but in Bible times the really serious contagious diseases were leprosy and gonorrhœa, either of which might have ill effects lasting a lifetime. There is therefore a whole chapter (Lev. xv.) laying down some stringent regulations for those suffering from discharges; regulations that would go far to prevent the transmission of infection to others. Even more remarkable is the law concerning the method of dealing with leprosy. Leprosy was and is a terrible scourge. It spreads from patient to patient, and especially to those inhabiting the same house. It was quite incurable; even with modern treatment only in a proportion of cases, varying in different countries, can the disease be arrested. It produces terrible disfigurement, with, it may be, loss of eyes, or fingers, or toes. There is no quick release; it may drag on for years. True, our word "leprosy" is not an exact translation of the Hebrew *tsara'ath*. Leprosy to a modern physician means a disease due to Hansen's bacillus. Before the bacillus was discovered, it meant a disease with certain skin manifestations. What *tsara'ath* meant is plainly described in a chapter in Leviticus, though the technical medical terms have puzzled our translators. It is, however, quite certain that the so-called leprosy of the Middle Ages, of which Robert the Bruce died, was in the main identical with the leprosy of to-day, and though the Bible account of the diagnosis does not mention the patches of anæsthesia, the changes in the hair and the risings and ulceration of the skin are sufficiently characteristic of the commoner form of leprosy, the nodular form, to make it clear that the Israelitish priest put in a modern leper camp would decide that most of the patients were suffering from *tsara'ath*. He might perhaps send a few to the camp who were not infected with Hansen's bacillus, but he would soon find out his mistake.

How was this really grave menace to the public health to be controlled? The primitive African tribes of to-day would call for the fetish doctor and start a witch hunt to find out who had laid the evil spell on the patient. Not so the law of Moses. The

sufferer, after due care had been taken over the diagnosis, was to be expelled from society, and dwell alone. He must wear a distinct dress, and cry, "Unclean, unclean." He was not to be readmitted until the priest acting as health officer had certified that he was free from infection, and then various bathings and shavings were prescribed to make all safe. In practice, apart from an error in diagnosis, the ceremony so graphically described in Leviticus can seldom have been witnessed. What a marvellous picture it is, even in minute detail, of the cleansing of the sinner by the personal appropriation of the death and resurrection of the Lord Jesus, and the new life sanctified by blood and the anointing of the Holy Ghost.

The public health officer is also interested in good housing. There was a *tsara'ath* of houses as well as of patients. The description given tallies remarkably with that in the Government manual on the recognition and treatment of dry-rot, starting in the woodwork but spreading over the stones of the building; and if simply scraping does not stop the rot, the stones are to be replaced and the timber removed. Dry-rot is unsightly and unwholesome, and probably indicates that the house is damp.

We repeat that all these principles are so free from paganism or magic, are so simple, so scientific, so neglected for centuries only to be rediscovered within our own lifetime, so little likely to be due to the observation of a people as primitive as the Israelites, a thousand or fifteen hundred years before Christ, that we must surely conclude that the writers had a special revelation from God. Yet some say that the Bible is full of scientific errors!

There is a very remarkable story told in the first book of Samuel which enables us to make a confident diagnosis of the nature of an ancient epidemic, solely by reason of the accurate observations of the contemporary writer. The Philistines, as a judgment for their treatment of the Ark, were visited with a deadly disease which afflicted large numbers of the people, and which spread from town to town along the lines of human communication. The main symptom is given in the Authorized Version as "emerods in their secret parts," a phrase which is unintelligible to the ordinary English reader. The mortality was very heavy, but some recovered. Most remarkable of all, we are

told that the Philistine priests sent back to the God of Israel not only "five golden emerods", but also "five golden mice". Later, there was a great mortality in Judah also.

Now, this passage lay on the page of Scripture for centuries uninterpreted until about forty years ago, when a great epidemic of bubonic plague, spreading from India all over the world, reawakened interest in the subject, and it was recognized that plague is really a disease of rats, and that many dead rats are found lying about during an epidemic outbreak. The Hebrews were not exact zoologists, and no doubt their word *'akhbar* included rats as well as mice. Rats are never mentioned in the Bible, yet they are very abundant in Palestine, and always have been; their skeletons have often been found in the ruins of long-buried cities. We are told that the "mice", or more probably the rats, marred the land. Presumably they lay about dead. The "emerods" were plague-buboes; that is to say, swollen lymph-glands in the groins, the characteristic symptom of bubonic plague. The significant point about the whole narrative is that the writer, or his informants, were sufficiently observant to notice, first, the association of a mortality amongst the rats and amongst human beings, and, further, that the epidemic spread along the lines of travel and communication. This association with disease amongst rodents was completely missed during the great epidemics of the Middle Ages and up to about 1900. For instance, it is not mentioned in the very full accounts that have come down to us of the Great Plague of London in 1665. The Bible narrative shows a remarkable degree of accuracy, even when nearly three thousand years go by before the facts are pieced together and explained.

But, it may be objected, what are we to make of the instances of demon-possession described so plentifully in the Gospels? The descriptions of the symptoms sound to modern medical ears just like cases of maniacal insanity, or epilepsy, or deaf-mutism.

Here, we readily admit, we are on difficult ground, and very varying opinions have been expressed. Reputable experts in mental diseases are convinced that demon-possession has existed until quite recent times.[1] Some doctors, of course, like

[1] See, for instance, a description in Hack Tuke's *Dictionary of Psychological Medicine*, vol. i., p. 352.

the Sadducees of old, believe in neither angel nor spirit, and would not be likely to diagnose a case of demon-possession if they saw one. Examples of apparent demon-possession nowadays are most commonly reported from China, but it is not at all frequent even there.[1] Even if demon-possession does not exist to-day, that does not disprove the possibility that when the Son of God was manifested evil powers appeared to oppose Him, and took possession of unfortunate human derelicts for the purpose. The demoniacs used language which is not heard now either within or without a lunatic asylum, the spirit speaking through the mouth of the sufferer as a separate personality: "What have we to do with Thee, Thou Son of God? Art Thou come hither to torment us before the time?" Or, on one occasion, they besought Him that they might depart into the swine. The demons recognized Him, when the religious leaders of the land did not.

It must be borne in mind that the Jews did not attribute the bulk of medical ailments to demon-possession. Blindness, fever, lameness, paralysis and other afflictions, are spoken of as illnesses in the ordinary way. But cases which they recognized as possessed by demons were treated by Christ as such, and He commanded the demon to go out. Some will say, of course, that He knew better, but did not care to discuss the matter, or even that He was mistaken. These theories are too much contrary to all else that we know about Him to be accepted. Which drives us back to remark, What do we really know about the *ultimate* causes of mental disease, or even of epilepsy? True, there are fashions amongst the insane. Two hundred years ago, a person mentally afflicted would quite probably say he had a devil inside him; thirty years ago, it would have been "X-rays"; to-day, Hitler. All these delusions would be equally baseless, but when we look for something more tangible, probably nothing will be found. The brain may be perfectly normal to the naked eye and to the microscope, and biological chemistry may find nothing amiss. Why, in the last resort, are certain people subject to pain and ill-

[1] For some non-medical descriptions, see Guinness' *Life of Pastor Hsi*. The whole subject is discussed in Dr. Nevius' *Demon Possession and Allied Themes*, New York, 1895.

ness and death? Are we quite sure that no spiritual adversary has a hand in it, in some cases, if not in all?

Jesus once healed a woman who was suffering from spondylitis deformans; the bones of her spine were fused into a rigid mass. There is no hint that the Jews, or the disciples, looked on this as a case of demon-possession, but Jesus asks: "Ought not this woman, whom Satan hath bound, lo these eighteen years, to be loosed?" To pronounce in confident tones that Jesus attributed certain symptoms to a demon, but that we know it was only epilepsy, is an example of the all too common mental attitude which thinks it has solved any and every problem as soon as it has been officially labelled with a name. We may conclude with some cautious words by W. O. E. Oesterley. "May it not be that behind both theories (the naturalistic and the demonistic) there lies a deeper cause, the Principle of Evil, occupying a vacant place in individuals which they themselves have provided by the abandonment of their self-control? It is well to remember that the advance of modern science, especially in the domain of Psychology, has revealed problems whose most important result is to show how little we know about such things as 'secondary personality', the 'subliminal self', 'change of control', etc.—in a word, how hidden still are the secrets of the region of the super-sensuous. Christ saw in the case of every 'possessed' victim a result of sin, not necessarily through the co-operation of the victims; sin He saw embodied in 'Satan', who is identified with 'demon'; he was the personification of the principle of evil, which was manifested in men in a variety of ways. When Christ 'exorcised' a demon, He by His divine power drove the evil out, and at the same time obliterated the visible results of sin."

There was a remarkable provision in the law of Moses that the land was to be allowed to "keep sabbath" and lie uncultivated one year in seven. It looks at first sight as if this is Sabbatarianism run mad, and man's interest sacrificed for the sake of a mere religious fad. The truth is far otherwise. There are great areas to-day that are known to have been amongst the most fruitful wheat-growing countries in the world, but now lie desert, and are in some cases enlarging and encroaching on the fertile soil nearby. Such is Mesopotamia, such also the region known as

the "Dust-bowl" in the United States of America. Travelling some years ago through the Little Sahara in Algeria, an arid waste without a drop of water, the writer was interested to see dry watercourses with rounded stones in the beds that had evidently carried considerable rivers within historic times. If in a wheat-growing country crops are raised year after year, and forests and grass-land turned into corn-fields over a very wide area, the region becomes desiccated, rain ceases, or only falls in great storms that wash away the soil, and the area is blown over with dust and sand. Reclamation is difficult. It was therefore a very wise provision of the divine law that the land should keep her sabbaths. That the land of Palestine, once flowing with milk and honey, now looks so dry, stony and desolate, is largely due to the fact that the forests have been cut down and the grass-land ploughed up over many centuries. God's laws are wiser than man's short-sighted greed.

REFERENCES

D. M. BLAIR: *A Doctor Looks at the Bible,* Inter-Varsity Papers, No. 4, 1936.

W. O. E. OESTERLEY: Article "Demoniacal Possession" in Hastings' *Dictionary of Christ and the Gospels,* vol. i., p. 438.

CHAPTER VII

ARCHÆOLOGY AND THE OLD TESTAMENT: GENESIS TO JOSHUA

WHEN we remember the hundreds of generations that have lived on the earth since Abraham's time, and the considerable population of the countries in which the patriarchs lived, it would seem unreasonable to expect that the archæologist could by digging find out anything of the least significance. Nor does it seem at all likely that he would be able to date and interpret any interesting object if he was fortunate enough to discover it. We may well believe that it is in the providence of God that so much has come to light, and we must not forget to pay a tribute to the diligence, patience and skill of a host of investigators. The theory of the Pentateuch commonly taught in theological circles is based on Wellhausen's hypothesis, that its component books are of late and composite authorship, the earlier portions being written about the time of the early Israelitish monarchy, and the later in the period of the Babylonian captivity, when an editor or editors assembled the whole into its present form. The hypothesis was based on the idea that the early Israelites were a very primitive people, unable to write books or draw up a complicated law-code. The arguments by which the theory is elaborated will be considered in our next chapter. We hope in the present chapter to show that the records were probably contemporary, not of late origin. (It is not claimed, of course, that actual remains of the patriarchs themselves have been found.)

Modern archæology as far as the Old Testament is concerned may be said to have commenced when about 1836 a young army officer, Henry Rawlinson by name, made a copy, at much personal risk and discomfort, of the great cliff inscription at Behistun, in Persia, written in three languages, in the cuneiform script. One of them was Babylonian. After much labour, he and other scholars were able to read these. Immense quantities of clay tablets and inscribed cylinders have since been found, written in this character

—for instance, at Tell-el-Amarna in Egypt; at Nippur by the University of Pennsylvania's expedition; at Kish by Dr. Langdon; at Boghazkeui in Turkey-in-Asia by Dr. Winckler; at Ras Shamra in Syria by Messrs. Schaefer and Chenet; and many besides. The trouble is to find scholars with time to decipher them. Then a primitive Phœnician script with twenty-seven letters has been found at a temple in Sinai by Sir Flinders Petrie; at Ras Shamra; and on a very ancient vase at Tell Duweir; and the language proved to be an archaic Hebrew. The Egyptian hieroglyphic inscriptions had been deciphered before the Babylonian.

Evidence of a different kind had meanwhile come to light, in the shape of ancient walls, temples, fortifications and household articles discovered by digging down in the sites of buried cities. Much more of this might be done if it were possible to disturb towns still inhabited, or sites held sacred by the present Arab population. Sir Leonard Woolley has described his marvellous finds at Ur of the Chaldees; Lachish, Jericho and the outskirts of Jerusalem have also yielded much evidence. Sir Flinders Petrie discovered how to date excavated sites by noting the fashions in pottery, which have followed a regular sequence, and by correlating them with Egyptian scarabs or seals buried at the same level, often stamped with the name of the reigning Pharaoh. We know the order of the various Pharaohs, and their approximate dates, so that ruins can now be dated. There were three periods of the Bronze Age:

The Early Bronze Age, usually given as 2500-2000 B.C.
The Middle Bronze Age, usually given as 2000-1600 B.C.
The Late Bronze Age, usually given as 1600-1200 B.C.

We are now in a position to examine the results of these discoveries in a little more detail. Only a small selection can be given here, and we shall not enter much into difficult questions of dating.

The Creation and the Flood

To understand the bearing of recent discovery on these subjects, a few words must be said about the history of civilization in the country now known as Iraq, the Mesopotamia of the Bible,

lying between the Tigris and the Euphrates. From Babylon southwards, to the confluence of these rivers, was the land of Sumer, whose inhabitants were non-Semitic, and probably came in from the north-east. Even in the days before the Deluge they could boast, like ancient Egypt, of a remarkable degree of civilization. Some of the later kings of Babylon and Assyria took a great interest in antiquities, and have put on record a good deal of information about the ancient Sumerians. Their country was almost entirely devoid of stone, so their buildings were made of brick. This seemed unusual to the writer of Genesis xi., living in a country where stone abounded, so he wrote concerning the tower of Babel: "They had brick for stone, and slime [bitumen] had they for mortar." Their principal cities were Ur, Kish, Nippur, Erech, Lagash and Babylon. They used the cuneiform script, impressed on tablets of baked clay, at least as far back as 3000 B.C. North of them lived the Semitic race called the Akkadians. At a later date, during the period of the Israelitish kings, the great empires of Babylon and Assyria contended for the mastery of the lands about the Tigris and Euphrates; sometimes the one and sometimes the other was in the ascendancy. The capital of Assyria was Nineveh, far to the north.

The earlier archæologists, Botta, Layard, Rassam and others, mostly worked over the ruins of Assyrian towns. This was fortunate, as Sir Frederic Kenyon points out, because the stone buildings, colonnades of human-headed bulls and inscribed historical cylinders, were far more impressive and useful discoveries than could have been made in the much earlier Sumerian cities. The first versions of the Creation and Deluge stories to be brought to light came from Babylonia, and were translated and read to a London audience by George Smith as long ago as 1872.

A Creation-narrative[1] was well known amongst the Babylonians and Assyrians. It consisted originally of six books or tablets. It was recited regularly at the New Year festival at Babylon, and was probably written during the first Babylonian dynasty, 2169-1876 B.C. In some respects it runs parallel to the first chapter of Genesis. There was a primitive chaos. "Then were created the gods in the midst of heaven." There was war between

[1] See "Creation, Epic of," S. Langdon, in *Encyclopædia Britannica*.

Marduk the Creator and Tiamat, the female principle of evil. When she had been conquered, he created the sun, moon and stars, and a division appeared between the sky above and the earth beneath. Finally, man was created. But the differences between the Genesis account and the Babylonian epic are more important than the resemblances. The latter is thoroughly polytheistic, full of myth and legend; it introduces a conflict between the forces of good and evil, and gives no ordered description of the origin of plants and animals. We have seen reason to believe that primitive religion in Mesopotamia was monotheistic, so the creation-epic represents a later corrupted account. It is improbable that the monotheistic narrative in Genesis is derived from the corrupted Babylonian. It is more probable that the Babylonian is derived from an older and purer version.

The fullest and best known, but not the oldest, of the Babylonian stories of the Deluge is the so-called Gilgamesh epic.[1] In the Gilgamesh version, the hero corresponding to Noah is called Utnapishtim, and the resemblances to the Genesis narrative are striking. In both, the Flood is a judgment for wickedness. The ark floated upstream, in a northerly direction. The waters were derived from "the foundations of the deep" as well as from rain. Animals were taken into the ark to preserve their lives. A dove and a raven were sent out when the flood was subsiding. When the hero and his family left the ark, they built an altar and offered sacrifice. There are, however, significant differences. The Babylonian story is polytheistic, and the ark is of impossible dimensions, having a breadth, length and depth of 140 cubits each, a thoroughly unseaworthy structure. Noah's ark was of natural proportions. The Gilgamesh flood only lasted fourteen days. Here, again, it is begging the question to assume that the Genesis narrative is copied from the Babylonian flood-story. Although a few words, such as that used for "ark", are similar in the Genesis and the Babylonian accounts, for the most part the wording is entirely different.

More recently, an American expedition had the good fortune

[1] Many accounts are available. For a brief summary, see article by G. F. Wright, "Deluge of Noah," in *International Standard Bible Encyclopædia*, or, more recent, Sir Frederic Kenyon, *The Bible and Archæology*, 1940.

to find at Nippur a temple library containing over twenty thousand inscribed tablets. Many of these are business documents; some are grammatical treatises; some are historical lists; and, most interesting of all for our present purpose, there were found Sumerian versions of the Creation and Deluge stories, dating from 2000 B.C. at the latest, probably much older. They are, therefore, anterior to the time of Abraham. The most important part of the Creation-narrative reads thus: "When Anu, Enlil, Enki and Ninkharsagga created the black-headed [*i.e.*, the human race], the niggilma [meaning unknown] of the earth they caused the earth to produce. The animals, the four-legged creatures of the field, they artfully called into existence." It will be observed that man was created before the animals. The hero of the flood-story, the builder of the ark, is Ziusudu; the flood only lasted seven days and nights. The narrative is much briefer than the Gilgamesh epic.

A great sensation was caused in March, 1929, when Sir (then Mr.) Leonard Woolley[1] announced that during his excavations at Ur of the Chaldees he had found a layer, eight feet thick, of water-laid clay, evidently deposited by a deluge of stupendous proportions. To use his own words:

"The shafts went deeper and suddenly the character of the soil changed. Instead of the stratified pottery and rubbish we were in perfectly clean clay, uniform throughout, the texture of which showed that it had been laid there by water. . . . The clean clay continued without change until it had attained a thickness of a little over eight feet. Then, as suddenly as it had begun, it stopped, and we were once more in layers of rubbish full of stone implements and pottery. The great bed of clay marked, if it did not cause a break in, the continuity of history; above it we had the pure Sumerian civilization slowly developed on its own lines; below it there was a mixed culture. No ordinary rising of the rivers would leave behind it anything approaching the bulk of this clay-bank; eight feet of sediment imply a very great depth of water, and the flood which deposited it must have been of a magnitude unparalleled in local history. That it was so is further proved by the fact that the clay-bank marks a definite break in the

[1] *The Times*, March 15, 1929; Sir L. Woolley, *Ur of the Chaldees*, 1929.

continuity of the local culture; a whole civilization which existed before it is lacking above it and seems to have been submerged by the waters. . . . There could be no doubt that the flood was the flood of Sumerian history and legend, the flood on which is based the story of Noah." Confirmation was soon forthcoming. A few days later, Professor Langdon[1] announced that he had made exactly the same discovery at Kish, hundreds of miles away, and the clay-bed corresponded to the same period, "anywhere between 3400 and 3200 B.C. . . . When we made these observations two months ago we were loth to believe that we had obtained confirmation of the Deluge of Genesis, but there is no doubt about it now."

Sir E. Wallis Budge, of the British Museum, added a note to the following effect: "A tradition like that of the Flood, which is so widespread and so persistent throughout Babylonian, Sumerian and Assyrian history, must certainly have had an historical foundation. It is on all fours with the story of the Exodus, of which, unfortunately, few details are known, but which, like the Flood, must rest upon a substratum of fact."

We do not know, of course, the full extent of the deluge of which these investigators have laid bare the traces. It is possible that, after all, what is described in Genesis is the immense submersion of which evidence was discovered by Russian geologists, and by the late G. F. Wright.[2] There is abundant proof that in recent times, geologically speaking, there was a vast fresh-water sea covering the Caspian and Aral regions, and hundreds of miles around. This, according to Wright, was since the Ice Age. At Trebizond, on the Black Sea, there is a raised beach 750 feet up the mountain. The Caspian, the Sea of Aral and Lake Balkash have no outlet, but their waters are still comparatively fresh. Therefore, they must be of recent origin. Also, there is a seal still living in Lake Baikal and the Caspian, and found fossil around the Sea of Aral, which is now found no nearer than the Arctic Ocean, so that these waters must have been connected. Even if the submersion which left these traces is not the same as the Noachian

[1] *The Times*, March 18, 1929.

[2] G. F. Wright, *Quarterly Journ. Geolog. Soc.*, 1901, p. 244. Article "Caspian" in *Encyclopædia Britannica*.

deluge (which perhaps did not last long enough to account for all this), it suffices to show that the story is far from incredible.

If it were reasonable to interpret the Bible as teaching that the whole world as we now know it, including South America, Antarctica and the like, was submerged at one time, and that every one of our 800,000 species of animals was represented in the ark, which was only 150 yards long, the difficulties would indeed be formidable. This is just the sort of artificial difficulty that some types of mind love to raise against the Bible. It is an outrage on the use of words to talk like this; words in the Bible, as in any other old book, are used in the sense that they bore at the time of writing, and not in the sense that they have come to bear to-day. It was the *then known* world that went under the Deluge, and the then known animals that were preserved alive. We do not believe that Abraham went out of the world because the same Hebrew word is used in Genesis xii. 1 as is translated "earth" in the narrative of the Flood. When Luke says all the world was to be taxed, he obviously did not mean South America. Nor, when we are told that "all the kings of the earth sought the presence of Solomon" is it meant to include Japan and Australia. Genesis says that all the high hills "under the whole heaven" were covered. Amongst St. Peter's audience on the day of Pentecost were men "from every nation under heaven"; in each case it obviously means all the then known world. Whether the Ararat on which the ark rested was the same as the mountain now known as Ararat, there is room for difference of opinion. There are a good many sacred sites in Bible lands—sites which are quite unhistorical and owe their reputation to monkish tales no earlier than the Middle Ages.

It is, of course, a fact that stories of a great primitive flood have been preserved, not only by the inhabitants of the Mesopotamia region, but also by other far-distant peoples, such as the Mexicans and the Chinese. This has been taken to prove that the Deluge covered the whole world. But it may be that the dispersed peoples took the memory of Noah's flood with them. Also it is by no means certain that the floods of which they preserve stories were related to the Genesis narrative at all. Floods have not been so very uncommon at all periods of history.

The Life and Times of Abraham

We shall pass over the story of the tower of Babel and the Table of Nations given in Genesis x. This is a very important and interesting document, wherein the origin and distribution of nations is combined with personal genealogies. It has been abundantly confirmed and illustrated by archæological discoveries, as it has in turn thrown a light upon them, but to enter into this would introduce us to problems of very difficult ancient geography which most readers would find unprofitable. We therefore pass on to the life and times of Abraham. The period is commonly supposed to be about 2100 B.C.

It used to be thought that Abraham would be a very primitive person, unable to read, and with no more knowledge of geography, or history, or business transactions, or law, than a Bedouin sheikh of the Arabian desert to-day. Modern discovery, and especially the diggings of Sir Leonard Woolley at Ur of the Chaldees, have shown us how utterly misguided this notion is. Ur of Abraham's time, and, indeed, for centuries before that, was a brick-built Sumerian town at least as business-like, at least as civilized, as the smaller towns of Mesopotamia to-day. It was dominated by a huge temple-mound built of brick, called a ziggurat, which is still by far the best preserved of the temple-mounds of that country. It stands on a rectangle of 200 by 150 feet. The original height was about 70 feet. It was ascended by three external staircases. The lower courses were black, the upper red, and on the platform at the summit stood the temple shrine of blue-glazed brick. The shrine has gone, but the scattered bricks remain.[1]

The streets of the town were narrow, winding and unpaved, with on either side blank walls unbroken by windows, such as are seen in most Arab towns to-day. Against one house was a mounting-block, showing that donkeys were ridden through the streets. Some of the houses, in Abraham's time, appear to have been of two storeys, built around a small central courtyard, with as many as fourteen rooms. There was a brick stair leading to the upper storey. The kitchen, reception room and private chapel,

[1] For picture of a reconstruction of the ziggurat, see Woolley's *Ur of the Chaldees.*

with its teraphim—that is to say, clay images such as those Rachel carried away with her—can often be recognized. The family burial vault was beneath the house. In place of books, there were clay tablets; some of these were receipts for business transactions; others were temple hymns; others were mathematical tables with formulæ for calculating square and cube roots, as well as simpler sums. In the temple storerooms, receipts were found for numberless objects—sheep, cheese, wool, copper ore, oil for lubricating hinges—and pay rolls for the female employees. It is all very practical and curiously modern.

It may be asked, How can the finds be dated? These ancient cities were built and rebuilt on the same site, so that a whole succession of levels is usually found, the lowest naturally being the oldest. Fashions in pottery changed, and if at one excavated site a particular fashion can be dated, similar pottery found elsewhere will be of the same period. Kings usually inscribed their names on the hinge-sockets of temple doors, and the name of the god would be given also. Inscribed stones were often laid under palace or temple walls in memory of the founder. Royal sepulchres can usually be identified in the same way. There exist copies, dating back before 2000 B.C., of lists drawn up by Sumerian scribes of the kings according to the successive dynasties, with a note as to the length of the reigns. A few miles from Ur, an inscribed foundation-stone was found, laid by a king of known name, of the First Dynasty of Ur, which the scribes speak of as the third dynasty after the Flood. This king seems to have reigned 3100 years before Christ, more than a thousand years before Abraham.

Woolley discovered a number of ivory figures, in a royal standard, which illustrate the dress and customs of the times in a most lifelike manner. One may see the royal family sitting at a feast, the servants, minstrels and singers attending them, the goats and cattle being brought to the palace, the prisoners of war, the army with soldiers wearing helmets and carrying battle-axes, and the war chariots drawn by asses. How astonishing that we should learn so much about such a remote time, and that the people should be so civilized!

There was a very sinister side to life at Ur. Woolley discovered the burial chambers of some of the kings and queens rather earlier

than Abraham's time. They were buried in great splendour, so much so that most of the tombs were plundered shortly after the interment, as has nearly always happened in Egypt, and for the same reason. The contents of a few unplundered royal tombs, with a wealth of gold and precious stones and ornaments, were found and are now in the Bagdad and British Museums. With the sovereign, laid in orderly rows, were buried scores of his attendants, soldiers and women, arrayed in their best finery. In one such grim death-pit there were six men and sixty-eight women. It is supposed that they were poisoned with opium or hashish. Asses or oxen drawing chariots were buried with them. No doubt they were to attend upon their lord in another world.

Such was Ur of the Chaldees. Its principal deity was Nannar, the Moon-god. It was from this idolatrous town, with its learning, its polytheism and its cruelty, that Abraham felt called to go out, not knowing whither he went, to dwell as a stranger in a strange land, a land which he should after receive for an inheritance. He and his father and his brothers had "worshipped other gods" in Ur, and in Ur his brother Haran was buried. To Ur he might have found opportunity to have returned if he had so desired. It is easy to see now that he could never have learned to know God, to become the Friend of God, if he had remained in that heathen atmosphere. If Abraham had not obeyed that call, how differently the history of the world would have been written!

Not long after Abraham came into the land of Canaan, moving about like a Bedouin sheikh from place to place to find pasture for his flocks, two events took place which are of great interest to the archæologist. The first was the raid of four kings from the East. The second was the destruction of the Cities of the Plain.

The route followed by the four kings is given in the Bible, rather needlessly it would appear at first sight, as the places named are not famous. It has lately come to light that these places, Ashteroth Karnaim and Ham, were in occupation about the time of Abraham, but not much later, and were on a regular trade route running down to the Red Sea.[1] The names of the five kings of the Cities of the Plain (with the exception of Shinab), and of

[1] Albright, *The Archæology of Palestine and the Bible.*

Abraham's helpers Aner, Eshcol and Mamre, are all of Western Semitic or Arabic type, and so also are the names of the cities. They all fit very well into the lifetime of Abraham, and very ill into the modern critical hypothesis that the chapter was written centuries after the event (Pilter). The "slime-pits" on the battle-field fit the peculiar nature of the country well; they were dug to obtain the bitumen or asphalt which was and is found around the Dead Sea. But the great interest of the story, for our present purpose, is the identification of the four raiding kings. Elam lay east of the southern course of the Tigris. Shinar was the ancient Egyptian name for Babylon, a suitable name if the narrative was written by Moses in Egypt. Ellasar is obviously the Larsa of the Babylonian inscriptions. The "nations" were probably mercenary troops of no one country. Chedorlaomer was the leader of the raid, but at its first mention Amraphel is given priority, as though he eventually became the best known. Very many archæologists of repute have accepted E. Schrader's proposition that he is to be identified with the most famous of the early Babylonian kings—Hammurapi (or Hammurabi), the lawgiver, sixth king of the Amoritic dynasty, just before 2000 B.C.[1] He came early to the throne, and reigned forty-three years. We know a good many details of his reign, but most remarkable of all is his code of laws, inscribed on a diorite stone discovered by Moissner in 1898 in the library of the Assyrian king Ashur-banipal. The laws are severe; the death penalty is often threatened. They deal with sorcery, theft, vassalage, property, marriage law, and much besides. A surgeon who treated a patient successfully received a high fixed fee; if he failed, under certain circumstances, his hand might be cut off. Many of the laws remind one strongly of Israelitish law and custom. A childless wife might give her maid to her husband, as Sarah did to Abraham, and claim the child as hers, but the maid must not be disrespectful to her mistress. The law of an eye for an eye and a tooth for a tooth, the law about an ox fatally injuring a man, and the law about setting a bond-servant free

[1] Many authorities might be quoted. See W. T. Pilter, *The Pentateuch an Historical Record*; Sir Frederic Kenyon, *The Bible and Archæology;* article "Hammurabi" by Professor S. Langdon in *Encyclopædia Britannica*; and articles on each of the kings by T. G. Pinches in *International Standard Bible Encyclopædia.*

after a period of years may be quoted as examples in which Babylonian and Mosaic law agreed.

If Amraphel and Hammurapi are identical, as the chronology and the similarity of the consonants, except the *l*, would indicate, the other three kings fall into place. Chedorlaomer will be Kudurlagamar, or Kudur-mabuk, who reigned during Hammurapi's youth. He is mentioned in several inscriptions. A broken inscription on one of the so-called Spartali tablets in the British Museum appears to mention Hammurapi, Chedorlaomer and Tidal together. Tidal, called Tudhula in the monuments, seems to have been a captain of mercenary soldiers. His name is of Hittite origin. Both Chedorlaomer and Tidal were murdered by their own sons. Arioch of Ellasar is considered to be Eri-aku, also called Rimsin, of Larsa. He is mentioned along with Kudurlagamar in another tablet.[1] We have a complete list of the kings of Larsa at this period, and several inscriptions mention him. It is true that the identification of these kings of the monuments with the four kings of Genesis is not regarded as proven by all archæologists; it is a matter that must await further evidence before it can be taken as certain. Obviously, four kings may very well have come raiding together in Abraham's time, even if they are never mentioned in surviving monuments.

The story of the destruction of the Cities of the Plain reads almost like a fairy-tale, and has been dismissed by many as mere folklore. There is no certainty as to whether these little towns were north or south of the Dead Sea, or buried beneath it. Good reasons are given for all three views. But when the very peculiar nature of the locality is investigated, the story ceases to be incredible and becomes natural enough. The Dead Sea lies in a deep depression; it receives the waters of the river Jordan and other streams, but has no outlet. Evaporation from the surface approximately keeps pace with the inflow. The river waters bring in various mineral salts in solution; these, of course, become concentrated in the Dead Sea, which accounts for its high salinity. As the lake used to be larger and has receded, there are beds of rock-salt nearby; one stratum is 150 feet thick and

[1] T. G. Pinches, article "Chedorlaomer" in *International Standard Bible Encyclopædia*.

can be traced for six miles. Overlying it is a layer of sulphur which can be lit with a match. Large quantities of bitumen (asphalt) used to exist around the lake. There is some oil, though not enough to be worked commercially. It will be observed that the whole district is highly peculiar. If by some act of God the gases generated in the soil became ignited, all the materials are, or were, present for a great catastrophe, and it is not surprising that fire and brimstone (sulphur) were rained upon Sodom and Gomorrah, and that Abraham saw the smoke of the country go up as the smoke of a furnace. Probably the houses were wooden. Kyle says a rupture of the strata is still plainly visible. Lot's wife was evidently overwhelmed and covered by salt flung into the air. The Hebrew word used does not elsewhere in the Bible mean a "pillar"; the root meaning is something placed or fixed in position. Let us remark that we are in no way attempting to explain away a miracle. It was by a most unusual act of God that the catastrophe came when it did and as it did, and that Lot was warned in time to escape.

Another confirmation may be referred to. The pottery fragments found at the most probable site of the cities show that the region was inhabited during the Canaanite period, around the time of Abraham, but not again until Roman times.[1]

There is a most lifelike narrative in the story of Abraham, relating how he purchased the cave of Machpelah from Ephron the Hittite. Here Abraham, Sarah, Isaac, Rebekah, Jacob and Leah were buried. Some of the traditional sacred sites in Palestine are of very doubtful authenticity, but it seems reasonably certain that the Haram at Hebron is really built over the double cave of Machpelah. It is one of the most jealously guarded sanctuaries in the world. Even royal visitors have not been allowed to see much. When Allenby conquered Palestine in 1917, Colonel Meinertzhagen found the shrine deserted and entered an underground chamber. With the aid of matches, he discerned a stone coffin with spiral columns. Perhaps one day we shall hear more. Of late years, some visitors have been allowed to visit the mosque, but not to enter the cave.

[1] For this section, see M. G. Kyle, *Journ. Trans. Victoria Institute*, 1927, lix., p. 217.

Israel in Egypt

For a generation or two, scholars of the critical school have been inclined to refuse to take the Genesis and Exodus narratives literally. Abraham, Jacob and the twelve patriarchs were tribes personified, about whom mythical tales were told. The story of the Exodus was discredited. Here, as elsewhere, modern archæology has given rise to a swing-back of opinion. And surely our knowledge of human nature ought to be sufficient to convince us that these are no legendary hero-tales. What nation would fabricate, or believe if fabricated, a story of disgraceful captivity in Egypt if it were not true? What tribe would attribute to its ancestors such discreditable episodes as Abraham's denial of his wife and rebuke by Pharaoh, Jacob's deception practised on his blind father, Reuben's adultery, Judah's unsavoury affair with Tamar, or the cruelty of Simeon and Levi, if there was no foundation in fact? Why should most of the patriarchs be dismissed with a bare mention? Jacob-el and Joseph-el have been found as personal names about this period.

If Biblical chronology is laid alongside of Egyptian, it would appear that the dynasties concerned may run from the XII to the XIX. The date of Abraham's visit to Egypt, according to one theory, would fall in the middle of the XII dynasty, during the reign of Usertesen III (Pilter). It is therefore very interesting to find that there is a scene carved on a tomb at Beni-hasan of the father of this king receiving a company of Semites bringing presents. This shows the likelihood that Abraham would be well received. Another theory places the visit in the XV dynasty, under a Hyksos king. The five dynasties XIII to XVIII cover one of the obscurest periods in Egyptian history. The country was conquered by the Hyksos, or Shepherd-kings, coming in from Asia; they destroyed many of the older monuments, and left very few themselves. According to Professor Breasted, the five dynasties cover 208 years, 1788 to 1580 B.C. The Hyksos introduced the horse into Egypt, and also the chariot. The first mention of the horse is from the XVIII dynasty. Now, this exactly coincides with the Bible record. Horses and chariots are not referred to in Abraham's time, but they appear in Joseph's day (Genesis xli. 43; xlvii. 17). This is one of those small matters

that go so far to prove that a record is contemporary, not written up centuries later.

Joseph, therefore, was in office in Egypt either during or after the Hyksos period. Which? We read that "every shepherd is an abomination to the Egyptians", but Joseph and his father and brethren were welcomed by the Pharaoh and offered a position to take care of his cattle. Joseph gave his father a splendid funeral, but he himself was embalmed in Egypt. Another king arose that knew not Joseph, and ill-treated his nation. All this fits the facts well if Joseph's Pharaoh was one of the last of the Shepherd-kings, and was succeeded by the XVIII dynasty of native Egyptians, hating their late foreign rulers. Our authority for the later Hyksos kings is Manetho, but his table is given differently by Eusebius[1] and by Josephus (*Contra Apion.*, i. 14). The king was Apophis (Egyptian Apepa) according to Eusebius; Josephus makes him last but two years. According to ancient tradition,[2] Joseph came to Egypt in the fourth year of Apophis. Josephus says he reigned 61 years. A comparison of Biblical and Egyptian chronology also seems to fit Joseph into this reign.

Famines in Egypt rarely last long. As everybody knows, agriculture in that country entirely depends on the Nile inundation. A very interesting discovery has been made, on the island of Elephantine, of a tablet to commemorate the fact that for seven successive years the Nile failed to rise. The exact date of this tablet cannot be ascertained, but an inscription has been discovered and published by Brugsch,[3] as far as we can tell coinciding with the time of Joseph, which mentions a famine lasting many years. It was found on the tomb of one Baba (or Beby), and reads: "I collected corn, as a friend of the harvest-god, and when a famine arose, lasting many years, I distributed corn to the city each year of famine." In a recent paper, A. Lucas argues that Joseph's Pharaoh probably belonged to the XII dynasty; perhaps it was Sesostris III. Potiphar bears an Egyptian name, and Joseph was given an Egyptian name, which seems unlikely under a Hyksos king.[4]

[1] In the Armenian version of his Chronicle. See Pilter.
[2] George Syncellus, *Chronography*, eighth century.
[3] Brugsch, *History of Egypt*, i., p. 304.
[4] A. Lucas, "Date of the Exodus," in *Palestine Exploration Quarterly*, July, 1941.

When the Hyksos were expelled, the kings of the XVIII dynasty assumed the throne. The names of the rulers of this and the XIX dynasty are appended.

XVIII Dynasty

(*About* 1580-1350 B.C.)

Aahmes	reigned	22	years.
Amenhotep I	,,	10	,,
Thothmes I	,,	30	,,
Thothmes III, including Thothmes II and Queen Hatshepsut	,,	54	,,
Amenhotep II	,,	26	,,
Thothmes IV	,,	8	,,
Amenhotep III	,,	36	,,
Amenhotep IV (Ikhnaton)	,,	17	,,
Sakera	,,	2	,,
Tutankhamen	,,	3	,,
Ai	,,	3	,,

XIX Dynasty

(*About* 1350-1205 B.C.)

Harmhab	reigned	34	years.
Rameses I	,,	2	,,
Seti I	,,	21	,,
Rameses II	,,	67	,,
Merenptah	,,	10	,,
Amenmeses	,,	?	,,
Saptah	,,	6	,,
Seti II	,,	2	,,

Some of these kings, especially Thothmes III and Rameses II, were great warriors and builders, and have left copious records. The mummies of most of the kings of these two dynasties, almost by a miracle, have been preserved, and are in the museum at Cairo. That is a famous story, but we cannot turn aside to it now, nor can we tell again how Mr. Howard Carter laid open the practically intact tomb of the youthful Tutankhamen.

There are two theories as to which of these kings was the Pharaoh of the Exodus. Until recently, it was supposed that

Rameses II was the Pharaoh of the oppression, and that the Exodus took place under Meren-ptah. This was based on a very remarkable investigation, by Naville[1] and others, of the remains of the store cities, Pitum and Raamses, built by the Israelites. The lower courses showed the usual Egyptian sun-dried brick mixed with straw; in the middle courses there was stubble and grain pulled up by the roots. "The impress of the roots is as plainly marked in the brick as though cut by an engraver's tools" (Kyle). In the upper courses there was no binding material at all. How well this accords with Exodus v. 7-12, where we read how straw was no longer given the slave-builders, and they had to gather stubble instead. On the gate is Rameses' inscription, "I built Pi-tum at the mouth of the east." At first sight, this seems conclusive that the cities were built in the reign of Rameses, but he had a habit of annexing the structures put up by his predecessors and putting his own name thereon, so the evidence is not quite positive. The town might have borne the name long before the time of Rameses II. A stele of his, found at Bethshan in 1923, states that he used Semitic labour to restore the city. Another stele (found by Sir Flinders Petrie in 1896), from the fifth year of Meren-ptah, declares that "Canaan is seized with calamities of every kind; Askelon is carried away, Gezer is captured; Israel is wasted, he hath no seed; Palestine is become as a widow before Egypt." It has been supposed that if Meren-ptah was the Pharaoh of the Exodus, this relates to the defeat of the Israelites at Hormah, but that does not explain the rest of the inscription.[2]

Of late years, the view has gained ground that the Pharaoh of the Oppression was Thothmes III, and that the Exodus was under Amenhotep II. It is not likely, after the Hyksos were expelled, that their kinsfolk the Hebrews would be left in peace for the whole of the XVIII dynasty. The Rameses-Meren-ptah theory makes the sojourn in Egypt too long, and the period from the Exodus to the building of Solomon's Temple too short.[3] We have mural inscriptions of the Thothmes III period, showing slave-

[1] Naville, *The Store City of Pithom*, 1885.

[2] Numbers xiv. 45.

[3] 480 years, according to 1 Kings vi. 1. See Jack, *The Date of the Exodus*, 1929.

builders and brick-makers of Semitic appearance, under the lash of Egyptian taskmasters, saying, "Be not idle." There was an Egyptian princess, a very strong character, named Hatshepsut, who would fit in very well as the patroness of the infant Moses. There is some evidence that the eldest son of Amenhotep II died before he came to the throne.[1] According to Manetho, during this reign a company of "lepers" were expelled from Egypt. This view is powerfully supported by two other lines of evidence, of which we shall speak more fully, in its own place, at the end of this chapter. The Tell-el-Amarna tablets, dating from the reigns of Amenhotep III and Amenhotep IV, otherwise known as Ikhnaton, tell of the overrunning of Palestine by invaders called Khabiri, who are almost certainly the Hebrews. In the cemeteries and ruins of Jericho as it was left after the capture by Joshua there were found scarabs of Egyptian kings down to and including the period of Amenhotep II, but none later. The evidence of the pottery points to the same date. Jericho fell forty years after the Israelites left Egypt. Now, forty years back from Amenhotep III might fall into the reigns of Thothmes III, or of Amenhotep II, but Thothmes reigned for fifty-four years, and in Exodus ii. 23 we read that during Moses' sojourn in Midian "the king of Egypt died". This, it seems, must be Thothmes, who had been king during the forty years Moses was in Midian.[2]

It has been objected to this interpretation of the chronology that kings of the XIX dynasty ruled over part of Palestine, and left their memorials at Bethshan and elsewhere, but the answer to this appears to be that the Israelites did not conquer the whole country, and in particular did not occupy the plains by the Mediterranean Sea, which were the highway of the Egyptian armies. The Pharaohs would not trouble to follow them up into the mountains.

Whether the Pharaohs of the Oppression and the Exodus belonged to the XVIII dynasty or the XIX, their mummies are at Cairo to-day. Nor does this conflict with the Bible account. It never tells us that the Pharaoh was drowned. Even in Psalm

[1] Knight, *Journ. Trans. Victoria Institute*, 1927, lix., p. 106.

[2] For this section, see Jack, *The Date of the Exodus*; Marston, *The Bible is True*; Pilter, *The Pentateuch an Historical Record.*

cxxxvi. 15 it merely stated that God "overthrew", literally "shook off", Pharaoh and his host in the Red Sea.

The incidental references to Egyptian customs are very true to life. The kine coming out of the river to feed in the reed-grass, Joseph shaving himself to appear before Pharaoh because Hebrews wore beards and the Egyptians were clean-shaven, and Moses' reference to the Egyptian hatred of animal sacrifices, all fit in with what we know about ancient Egypt. The Ten Plagues have a strong Egyptian colouring and would fit no other country so well. Some of them were exaggerations, under God's hand, of the natural scourges of the country: the frogs, the lice, the swarms of flies, the locusts, the rinderpest of cattle, the darkness due to the Khamseen, or wind laden with the desert sand. The order of the plagues agrees with the natural sequence of these disasters in modern Egypt. Egyptian names and words abound in this part of the Pentateuch.

The conclusion is inevitable. This record is the work of a contemporary who lived in Egypt. No scribe of Ezra's day, living in Babylon, could have achieved such accuracy in archæological detail.

Discoveries at Ras Shamra

Reference has been made, in a word or two, to the investigations of French scientists at Ras Shamra, near Latakia, from 1929 onwards. The ancient name of the settlement was Ugarit, and it was in occupation from the time of Hammurapi until after the Israelitish entry in Canaan. There is no direct relation to events described in the Old Testament, but the finds illustrate the culture of those times. A library was found in a building, supposed to be the residence of the high-priest, between the temples of Baal and of Dagon, both of which names sound familiar. The library consisted of clay tablets written in a cuneiform adapted to an alphabet of twenty-nine characters. This is the earliest alphabet known. The language is proto-Phœnician—that is to say, Canaanite. The tablets include dictionaries, price-lists, but especially religious texts. The date is the fifteenth century B.C., rather before the Exodus. God is referred to as El or Elohim, as in the Hebrew Old Testament.

The religion is polytheistic, with El, Baal, Dagon and Asherat (a sea-goddess) as deities. Baal's emblem was a bull. There is a prescription for seething a kid in its mother's milk, a practice forbidden in the law of Moses (Exod. xxiii. 19). "The Ras Shamra texts, in their representations of ritual practices, give much reason to think that even those parts of the Pentateuch which on grounds of literary analysis appear to be the latest in composition may well rest on very early records."[1] The technical expressions for the offerings are often the same as in the Bible. There was a trespass offering, a peace offering, a wave offering, a burnt offering, new moon offerings, bread of the gods, and so on. There is a ritual text for offerings on the house-tops to the sun, moon and stars. There was a courtyard, and a holy place of the holy places, and a table of gold in the sanctuary. The priest was called "Kohen", as in Hebrew. Seven was a sacred number. A Ras Shamra tablet mentions "leviathan the swift serpent".[2]

The Entrance into Canaan

Of the journeyings through the wilderness we have little to say. The place where the Israelites crossed the Red Sea has been provisionally identified; it was probably through what is now called the Bitter Lakes. Some of the sites mentioned in the Exodus story can also be recognized, but not many. There is a real problem with regard to the numbers of the Israelites, which needs further elucidation. Some of the most serious difficulties of the Old Testament are concerned with numbers; there were peculiar difficulties in transmission of the correct text because figures were represented by letters, which are easily mistaken in copying. The story of the manna cannot be explained by natural occurrences; it was frankly miraculous. There has been an interesting parallel recorded in Southern Algeria, where, following a period of unusual weather, there were falls of a whitish, odourless, tasteless matter of a farinaceous kind, which covered tents and vegetation each morning. Old inhabitants remember this also happening some sixty years ago, which they still refer to as "l'année de la farine".[3]

[1] Sir F. Kenyon, *The Bible and Archæology*, p. 162.
[2] Sir Charles Marston, *The Bible is True.*
[3] *The Times*, July 19, 1932.

On two occasions, the Israelites were fed in the wilderness by vast quantities of quails (Exod. xvi. 13; Num. xi. 31-33). The quail is a plump, heavy-feeding bird allied to the partridge, and in the Middle East it is migratory, flying in great flocks. They come in from the sea in September and October, or in April, when there is a wind behind them, and land in an exhausted condition. In one year over a million were exported from Sinai into Egypt. The Israelites "spread them all abroad for themselves round about the camp", just as Herodotus tells us the Egyptians did, laying them on the sand to dry. Pliny relates that on one occasion they landed on a ship in such numbers that it sank.[1]

It has been objected that the sacrifices spoken of could not have been offered in the wilderness, because there is, now, not enough wood for fuel. But a temple has been discovered at Serabit in Sinai, dating from the reign of Thothmes III, with standing stones like those erected by Jacob at Bethel, and vast heaps of ashes of sacrifices, and a system of writing used by the Semitic workmen.[2]

The story told in the Book of Joshua of the crossing of the river Jordan has been dismissed by many as obviously mythical. That the waters should suddenly be cut off, during a time of flood, did seem to be too incredible. Strange to say, the same thing has happened on at least three occasions in history since.[3] The Arab historian Nuwairi related that on December 8, A.D. 1267, the river-bed became dry opposite Jericho owing to a landslip higher up. No water flowed down the river-bed for sixteen hours. The next occasion was in 1906, and the latest in July, 1927. What happened then was that a great landslide occurred, following an earthquake, about sixteen miles farther up the river Jordan, at Damieh (the Adam of Joshua), where it flows between high earthen banks. The river was blocked for twenty-one hours, and it was possible to walk across the dry stream-bed below. The account given in the Book of Joshua tells us that "the waters which came down from above stood, and rose up in one heap, a great way off, at Adam, the city that is beside Zarethan; and those that went down

[1] C. S. Jarvis, lately Governor of Sinai, *Palestine Exploration Fund Quarterly*, 1938, p. 25.

[2] Sir Charles Marston, *The Times*, April 21, 1932.

[3] J. Garstang, *Joshua-Judges*, 1931, pp. 136-138.

toward the sea of the Arabah, even the salt sea, were wholly cut off; and the people passed over right against Jericho." How providential that this should have happened just when and where the Israelites were told to cross, and Jordan had overflowed all its banks, and just when the priests' feet bearing the ark slipped into the water of the river! No wonder that fear fell upon all the inhabitants of Canaan at so marvellous a happening.

The Conquest of Canaan

Another Bible story which timid padres have been almost afraid to read in church because it seemed likely to bring the book into ridicule relates how the walls of Jericho fell down flat after the Israelites had marched round it seven times in a day without making any attack; and then they blew the trumpets, and shouted, and it happened. Surely no town has ever been so besieged before or since! Strange to say, it has been possible to obtain a great deal of evidence bearing on the event. Excavations in Palestine are usually impossible without disturbing existing occupied sites, but old Jericho stood at a little distance from the Jericho of the Gospels and the modern township, and it has been investigated, principally by Professor John Garstang about ten years ago. It was a small place, standing on an area of about seven acres. The site had been occupied long before Joshua's time; there had been a Hyksos fortification there, with its characteristic glacis instead of a vertical wall. The last, and to us the most interesting Jericho, belonged to the late Bronze Age, about 1400 B.C. This is proved by the pottery remains, at least a hundred thousand of which were examined, derived partly from the city itself and partly from the nearby cemetery. The writer has seen some of these vessels, which are now in the University Museum at Glasgow. They are very characteristic. There is one type of vessel with the base not flat, but conical, with the point downwards; it must have been stood in a ring, or thrust into the ground. The date is further proved by the scarabs, bearing the cartouche of the reigning Pharaoh, buried in the tombs. About eighty of these were found, including many from the Hyksos period.

In later tombs, there was a cartouche bearing the joint names

of Princess Hatshepsut, who may well have been the royal lady who adopted Moses, and Thothmes III, and, latest of all, two seals of Amenhotep III. The very distinctive pottery of the time of Ikhnaton and Tutankhamen is entirely absent.

The walls of the period were double, the outer about six feet thick, and the inner twelve feet thick. They were probably about thirty feet high. The bricks were sun-dried, and none too well laid. There were houses built on the walls, reminding us of Rahab's inn, from which the spies were let down outside the city. Most remarkable of all, Garstang found that the double walls, linked by the houses, did indeed fall down flat. The eastern wall, and part of the western, collapsed; the northern and southern were not much affected. Garstang has proposed the theory that the damage was caused by an earthquake. This may or may not be so, but does not in any case detract from the remarkable miracle that the walls fell just when the Israelites invested the town. Further, it is plain enough that the place was destroyed by fire. Joshua was instructed to burn it thoroughly, and Achan was punished for reserving a small quantity of loot. The charred remains show that Jericho was not plundered before it was burned. In the houses were found wheat, barley, lentils, onions, dates and dough, all reduced to charcoal, with white ashes, and the remains of rope, thatch, and wood. It seems probable that Joshua's men collected wood to make a bonfire of the whole place.

Two other Palestinian towns mentioned in Joshua's story of the conquest yield similar evidence. These are Hazor and Ai, both of which were destroyed by fire in the late Bronze Age, somewhere about 1400 B.C. (Garstang).

But let us go back to Egypt. In 1887, an Egyptian woman, digging in rubbish at Tell-el-Amarna, found a number of clay tablets covered with cuneiform script. She sold them for two shillings. They came into the hands of a Cairo dealer, from whom they were bought, partly for Berlin, and partly by Sir Wallis Budge for the British Museum. It was thought strange that a Bablyonian script should be found in Egypt. When they were deciphered, it was found that they represented the foreign correspondence of the Pharaohs Amenhotep III and Amenhotep IV. Amenhotep IV, also called Ikhnaton, was a heretic king who

worshipped the solar disc. When he died, his palace at Tell-el-Amarna was deserted, and the official correspondence of his foreign office left in the dust. Over three hundred clay tablets, written in the Babylonian cuneiform, have been recovered. Many of them came from Palestine, at that time an Egyptian dependency, and are full of complaints that some people called Khabiri are invading the country from across the Jordan. In particular, there are letters from one Abdi-Khiba, King of Jerusalem, to this effect. "The Khabiri are devastating all the lands of the king. If there be troops in this year, then all the lands will remain the king's; but if no troops arrive, the lands of the king my lord are lost." And again: "Now the Khabiri are seizing the cities of the king. There is no local ruler left to the king my lord; all are lost." It seems all but certain that the Khabiri are the Hebrews—the consonants agree exactly—and that here we have the story of the invasion of Canaan told by the people of the land, just as in the Book of Joshua we have it told by the Israelites.

During the campaign for the conquest of Canaan, a remarkable incident took place which has seemed to some the height of absurdity. This was during the battle of Beth-Horon, when at Joshua's command the sun and moon "stood still in the midst of heaven, and hasted not to go down about a whole day". This narrative is derived from the Book of Jasher, which seems to have been a collection of ancient Hebrew poems. Now, one does not go to a book of poetry, whether Hebrew or modern, for photographic accuracy of historical description, but rather for analogy and picturesque expression. Thus, in Deborah's song "The stars in their courses fought against Sisera"; in Isaiah's dirge of the vineyard, a fruitful hill is called "a horn, the son of oil". So in this description the sun and moon were told, literally, to "be silent". If the only way in which such a miracle could have occurred was that the earth's rotation was temporarily stopped, the scientific difficulties would indeed be stupendous, but that would be to import an unnecessary absurdity. Sir Ambrose Fleming, inventor of the thermionic valve which made the wireless possible, writing on this subject, suggests that the arrest of the sun's going down was due to a local change in the refractive power of the atmosphere. Every normal day, refraction prolongs

the visibility of the sun by about four minutes. If the atmosphere was composed of krypton, we should be able to see right round the world.[1] On February 16, 1929, two "suns" were plainly visible in a blue sky at Rome, and this was reported next day in the English newspapers, but no one seriously believes that a new sun was created. E. W. Maunder, lately Superintendent at Greenwich Observatory, calculates from the data given that Joshua was at Gibeon, the sun was directly overhead, and the moon was half-full, near the horizon to the north-west, over the valley of Aijalon, and that the time of year was about July 21. It was no doubt very hot and fatiguing. He considers that the "silencing" of the sun and moon was due to the terrific hailstorm spoken of in the preceding verses, sweeping over the sky and pouring great hailstones on the fleeing Amorites. The miracle consisted in the fact that the storm happened just when Joshua commanded it. The Israelites had no clocks, so the only way they could measure a whole day without the sun was by their exertions in the pursuit. Whether this explanation satisfies the narrative must be for the reader to judge. It is well known that the Chinese, and also the Hindus, record a long day in the remote past. The Indian long day was very close to Joshua's time.[2]

In the latest chapters of the Book of Joshua, long lists of towns and villages are given to describe how Canaan after its conquest was divided up amongst the tribes. It might have been thought that few chapters in the Bible would be of less interest or value to anyone living to-day. But even these have yielded something to the archæologist. Professor Saarisalo (who kindly entertained the writer in Helsinki in 1936) has published a study of the area allotted to Issachar and Naphthali, and has demonstrated by the pottery test that the places mentioned were in occupation in Joshua's time, but that no other period of Israelitish history would suit them.[3]

The researches in this chapter all point to one sure conclusion. The events described in the six opening books of the Bible have

[1] A. Fleming, *Proc. Physical Soc.*, 1914, p. 318.

[2] For this section, see E. W. Maunder, *Journ. Trans. Victoria Instit.*, 1921, p. 120. Also, article "Beth-Horon, Battle of," *Internat. Standard Bible Encyclop.*

[3] A. Saarisalo, *The Boundary between Issachar and Naphthali*, 1927.

far too much local colour and accuracy to have been written up centuries afterwards. The narratives must have been recorded quite soon after the events took place.

REFERENCES

J. GARSTANG: *Joshua-Judges*, 1931.
SIR F. KENYON: *The Bible and Archæology*, 1940.
SIR CHAS. MARSTON: *The Bible is True*, 1934.
W. J. PILTER: *The Pentateuch an Historical Record*, 1928.
SIR L. WOOLLEY: *Ur of the Chaldees*, 1929.

CHAPTER VIII

THE LITERARY PROBLEM OF THE PENTATEUCH

IT is customary to-day in literary and theological circles to regard most of the books of the Old Testament as of very composite authorship, and, as a rule, of much later date than traditional Judaism and traditional Christianity believed. It is not possible here to discuss all these problems. One of them must suffice. The "surest results" of modern literary criticism relate to the so-called five books of Moses, the Pentateuch. Let us take that as a test case.

At least three views are possible:

(i) The older conservative view, that Moses wrote the whole of the Pentateuch without previous documents.

(ii) The critical view, that he wrote none of it, or the merest fragments, but that it was written by unknown authors, centuries after Moses' time. The oldest stratum, emanating from the days of Solomon or a little later, say 850 B.C., is said to consist of two closely parallel narratives called J and E, distinguished principally by their use of JHWH or Elohim respectively for the Divine name. These contribute the bulk of the narrative parts of Genesis, Exodus and Numbers. Next comes D, comprising nearly the whole of Deuteronomy, written in the reign of Josiah, say 621 B.C., found in the temple by Hilkiah (if not written by him) and offered to the king and people as an authentic work of Moses. Finally comes P, the priestly code, including Leviticus, the liturgical parts of Exodus and Numbers, and considerable fragments of each of the historical parts of the book, including the first chapter of Genesis.

In reality, the theory is much more complicated, with P^1, P^2, H, etc. (H stands for the Holiness code, supposed to be found in Leviticus xvii-xxvi.). P is said to date from the time of Ezra. Given a document so late, and by so many hands of unknown authors, it is easy to deny the historical worth of the books, and it is roundly declared that the tabernacle in the wilderness never

had any existence. No outside evidence is advanced to justify these sweeping conclusions; they are derived from a study of the Old Testament itself; in fact, as we have seen, the recent discoveries of archæology tell rather against the theory than for it, and there are no means of identifying the real writers of either J, E, D or P. One would have expected that some tradition would have remained of them and their work.

(iii) The neo-conservative view, that all the books were substantially written by Moses, but that he used for Genesis older materials brought, perhaps by Abraham, Jacob and the patriarchs, from Mesopotamia and Canaan. This view also allows the probability that the whole Pentateuch, but especially Deuteronomy, may have been cast into its present form by an editor, using Moses' written or spoken material. He would have been responsible for adding the account of Moses' death and other personal details. We know that the New Testament text underwent a certain amount of editing, resulting in what is called the Textus Receptus underlying the English Authorized Version; a similar process may probably have taken place for, at least, Deuteronomy, the modes of expression in which are certainly different in some respects from those of the other books.

It would seem to the unprejudiced reader that there are some prima-facie considerations by which we may very quickly decide between the critical and the conservative theories.

In the first place, it is a well-known axiom in literature that it is impossible, in dealing with modern composite writing, to decide with any confidence which author wrote this and which wrote that. Many examples of composite authorship—*e.g.*, Besant and Rice's novels—will occur to the reader which defy resolution into their elements. We have engaged in composite authorship ourselves, and are ready to challenge anyone to detect the various hands. If it is an impossible task with modern English books by known authors, is it likely that an accurate analysis can be made of an ancient Hebrew writing? May we not fairly ask the critics who profess themselves able to do the one to prove their skill by undertaking the other task also?

Next, and fortunately, there is an obvious culture-test available. If the neo-conservative view is correct, the first part of Genesis

will show tokens of Sumerian and the older Babylonian culture; the later part of Genesis, and Exodus, will be tinged with the culture of Egypt; throughout the five books late Babylonian and Persian influence will be absent; and the Hebrew will be archaic. The earlier parts of Genesis, if written up from older materials in Egypt, might show an Egyptian colouring. If the critical theory is correct, late Babylonian and Persian influence will be present, and Egyptian absent; the history and archæology will be full of mistakes and anachronisms.

Examined by this test, the verdict must be against the critical theory. It is this fact that has led many of the leading archæologists back to the neo-conservative view. As Professor Sayce and others have pointed out, there are plain marks of Sumerian and early Babylonian influence in the first part of Genesis. The story of the Creation and of the Deluge are found in these languages, though in a grossly polytheistic form. We do not believe that the Genesis account is *derived* from these legends, but that both the monotheistic and polytheistic narratives go back to primitive tradition and historical fact well remembered in Mesopotamia. There are Sumerian and Early Babylonian words—*e.g.*, the word *ed* translated "mist" in Genesis ii. 6, which is Sumerian for "river". According to Sayce, in Genesis xi. 29 the explanation of the curious phrase "the father of Milcah and the father of Iscah" (the latter never being heard of again) is that in cuneiform *mil* and *is* are the same, so that two possible renderings of the name into Hebrew are given. "Eve", "Eden", "sabbath" and the Genesis word for "rib" are also Sumerian, and in the description of Tubalcain, "instructor" and "artificer" are alternative renderings of a Babylonian word (Sayce).

It is proposed by the advocates of the late theory of the Pentateuch that these evidences of Babylonian influence date from the time of the Exile, but, as Professor Yahuda writes:[1] "My studies in this direction have more and more convinced me that this later period cannot be taken into consideration for the origin of the Pentateuch, on the following grounds: such books of the Bible as

[1] A. S. Yahuda: *The Language of the Pentateuch in its Relation to Egyptian*, p. xxix, 1932. Yahuda was Professor of Mediæval Hebrew in the University of Madrid.

Ezekiel, Daniel, and partly also Ezra and Nehemiah, which were admittedly composed during and immediately after the Exile, reveal in language and style such an unmistakable Babylonian influence that these newly-entered foreign elements leap to the eye. . . . On the other hand, however, in the first part of the Genesis narratives, where traces of an original connection with Babylonian myths are unmistakable, Babylonian influence in the language is so minute as to make us wonder how it is possible for such stories, pointing so distinctly to Babylonia, and containing, *inter alia*, so ancient an Akkadian expression as *tehom* (Gen. i. 2; vii. 11; viii. 2), to show so little linguistic relationship with the cognate Babylonian myths. Even in the Flood-story, in which Babylonian elements are so apparent—nay, even in the phrases which reveal an almost literal agreement with the Akkadian texts—the linguistic relationship is extremely meagre." *Kopher*, meaning "pitch" (Gen. vi. 14), is an Akkadian word. Yahuda adds:[1] "The differences between the Genesis stories and the Akkadian myths are very numerous and profound." He finds that even the early chapters of Genesis are full of Egyptian influence. The word *tebah*, "the box-ship, or ark", is an Egyptian loan word. This word *tebah* occurs twenty-six times in Genesis, twice in Exodus, and nowhere else in the Old Testament; J, E and P all use it, the latter (alleged by the critics to be written during the Captivity in Babylon) fourteen times. The first word in the Hebrew Bible, "In the beginning", literally " in the head", contains an Egyptian manner of speech; the dual word used for "the heavens" is also based on Egyptian usage. The deduction is that the stories were brought by the patriarchs from Mesopotamia, but written down by Moses in Egypt.

It is now well established that the story of Israel in Egypt, and of the Exodus, is thoroughly steeped in Egyptian influence. The archæology, as we have seen, is remarkably accurate. A large number of words and phrases in this part of the Pentateuch are good Egyptian. Examples are *hin* and *ephah*, liquid and dry measures. Other words are *ab*, meaning "inspector" (Gen. xlv. 8); *abrek*, meaning doubtful (Gen. xli. 43); *akhu*, the special word for the swamp pasturelands near the Nile (Gen. xli. 2); *shesh*, an

[1] *Ibid.*, p. 19.

Egyptian linen (Gen. xli. 42, etc.); *ye'or*, the Egyptian name for a river, found often in the Pentateuch and later books, but almost exclusively in reference to Egyptian rivers. There are Egyptian proper names—Zaphnath-Paaneah, Asenath, Potiphar and Potiphera. Many critical textbooks (Driver, etc.) repeat an old assertion that these names are late Egyptian, but recent investigation shows that they fit in better with the type of names in the dynasty of the Exodus (Lieblein, Naville). The order of thought, and of words in sentences, is like the Egyptian, and unlike Babylonian (in Ezekiel, a Babylonian order tends to appear). The court, holy place and Holy-of-Holies in the tabernacle are on the plan of an Egyptian house or temple, and quite unlike the Babylonian. In Gen. xlvii. 31, "Israel bowed himself upon the bed's head" as he took an oath from Joseph; "upon his staff", the old Greek translation, made in Egypt, reads; and now we know that the official oath in Egypt was to swear "on the wood", though we are not quite sure what it means. "Bed" and "staff" in Hebrew have the same consonants. Evidently Moses wrote an old Egyptian word, whose meaning was forgotten.[1] Yet the critics would have us believe that all this was written by JE, after David's time, and by P, during the Babylonian captivity! Had they all gone to live in Egypt to fit themselves for the task?

The above list has been greatly extended by Yahuda; only a very small part of his evidence can be quoted here. There are four Egyptian loan-words in one verse, Exod. ii. 3 (translated "ark", "bulrushes", "flags", "river"). The name Moses is of Egyptian origin. Certain Egyptian forms of expression are used; to speak of "the face of Pharaoh" was the usual phrase of court deference; to swear by the life of Pharaoh was a particularly emphatic oath.

Here is another point. The attentive reader will have noticed that in the Pentateuch the king of Egypt is always spoken of as "Pharaoh" without a personal name, but in the Book of Kings the names of the Pharaohs are given—Shishak, So, Necho, Hophra. This accords with Egyptian usage. From dynasty V, specially in XII, and very commonly in XVIII, XIX and XX, the title stands

[1] For Egyptian influence in the Pentateuch, see, in addition to Yahuda, Kyle, *Moses and the Monuments*, 1920; Pilter, *The Pentateuch*, 1928.

by itself in Egyptian monuments. From the XXII to the XXVI, the monuments give the king's personal name. Shishak belonged to the XXII, Necho and Hophra to XXVI. Yet it is alleged that J, E, P and D are none of them older than the XXII dynasty.

Further, we do *not* find in the Pentateuch Persian or demonstrably late-Babylonian words. The Hebrew, whether attributed to J, E, P or D, shows archaic forms; for instance, *hu*, not *hi*, is consistently used for "she", and *na'ar* is used twenty-two times for a female (*na'arah* elsewhere in Old Testament). The first month of the year in the Pentateuch is called Abib (six times); in later books it is called Nisan. During the later monarchy and the Exile, God is usually referred to as the Lord of Hosts; the political and religious centre of all their thinking was Jerusalem; in their worship, singing took a prominent place. Yet not one of these appears in the Pentateuch.[1] This is quite simple if it had been written before; it is very surprising if D and P had a hand in it.

It is alleged by the upholders of the documentary theory of the Pentateuch that the parts attributed to P must be late, because of the frequency of Aramaic and late Hebrew words therein. This has been subjected to a searching analysis by Professor Dick Wilson, who shows that the great majority of the words called Aramaic are, as a matter of fact, old words belonging to the common stock of all the Semitic languages.[2] As for the so-called "late Hebrew" words, of rare occurrence in the Bible, but present in later Jewish literature, these are almost as frequent in JE, supposed to be nearly the oldest part of the Old Testament literature. In E, 48·7 per cent. of these words also occur in the Talmud (written after the time of Christ); in P, 53·1 per cent. The difference is not enough to found a theory upon.[3]

There is some historical evidence as to the time when the Pentateuch was a completed volume. As mentioned in the following chapter, we have some literary remains of the colony of Jews who fled to Egypt when Nebuchadnezzar invaded Judea. We find that they observed the Levitical feasts, the directions for which are given in the so-called P section (attributed to the

[1] Salem and Moriah are mentioned once each.

[2] R. Dick Wilson, *A Scientific Investigation of the Old Testament*, 1926, p. 140.

[3] *Ibid.*, p. 135.

times of Ezra). So the Levitical law must have been observed before the destruction of the first temple. There is extant a letter to a governor named Bagohi, dated 407 B.C., which refers to the meal and burnt offerings and to frankincense.

Then there is the question of the Samaritan Pentateuch. The Samaritans were settlers brought in by the Assyrians to people the depopulated country that had been inhabited by the ten tribes. Long before the Christian era, and right down to our own times, they have held their own version of the Pentateuch sacred, but did not accept the prophets or other books of the Jewish Bible. Their version is obviously based on an ancient text of the Hebrew Pentateuch. They offer their sacrifices on Mount Gerizim down to the present time, though only a few families are left now. The crucial point is, when did they get their book? On a straightforward interpretation of the historical record in the Bible, this is quite clear from 2 Kings xvii. 24-41, and confirmed by Ezra iv. 2. They got all their knowledge of the prescribed method of sacrificing to God from a Jewish priest sent them by Esarhaddon, King of Assyria. At that early time, the prophets and historical books were not reckoned as Scripture, so they were not taken up. All this is, of course, absolutely fatal to the critical theory, for D and P were not yet written! An attempt is made to save the situation by guessing that one Manasseh, mentioned in a very garbled story by Josephus, may have taken the book to the Samaritans in the days of Nehemiah. This is quite incredible. Josephus says nothing about this, and his Manasseh lived a century later! The long-drawn hostility between the Jews and Samaritans had already commenced in Zerubbabel's time (Ezra iv.), and is it possible that after this they should gratefully accept the P document, lately written up by their enemy Ezra or his friends?

There is other evidence that the Samaritans got their book before the Exile. There is some confusion in it between the letters *d* and *r*,[1] and also between *m* and *n*, which could not have arisen in the post-exilic scripts, but only in the very early angular Zidonian characters, or in the still earlier form of letters found in

[1] These letters are also very like in the square Hebrew character, but that is later still.

the Siloam inscription of Hezekiah's reign, and the stele of Mesha, King of Moab, contemporary with Ahab; further, the Samaritan script agrees with these inscriptions in separating its words by dots, which the later Hebrew does not do. The Samaritan has no gutturals; this goes to show that their pronunciation dates from the time when in the days of Ahab and his successors the non-guttural Phœnician speech was popular in Israel.[1] One would have thought that this evidence alone would have put the critical theory of D and P out of court.

But it is time to examine the arguments put forward for the critical—or, as it is called, the documentary—theory of the Pentateuch. As stated by the critics themselves, there are three main clues.[2]

(1) Astruc's clue (1753). Certain passages in Genesis call God JHWH (Jehovah), and in others He is referred to as Elohim. This is interpreted to mean a difference in authorship.

(2) De Wette's clue (1805). The laws of Moses are ignored until the time of Josiah; then we begin to hear of the central sanctuary prescribed in Deut. xii. Moreover, the literary style and moral and religious tone of the books are centuries ahead of Moses' day.

(3) Graf's clue (1866). There are three stages in the development of Israelitish religion. JE correspond to a stage, running up to the time of Josiah, when God might be worshipped anywhere at any shrine; any layman could offer his sacrifice, and images of Jehovah were tolerated. D corresponds to a stage when worship was centralized at Jerusalem, and priests and Levites only might minister at the altar. After the Exile, a full and complicated ritual was laid down by P, and only priests could minister.

Let us, then, test the three clues.

That there is a curious problem connected with the distribution of the Divine names, especially in Genesis, is patent to every attentive reader. Compare, for instance, Gen. i. with Gen. ii. (after verse 4). The passages where the English Version translates "Lord" are attributed to J; where the translation is "God",

[1] Thomson, *Journ. Trans. Victoria Instit.*, 1920, p. 142.

[2] Quoted from *The Bible and Modern Thought*, 1920, Cohu (an able advocate of the critical view).

they are divided between E and P. It is maintained that there are slight differences of language and style between J and E, and marked differences between these and P, and also that the same event is recorded twice by different narrators, the best examples being the Creation-story by P and J, and Abraham's denial of his wife by J and E.

But Elohim several times occurs in J passages (Gen. iii. 1, xvi. 13) and JHWH in E passages (Gen. xxii. 11, 14), and that in spite of the fact that the theorists cut up the paragraphs and even the verses mercilessly to avoid discrepancies of this sort—*e.g.*, the E narrative in Gen. xx. is supposed to end with the last verse but one of the story, because Lord occurs in the last verse! Neither J, E nor P makes up anything like a connected narrative; almost every incident in the life of each patriarch owes something to two or more of them. Surely the common-sense explanation of the difference in usage is that the writer is guided by the sense and bearings of his subject; when God the Ruler of nations is referred to, Elohim is more often used, as, for instance, in the Balaam prophecies; when it is God keeping covenant with His own people, the name is usually Jehovah, and particularly after His special revelation of Himself by that name in Exod. vi. 3.[1] If it be asked, as it often is, why the name Jehovah appears in Genesis if it was not known before this revelation to Moses, the probable answer is that the name was not in use amongst the Israelites. It appears in early cuneiform texts as Yahu, and was known before the Deluge (Gen. iv. 26).

Duplicate narratives do not always prove two narrators, because similar events may happen twice. It may have been Abraham's settled policy to call Sarah his sister, and the stories are by no means identical. It is likely enough that Moses may have made use of more than one document in writing the Genesis story, or Professor Naville's suggestion may be correct, that Moses wrote in cuneiform, and that to some extent the "documents" of the critics may represent separate tablets. He believes that the first tablet ended at Gen. ii. 4, and the second at Gen. v. 1, which he translates, with the Septuagint, "This is the book of the genera-

[1] See McCaig, "Use of Divine Names in the Pentateuch," *Evangelical Quarterly*, January, 1930.

tion of mankind." Naville also lends the weight of his great authority to the suggestion that Abraham may have brought the originals of these tablets from Ur.[1] We conclude, then, that the Astruc clue by no means proves several post-Mosaic writers.

We turn to consider the de Wette clue. It is alleged that in the days of the Judges and Samuel and the earlier kings we hear nothing of the Levitical observances, and there is no centralized worship, until in the reign of Josiah the book of the law is found in the temple by Hilkiah, and then, as prescribed by Deuteronomy, the altars of the "high places" are broken down, and the people are brought to the temple at Jerusalem to offer their sacrifices. Now, is this true?

It is common ground, of course, that the observances prescribed by the law of Moses are not very prominent in the story of the Judges and the earlier kings, and also that there were frequently grave lapses and irregularities. The critics seem to take it for granted that if Israel had known of these laws, complicated and burdensome as they were, they would undoubtedly have obeyed them. But surely nations, like individuals, often fail to live up to their best ideals, and it is the central lesson on the pages of Judges, Samuel and Kings that they knew the better and did the worse. Even after the awful warning of the Captivity their practice, though better, was by no means perfect. Again, in the nature of things, central worship and a full obedience of the law were impossible unless peace and settled conditions prevailed, and in those days the land was continually overrun by Philistines and other enemies. And, once again, does silence really prove anything? Silences are surprising. Are we likely to conclude that there was no public worship in England, no churches and cathedrals and no ceremonies, because Shakespeare so seldom alludes to them? He never mentions Canterbury, the old St. Paul's, Winchester or Durham cathedrals; does that prove that they were not yet built? However, this is a matter in which every Bible reader can judge for himself, if he will go through, shall we say, the books of Samuel, and find what, if any, of the Levitical observances are mentioned. There is a single high-priest, a tabernacle, an ark; Elkanah goes up regularly to worship and

[1] Naville, *Journ. Trans. Victoria Instit.*, 1916, p. 329.

bring sacrifices; the priests must burn the fat; in accordance with the law of Numbers vi. 5, no razor is to come on the head of Samuel or Samson; a family of the Levites had been chosen for the priesthood, to burn incense and wear an ephod; the offerings made by fire were to be theirs. We read of the lamp burning in the sanctuary, and in the same chapter "the iniquity of Eli's house shall not be purged [the Levitical word for atonement is used] with sacrifice nor offering for ever". We read of judgments because the ark was improperly handled by the laity. A lamb is offered for a whole burnt offering. It is wrong to eat blood. Sanctification is needed before sacrifice. And Saul knows all about ceremonial uncleanness. The shewbread is mentioned, and the Urim, and it is wicked to resort to necromancers. In 2 Samuel vi. we read of burnt offerings and peace offerings, and of judgments and statutes, and of the cherubim over the ark. And yet we are invited to believe that in David's time the law of Moses had never been written, because it is passed over in silence!

But, it is argued, all these references may be later interpolations. Why? Interpolations occur in some texts of the Bible, but they show themselves, either by being omitted in other manuscripts, or by leaving a clear, consistent sense when they have been removed, but the above references occur in all the authorities for the text, and if they are torn out of the story it is left full of obvious holes. Besides, any wild theory can be "proved" if one may simply blot out without rhyme or reason all the opposing evidence. "Well," says the critic, "perhaps these things were practised, although they had never been written down." Perhaps so, but by this time the de Wette clue has become no longer an argument pro, but an almost insuperable objection to the critical theory. We have been content to put in only Samuel in evidence, leaving the reader to add Judges, Kings, Chronicles (which, though written late, draws on early sources) and the pre-exilic prophets, if he will take the trouble to search through them. We will just draw attention to one verse, Hosea viii. 12 (R.V.), undoubtedly written long before Josiah's time: "Though I write for him My law in ten thousand precepts." The R.V. margin is still more explicit: "I wrote for him the ten thousand things of My law." Can this possibly refer to anything besides the books of Moses?

In Jeremiah we constantly find phrases taken from the Book of Deuteronomy, which is attributed to Hilkiah's discovery of the Book of the Law. But there are exact quotations from Leviticus also (*e.g.*, Jer. vii. 23 from Lev. xxvi. 12).

We turn now to the Graf clue. It is maintained that up to the time of Josiah, when Deuteronomy appeared, God might be worshipped anywhere, at any shrine; any layman could offer his sacrifice, and images of Jehovah were tolerated. Numerous altars are spoken of in Judges, Samuel and Kings, especially on high places; Samuel, Saul, David and Solomon are said to have offered sacrifices, and Micah's image, the teraphim kept by Michal, David's wife, and the calves set up by Jeroboam, are instanced as proving the last point. It is admitted, of course, by all that in Deuteronomy xii. it is commanded that there should be one central sanctuary, but this was to be only when "ye dwell in safety", and in Deuteronomy xxvii. another altar was to be built on Mount Ebal. In the days when Israel was backsliding, and every few years an enemy overran the country, of course there could not be a central altar, but there were times when they did their best to maintain one. There was one at Shiloh in Eli's day. David and Solomon spent a fortune to build up a sanctuary, and from that time other altars are spoken of as wrong (1 Kings iii. 2, 4; xv. 14; xxii. 43, etc.). Then as to the offerer, Samuel was evidently reckoned a priest on account of the death of Eli and his sons; it is by no means clear that David or Solomon did more than give the animals for sacrifice (Solomon could not have himself offered 22,000 oxen at once), and Saul was severely censured for offering a burnt offering with his own hand. As for the images, the story of Micah seems to be put in as the height of religious apostasy, as the narrative following is the height of moral apostasy, in a day when "every man did that which was right in his own eyes"—the tragic conclusion of the Book of Judges. What Michal's images may have been we can only guess; it is not the only instance in history when a wife has secretly cherished something that would have horrified her husband. And as for the calves at Bethel, they are always spoken of with condemnation by the writers of Kings and Chronicles, and also, far earlier, by Amos and Hosea (Amos iv. 4, 5; Hosea viii. 5, 6, R.V.).

The theory goes on to maintain that Leviticus presupposes the laws of Deuteronomy, but surely the evidence is all in favour of the view which had prevailed unquestioned for thousands of years, that Deuteronomy is unintelligible to one who does not know the legal parts of Exodus, Leviticus and Numbers, which the Graf theory gives to P, at the end of the Exile. Even Driver allowed that Deuteronomy xiv. 4-20 presupposes Leviticus xi. 2-23; Deuteronomy xxiv. 8 expressly refers back to the Levitical law of leprosy; the Deuteronomy account of Moses' being forbidden to enter Canaan looks back to Numbers (a P section).

These are the three main clues relied on by the critical theory. If it be alleged that the real strength thereof does not stand in any tangible argument, but in a multitude of trivial points, the answer is that the evidence for this rests on a purely subjective basis. By varying the "points" or characteristics, the evidence is varied correspondingly, and so will yield any result that is desired. The methods employed remind one forcibly of the kind of arguments that were used by some to prove that Shakespeare's plays were written by Bacon. The reader may see in the books by the defenders of the traditional view a detailed criticism of scores of such minor points, and as many more that tell in favour of the other side.

Consider again. *Why* did D, and why did P, write all this, and use such art to get it all accepted as a work of Moses, and how was it that nobody seems to have suspected the imposition? Did they stain the parchment to make it look centuries old? It is useless for the critics to pretend that there is not a moral issue involved, and for them to say that there was no intention to deceive and that nobody was deceived; the cheat, if we can believe that the inventors of the highest code of morals the world had ever seen were guilty of it, was almost magically successful, and reform swept the kingdom. Take D. Who wrote it? Certainly not a prophet; much of it is ritual. Not a Jerusalem priest, because it lays down that he is to share all his tithes with the Levites, who on the critical theory were the priests of the provincial high places. It must have been a thoroughly unpopular discovery for the unspiritual among the people, for it made them pay tithes. And what an extraordinary book it is for its alleged purpose—to

centralize worship at Jerusalem! There is only one inconspicuous reference to that subject; for the rest, the book is hopelessly antiquated in its interests: it talks of all Israel still as one, though the ten tribes had disappeared long ago, lays down laws for sieges, for sanitary arrangements in camp, that they must exterminate the Canaanites and Amalekites, and must not choose a foreigner as king! It is all about as suitable as a newly discovered Henry VIII code of laws would be to us to-day.

Then, let us consider P. This is supposed to have been drawn up specially as a code-book for the second temple, with its priests, porters, Nethinim and singers. Yet these last three are never mentioned! It speaks of an ark and of the Urim, but these were now lost for ever. It contemplates a portable tent, but the new temple was to be a stone building. It brings in new tithes, and a complicated ceremonial of the day of Atonement, purporting to be of age-long antiquity, but really quite new; did the aged men who wept when they compared the present poor foundation with the temple of their childhood never mention that these new-fangled laws and ceremonies had not been heard of in their young days? The Levitical tithe-law contemplates many Levites and few priests; in Ezra's day there were ten times as many priests as Levites, and the financial arrangements were clearly unworkable. The tabernacle service was quite suitable and in keeping with the wilderness experience, though circumcision, and perhaps other ordinances, were not all faithfully observed. That it was given by Moses in the wilderness is a natural conclusion; that it first saw the light, and was accepted as Mosaic, during the Exile puts a great strain upon credulity. "But," says the critic, "though the writing was new, the laws may have been observed long before as a sort of tradition." Then what becomes of the de Wette and Graf clues, the pillars on which all this theorizing has been built up, that these laws must have been newly written, because the pre-Exilic prophets and historians betray no knowledge of them?

Now, finally, let us start where we ought to begin with every author, and let us make the simple assumption that perhaps the writers of the Bible may have been honest men who did try to tell the truth, and what do we find?

We find that Christ Himself spoke of Moses as the writer. "He wrote of Me."[1] We find that the absolute confidence expressed by the Apostles, by Josephus, and by Philo, that Moses wrote the Pentateuch is shared by all the Old Testament writers. Let the reader take a concordance and look up "Moses", and see the scores of testimonies, in nearly every book, such as "It is written in the law of Moses" (1 Kings ii. 3). In the Book of Joshua the references are particularly frequent (*e.g.*, Joshua i. 5, 6); and if we are going to believe the Bible writers, that is our authority closest to the time. When Joshua was written, Rahab was still alive (vi. 25). Let the reader come next to the five books of Moses themselves. Again and again we are told that Moses wrote the law in a book (Exod. xvii. 14, xxiv. 4; Deut. xxxiii. 2); also that he kept a record of history (Num. xxxiii. 2). Where he writes of the past, as in Genesis, a very long history is compressed into a small compass. When he writes of his own times, the narrative swells out, and it reads like a journal. It is dated "the fifteenth day of the second month", and so on; the fresh revelations from God are included as they come to him. There is an atmosphere of Egypt and the deserts. Certain pet phrases are met with both in Exodus, Leviticus, Numbers and Deuteronomy, as: "A land flowing with milk and honey"; "Keep My commandments, and do them." There is a unity of plan throughout.[2]

The natural conclusion is that the laws, discourses and history are substantially Mosaic. As we have seen, the laws of Hammurapi, the sacrifices offered at Serabit, and the religious practices at Ras Shamra, were at least as old as the time of the Exodus, and are sometimes strangely parallel to the legal and ceremonial sections of the books of Moses. It is probable enough that Moses, writing in Egypt, or the desert, or to the east of Jordan, may have made use of older documents, perhaps clay tablets written in cuneiform, by very various authors, when dealing with past history in the Genesis narrative. This will explain the variations in style and in the use of the Divine Name. It is noticeable that Genesis is divided up into sections, of very unequal length, each

[1] John v. 46. See also Matthew xix. 8; Mark vii. 10, xii. 26; Luke xxiv. 44; John vii. 19.

[2] See A. H. Finn, "Mosaic Origin of Pentateuch," *Journ. Trans. Victoria Instit.*, 1918, p. 32.

marked off by the phrase "These are the generations of," or "This is the book of the generations of." There is a book of the generations of the heaven and the earth, and of Adam, and of Noah, and of Shem, and of Terah, and of Isaac, and of Esau. The sections usually, but not always, begin with a family tree, and then pass on to other matters. Probably Moses edited them, and his own materials may have been worked over and pieced together by later editors.

No Biblical writer says that the whole book in its present form is by Moses. The last chapter of Deuteronomy may well be due to an editor, so may Deuteronomy iii. 14 and the description of Moses' meekness.[1] Whether the editorial element is large or small, or absent altogether, it is the province of reverent criticism to determine, but the data are likely to be so scanty that the conclusions must be very tentative.

And, again, we by no means wish to give the impression that if the Mosaic authorship of the Pentateuch be not accepted, we must therefore relinquish our belief in the reliability of its history, or in its divine inspiration. History books written long after the event, but based on early documents, are frequently accurate and impartial.

REFERENCES

M. G. KYLE: *Moses and the Monuments.*
J. ORR: *The Problem of the Old Testament.*
W. T. PILTER: *The Pentateuch an Historical Record.*
A. S. YAHUDA: *The Language of the Pentateuch in its Relation to Egyptian.*

[1] Also Dan in Genesis xiv. 14 and xxxvi. 31.

CHAPTER IX

ARCHÆOLOGICAL DISCOVERY AND THE OLD TESTAMENT

The Judges, Kings and the Prophets

It is a little disappointing that Palestine itself, where naturally we should look for evidence bearing on the times of the Israelitish occupation, has not been very kind to the archæologist up to the present. The climate has not the extraordinary dryness of Egypt, so that papyri have not survived; many sacred sites are still inhabited and cannot be dug up; the country has been ruthlessly fought over, desolated and pillaged, again and again. Nevertheless, discoveries have been made, and in neighbouring countries even more valuable evidence has been obtained.

We note, first, the general correctness of the first mention of domestic animals, metals and ornaments in human service. The horse seems to have been used first in war by the Hyksos, and it is probable enough that this gave them the mastery over Egypt. There is no mention of the horse in the Bible up to and including the time of Abraham, but we hear of horses in Egypt when Joseph was prime minister (Gen. xlvii. 17). It used to be supposed that iron did not come into use until about 1000 B.C., and that the mention of iron in the Old Testament (Josh. xvii. 16; Deut. iii. 11) was too early to be true. But discoveries at Gerar show that iron was in use about 1300 B.C., and some iron objects were found in the tomb of Tutankhamen about fifty years later. No doubt iron was beginning to come into service during the Late Bronze Age. In the story of Gideon we read of gold ear-rings and crescents and chains worn by the Midianites about 1140 B.C. Nearly all the gold found at Gerar was of this age, in several different deposits, and gold ear-rings were plentiful.[1] Gold and silver, of course, have attracted man's interest and cupidity from very early times. The oldest royal graves at Ur contained gold and silver orna-

[1] Garrow Duncan, *Digging up Biblical History*, vol. i., p. 143.

ments. The first mention of both in the Bible is also very far back; Abraham was very rich in silver and in gold (Gen. xiii. 2). Abraham's servant gave Rebekah a golden ring and bracelets, and jewels of silver. The coincidence of the Biblical record and the findings of archæology in these and various other matters that seem small to us is very remarkable. A late writer is apt to go astray and be guilty of anachronisms. In our school days, for instance, we used to be asked to make a list of the anachronisms in Shakespeare's *Julius Cæsar*.

There are many periods of the Israelitish occupation of Palestine concerning which archæology has but little to tell us except in a general way; we do know something, for instance, about the origin of the Philistines, and the home of the Edomites, and the story of certain cities such as Gerar,[1] Lachish,[2] Bethshemesh,[3] and others. At Lachish (Tell Duweir) the record can be made out with unusual clarity. It is, indeed, a mound of many cities. The oldest was the largest, long before the time of Abraham. Then came the Hyksos city, with the characteristic sloping rampart or glacis, still showing the tunnel, four feet wide, excavated by the besiegers, probably Egyptians, running under the rampart so that they might avoid casualties that would be suffered if they charged up the slope devoid of cover. Next in order of time was found a small temple, wonderfully well preserved under a thick layer of ancient mud. This could be dated by the discovery of a scarab of Amenhotep III in his tenth year—that is to say, near about the time when Joshua invaded Canaan. The temple furniture was scarcely disturbed. There was a tall pottery stand and bowl for the drink-offering, and a large collection of faience beadwork belonging to the Tell-el-Amarna period, and a face and a hand in ivory. The archæologists were greatly interested in a much-broken ewer with a very early alphabetical script on its neck. Next came the walls of the city as built by Rehoboam (2 Chron. xi. 9), showing marks of the sieges by Sennacherib, and later by Nebuchadnezzar. There is a bas-relief of Sennacherib's siege of Lachish in the British Museum, derived from Nineveh, and the

[1] Garrow Duncan, *Digging up Biblical History*.
[2] Bliss, *A Mound of Many Cities*; Marston, *The Bible is True*.
[3] Mackenzie, *Excavations at Ain Shems*.

bronze crest of a helmet from Tell Duweir resembles those of the Assyrian spearmen in the bas-relief. Nebuchadnezzar took Lachish by piling wood against the walls, igniting it, and calcining the limestone so that a breach was made. Last of all, there was the residence of the Persian governor under Cyrus or the kings who succeeded him.

After these preliminary observations, let us return to pick up our evidence in historical order.

A real difficulty here emerges. Egyptian history shows that the Pharaohs claimed to rule over Palestine during the XIX and following dynasties, and they have left their remains in the country, yet they are rarely mentioned in the Books of Judges and Samuel. No doubt the Palestine that they marched through was the low-lying coast-land, and the Israelites dwelt up in the mountains; but, according to Garstang, the periods of quietness in their history correspond to the reigns of strong Pharaohs, who kept order in what we now call the Middle East with a firm hand, and the periods of oppression by the Midianites or other lawless invaders correspond to the times of weakness or disorder in Egypt. After Rameses II of the XIX dynasty, the great days of Egypt were over, until there was some revival under Shishak. The chronology of the Pharaohs of Egypt from Amenhotep III to Shishak agrees well with Biblical chronology from the capture of Jericho by Joshua to the invasion by Shishak when Rehoboam was king in Judah (1 Kings xiv. 25, 26). It is suggested that the writer of the Book of Judges purposely omitted all reference, friendly or otherwise, to Egyptian influence in Canaan.

Discoveries at Jerusalem

There is a rather obscure narrative in the life of David relating to his capture of Jerusalem, at that time a Jebusite stronghold. The Jebusites were so sure that their town was impregnable that they announced that the lame and the blind would be all the garrison needed. But Joab effected an entrance by climbing up the *tsinnor*, translated "watercourse" in the R.V. (2 Samuel v. 8). The word appears to be of Hittite origin. The Jebusites had a vertical shaft by which they drew water from the spring of Gihon up into the fortress. This shaft was discovered by Sir Charles

Warren, and it has been supposed that by this means Joab got into the town. It is an exceedingly difficult climb, though it was successfully accomplished by some British officers in 1910. It would only bring the besiegers into the lower city, not into the citadel. According to Garrow Duncan,[1] there is a cave running for 75 feet under the city, with a funnel-shaped opening leading into the area where the citadel probably stood. The Jebusite wall, with pottery of the time of David, has been unearthed, with a breach battered in and later rebuilt. He suggests that this cave may have been the *tsinnor*, and the breach made by Joab's party to let in the main army.

Some remains have been found at Jerusalem of the ancient walls. It is difficult to date them, but some of the oldest go back in all probability to the time of Solomon, or even to the days of the Jebusites. Sir Charles Warren found the foundation-stones of the temple, still numbered with the Phœnician marks of Solomon's Gebalite masons (1 Kings v. 18, R.V.). One of the corner-stones, resting on bed-rock, was 26 feet long, 6 feet high, and 7 feet wide, composed of hard limestone, weighing over a hundred tons. New Testament allusions suggest that the builders did not know what to do with one of these huge stones, but it eventually became "the head of the corner".[2]

Discoveries at Samaria

An American exploration party, from Harvard University, commenced in 1908 the excavation of the remains of the Samaria of the times of Omri and Ahab, though their identification is not universally accepted as proven. They opened up what they consider to be the ivory palace built by Ahab (1 Kings xxii. 39). They found, in accordance with the Biblical statement, that Samaria was not older than the period of Omri. There were some good carved ivories, and potsherds bearing the name of Baal. In a list of Ahab's stewards, the name of Obadiah was found. Only one gate is mentioned in the Bible, and only one gate has been unearthed. The pool is still to be seen in which Ahab's chariot was

[1] Garrow Duncan, *The Accuracy of the Old Testament.*

[2] For a summary of the history of excavations at Jerusalem, and of the ancient walls and gates, see article "Jerusalem," by E. W. G. Masterman, in *International Standard Bible Encyclopædia.*

washed after his death. The masonry of the palace was very good. The numerous pottery fragments sometimes bear ink inscriptions, in old Hebrew script.[1]

The Moabite Stone

Readers of the Bible will remember a story that when Ahab died one of his underlings, Mesha, the King of Moab, who was a sheep-master, threw off the yoke of Ahab's son Jehoram and refused to pay tribute. The Kings of Israel, Judah and Edom attempted to bring him again into subjection, and besieged him in his capital city, where he was reduced to such straits that he offered up his son on the wall as a burnt offering to Chemosh, the god of the Moabites (2 Kings iii. 27). What followed is not very clear, but it is not claimed that the siege was successful, but rather implied that the three kings had to give up the enterprise as a failure. It cannot be described as a modern discovery, but we include for the sake of completeness the strange incident of the Moabite stone. In 1868, a German named Klein found at Dibon in the land of Moab an inscribed stone, which he recognized as important and wished to purchase, but had to go to Europe to raise sufficient funds. When he returned, he found that the Arabs had roasted the stone and thrown cold water over it to break it into pieces so as to exact a larger price for them. Fortunately, a French dragoman at Jerusalem, M. Clermont-Ganneau, had taken an impression of the intact stone, so that it was possible to restore the fragments and read the inscription. The stone is now (or was at the beginning of the war in 1939) at the Louvre in Paris. It is written in an early form of the Phœnician alphabet, and describes how it was set up by Mesha, King of Moab, to show how by the help of Chemosh his god he had thrown off the yoke of the house of Omri, King of Israel. A number of Biblical place-names are mentioned, and the God of Israel is called Yahweh. It is very remarkable indeed that such a memorial should survive, to commemorate one of the very few incidents in the history of Moab of which we have any knowledge.[2]

[1] Jack, *Samaria in Ahab's Time*, 1929; Crowfoot, *Early Ivories from Samaria*, 1938.

[2] Article "Moabite Stone," by A. H. Sayce, in *International Standard Bible Encyclopædia.*

Assyrian Discoveries

Our story now moves away from Palestine and its frontiers, and we begin to obtain quite a considerable amount of information, again not very recent, but of great value and importance, from the records excavated from the great cities of Assyria and Babylon. Many archæologists have contributed to these discoveries. Of British workers in this field, the earliest and one of the most successful was Sir Austin Layard. He began digging at Calah, and laid bare what had been the palace of the Assyrian monarch Ashur-nasir-pal, a name unfamiliar to Bible readers. The story has often been told of how his Arab diggers came upon the great human-headed bulls carved in stone that had never been seen by the eye of man for about 2,500 years; how the labourers ran for their lives and cried that they had found Nimrod himself; how the Arab sheikh in charge announced, "This is not the work of men's hands, but of those infidel giants of whom the Prophet (peace be with him!) has said that they were higher than the tallest date-tree. This is one of the idols which Noah (peace be with him!) cursed before the Flood." These marvellous finds, and many others, were floated down the Tigris, brought to England, and placed in the British Museum. Not long afterwards, and not far away, Layard obtained the black obelisk of Shalmaneser III, with a sculpture showing Jehu, "son" of Omri, King of Israel, offering tribute. This may be Jehu himself, or his ambassador. Other Jewish kings who are mentioned by name in the Assyrian records include Ahab, Hezekiah, Manasseh, Menahem, Pekah and Hoshea, as well as Hazael of Syria. All the Assyrian kings mentioned in the Bible appear in the monuments, with copious details of their predatory campaigns. The siege and capture of Samaria by Shalmaneser and Sargon is described, and the number of captives is given as 27,280. It will be recalled that the Book of Kings states that the siege was begun by Shalmaneser and lasted three years, but it does not say which king completed it; indeed, Sargon is only mentioned in the Bible in Isaiah xx.

The incident in Jewish history which is related most fully both by the Bible and by the Assyrian monuments is Sennacherib's invasion in the days of Hezekiah. The bas-relief portraying the siege of Lachish has already been mentioned (see Isa. xxxvi. 1, 2).

The story of the siege of Jerusalem is given in a large six-sided prism of the year 686 B.C. After describing the capture of Ekron, it goes on: "I besieged Hezekiah of Judah, who had not submitted to my yoke, and I captured forty-six of his strong cities and fortresses and innumerable small cities which were round about them, with the battering rams and the assault of engines and the attack of foot-soldiers, and by mines and breaches. I brought out therefrom 200,150 people, both small and great. . . . Himself Hezekiah like a caged bird I shut up within Jerusalem, his royal city. I threw up mounds against him, and I took vengeance upon any man who came forth from his city. . . . The majesty of my sovereignty greatly overwhelmed Hezekiah, and the Urbi and his trusty warriors, whom he had brought into his royal city of Jerusalem to protect it, deserted. And he despatched after me his messenger to my royal city of Nineveh to pay tribute and make submission, with 30 talents of gold and 800 talents of silver." The tribute is given in the Book of Kings as 30 talents of gold and 300 talents of silver, but there is independent evidence that the Jewish talent was more than double the weight of the Assyrian talent. It will be noted that the tablet does not claim that Jerusalem was captured. Nor does it mention the disaster that befell the Assyrian army shortly afterwards, when the angel of the Lord went forth and smote in the camp of the Assyrians a hundred and fourscore and five thousand, and when Israel arose early in the morning the Assyrians were all dead. Dictators who thrive on wars of aggression do not broadcast disasters to their arms. The destruction of the Assyrian army is, however, confirmed by Herodotus from Egyptian sources; he gives the curious explanation that mice were responsible for the catastrophe. The mouse was the symbol of the pestilence. Confirmation also comes from the Chaldean historian Berosus.[1] Certain infective diseases are capable of bringing about a disaster of this magnitude and suddenness—for instance, cholera or, more particularly, bubonic plague.

Incredible as it may sound, we even know what Sennacherib looked like, from his inscriptions. He was a powerfully built man with a big nose, square-cut hair and beard. The Assyrians who suffered so much persecution about twenty years ago in Northern

[1] Herodotus ii. 141; Josephus, *Ant. Jud.*, X., i., Section 5.

Iraq have much the same facial appearance even now. The Bible relates the end of his reign, how Adrammelech and Sharezer his sons smote him with the sword while he was worshipping in the house of Nisroch his god, and escaped into the land of Armenia, and Esarhaddon his son reigned in his stead (Isa. xxxvii. 38). Campbell Thompson has found at Kuyunjik a prism of Esarhaddon, which states: "Thereafter my brothers went mad, and did everything that was wicked against gods and men"; and so on.

The ruins of Nineveh show the thorough destruction by fire and assault so vividly described by the prophet Nahum. "Where is the dwelling of the lions, and the feeding place of the young lions? The gates of thy land shall be set wide open unto thine enemies; the fire shall devour thy bars. There shall the fire devour thee; the sword shall cut thee off." Truly Nineveh, with its corridors of lions and human-headed bulls, was aptly named the dwelling of the lions, though no doubt the main reference is to the warlike emperors and their cruel armies.

The Hittites

It used to be put to the discredit of the writer of the Book of Kings that he spoke of the Hittites as though they were a power like the Egyptians, capable of being formidable to the Syrians, whereas they were only one of seven little tribes in Canaan (2 Kings vii. 6). But modern research has shown that the Hittites were once a great nation. At Boghaz Keui, in Asia Minor, one of their ancient capitals, a large number of sculptures, tablets and inscriptions have been found, representing the art and civilization of the Hittite empire. Their sculptures have been found as far west as the Ægean Sea. They came originally from the mountains of Cappadocia, and even when they spread to warmer climates, as far as Carchemish on the Euphrates and all over Asia Minor, they wore their turned-up snowboots and peaked hats. Their facial appearance was characteristic, and ugly. It is only recently, and that imperfectly, that their inscriptions have been deciphered. It will be remembered that Ephron in Abraham's time, and Uriah, one of David's captains, were both Hittites.[1]

[1] For details, see A. H. Sayce, *The Hittites*, 1925; *Encyclopædia Britannica*, article "Hittites" by Professor F Hrozny.

Hezekiah's Tunnel

To return to discoveries in Palestine. In 1880, a native boy fell into the pool of Siloam, and found some writing carved in stone in a tunnel. It was investigated by Dr. Schick. It was only roughly scratched on a smooth rock surface, and consisted of six lines of ancient Hebrew script, giving the story of the excavation of a tunnel through the rock under Jerusalem, and how the two parties of sappers digging from opposite ends met in the middle, "pick to pick", so that the waters flowed through, a distance of 1,200 cubits. The writing resembles that found on pottery of the time of the Hebrew monarchy. According to the Book of Kings, when Hezekiah anticipated the siege of Jerusalem by Sennacherib, he was much concerned about the water-supply. The principal spring, called Gihon, was outside the city, so "Hezekiah also stopped the upper spring of the waters of Gihon, and brought them straight down on the west side of the City of David." "They stopped all the fountains, and the brook that flowed through the midst of the land, saying, Why should the kings of Assyria come and find much water?" "He made the pool, and the conduit, and brought water into the city" (2 Chron. xxxii. 30; 2 Kings xx. 20). The discovery of the Siloam inscription led to that of the tunnel itself, running from the Gihon spring (the Virgin's Fountain as it is called to-day) through a winding passage, 1,700 feet long, still conveying the water to the pool of Siloam. There is no reasonable doubt that this is the work of Hezekiah's sappers. The inscription was removed by clumsy or mischievous hands and damaged, but has been put together, and now rests in the museum at Istanbul. The name Siloam means "sent", or "conducted", which probably refers to the fact that the water is artificially derived from the distant Gihon spring. Excavations at the pool by Bliss show that in New Testament times it was quite large, cut in rock, 71 by 75 feet, with a splendid flight of steps on the west, and two arcades by the side of it, one perhaps for men and another for women. To this pool our Lord sent the blind man to wash, and recover his sight.[1]

[1] Article "Siloam," by E. W. G. Masterman, in *International Standard Bible Encyclopædia*.

The Lachish Letters

There is a rather unfamiliar story in the Book of Jeremiah (Jer. xxvi. 20-23) about the prophet Uriah, the son of Shemaiah, who prophesied judgment against Jerusalem in the time of King Jehoiakim, and who when threatened with death fled to Egypt, but was brought back by Elnathan and others, and slain with the sword. In January, 1935, the so-called "Lachish letters" were found in the debris of the gate-tower of that city. They are written in ink, on fragments of pottery, in what is called the Phœnician Hebrew script, like the Siloam inscription. There were eighteen of them, some very imperfect. They have been deciphered and described by Professor Torczyner of Jerusalem.[1] They present some personal correspondence, dating from the time of Jeremiah. The language is pure Biblical Hebrew. Some of the personal names used (Gemariah, Jaazaniah, Jeremiah, Mattaniah, Neriah, Elnatan, Ahijah) sound very familiar to readers of the Old Testament. God is referred to as Jahweh. Professor Torczyner thinks that some of the letters refer to the Uriah who fled into Egypt, and that the Elnatan of the Lachish letters was the king's messenger who went to Egypt to fetch him. This is perhaps a little uncertain, but the letters are a most interesting contemporary record of a period concerning which archæology has had almost nothing to show up till now.

Nebuchadnezzar and Babylon

A good deal has been discovered to throw light on Nebuchadnezzar (more accurately, as in the Book of Jeremiah, Nebuchadrezzar) and his chief city, Babylon.[2] He was a great builder, and bricks stamped with his name are widely distributed over the region of the Tigris and the Euphrates. Some have reached the British Museum. The general layout of the city of Babylon is known. The great gate of Ishtar and the enormous royal palace

[1] H. Torczyner, *The Lachish Letters*; Sir Charles Marston, *The Bible Comes Alive*, chapters ix., x.

[2] For a popular account, see *Nebuchadnezzar*, by the well-known French journalist Mme. Geneviève Tabouis. The book contains a portrait thought to be that of Nebuchadnezzar in his youth, from a coin in the Berlin Museum. It is a very English face.

were dug up by a German expedition from 1899 onwards. The front and passage-way of the gate were lined with rows of bulls and dragons, about 570 of them, in coloured enamelled brick. These are now in the Berlin Museum. Lengthy inscriptions have been found describing how Nebuchadnezzar built walls, temples and palaces. The like had never been seen before in any country. An immense volume of slave labour, derived, no doubt, from conquered peoples, must have been mobilized to build so much and in so short a time. We seem to hear an echo of this in the prophecy of Habakkuk: "Woe to him that getteth an evil gain for his house, that he may set his nest on high; that he may be delivered from the hand of evil! For the stone shall cry out of the wall, and the beam out of the timber shall answer it. Woe to him that buildeth a town with blood, and stablisheth a city by iniquity! Behold, is it not of the Lord of hosts that the peoples labour for the fire, and the nations weary themselves for vanity?"

There is a prophecy in the Book of Jeremiah warning the Jewish remnant, left after the bulk of the nation had been destroyed or carried away by Nebuchadnezzar, that they should not think to escape him by going down into Egypt (Jer. xliii. 8-13). He announced that the Babylonian king would follow them there, and set his throne upon the pavement at the entry of Pharaoh's house in Tahpanhes. As a witness of this, the prophet laid some great stones in the mortar of the pavement, just where Nebuchadnezzar would sit as a conqueror. This very pavement and palace were uncovered by Sir Flinders Petrie at Tell Defferneh, ten miles west of the Suez Canal, in 1886: "On the N.W. side was a great open-air platform of brickwork. . . . A space reserved outside the door, covered with hard-beaten mud, edged with a border of bricks. . . . This platform is no doubt that of which Jeremiah speaks as stretching out at the entrance of Pharaoh's house, and here Nebuchadnezzar spread his royal pavilion. Strange to say, in corroboration of the actual presence of Nebuchadnezzar at Tahpanhes, three cylinders of terra-cotta, the text of which was an inscription of Nebuchadnezzar about his buildings in Babylon, were sold some years ago to the Cairo Museum by a native, who seems to have found them at this place, where they were probably put under the now ruined

part of the platform to commemorate the visit of the great king."

No one who understands anything of the mentality of dictators would expect the royal archives to give any details of Nebuchadnezzar's madness, especially seeing that he recovered from it. But it is noteworthy that there is a gap in the history of his later years, and a good while ago a damaged inscription was found, which Sir Henry Rawlinson translated as follows: "For four years the seat of my kingdom in the city . . . which . . . did not rejoice my heart. In all my dominions I did not build a high place of power; the precious treasures of my kingdom I did not lay out; in the worship of Merodach, my lord, the joy of my heart; in Babylon the city of my sovereignty and the seat of my empire I did not sing his praises, and I did not furnish his altars; nor did I clear out the canals." It may well be that this very unusual and strange confession refers to the period of madness, though it is not clear how the "seven times" of the Book of Daniel and the "four years" of the inscription are to be reconciled. A "time" does not of necessity mean a year.

The critical view of the Old Testament looks upon the Book of Daniel as written long after the events it describes, and as quite unreliable historically. It purports to be a prophecy uttered between 606 and 534 B.C., but it has been widely regarded as written not earlier than 165 B.C. The evidences given for this conclusion are the detailed nature of the prophecies, which suggests that they are really written up after the event; the language of the book; and the "mistakes" in history. It would then be a late forgery by some pious Hebrew in the days of the Seleucid tyrants. Let us consider first the theory based on language. Professor Driver declares that "the Persian words contained in Daniel presuppose, the Greek words demand, the Hebrew support, and the Aramaic permits, a date after the conquest of Palestine by Alexander the Great" (332 B.C.). There are three Greek words in Daniel, all names of musical instruments. But the study of archæology tells us in no uncertain terms that there were the strongest bonds between Greece and the East all through what is known as the Ionic period of ancient Greek art (800-480 B.C.). On pottery and metal work we get an increasing

number of Eastern motives, such as the palmette, the lotus, panthers and lions, mingled with the mythical faun, the sphinx, the griffin, the harpy and other equally Oriental designs. This is sufficient to prove without the shadow of a doubt a strong artistic connection between Greece and the East long before the days of Daniel. So the theory that Greek words are out of place in a manuscript of the seventh century falls at once to the ground. It is now known that even in Nebuchadnezzar's time Greek craftsmen and mercenaries were working in Babylon.[1] The *fewness* of the Greek words is strong evidence for a date before the conquest by Alexander the Great. Another evidence for an early date is that some of the personal names are Babylonian.

As for the Aramaic words, the Elephantine papyri, mentioned below, finally dispose of any difficulty on that score. When the Greek translation (Septuagint) came to be made, four or five words in the Book of Daniel were so obsolete that their meaning was lost.[2]

What more particularly concerns us just now, however, is the question as to whether the history of the Book of Daniel is at fault. It is the fifth chapter which is regarded as the most obviously unhistorical section in the Old Testament.

The errors which have been alleged against it are:

(1) There was no such person as Belshazzar known to secular history.

(2) The last king of Babylon was Nabonidus, who was not a descendant of Nebuchadnezzar, and was not killed in Babylon, but taken prisoner.

(3) There was no siege of Babylon, no assault, and no ruler was slain.

(4) History does not know any Darius the Mede; Cyrus himself was the new ruler.

All this looks very formidable, no doubt, but let us examine into it. Our older authorities were the long-known Greek histories by Xenophon and Herodotus, which do not mention Belshazzar, but describe the taking of Babylon by Cyrus, who is said to have diverted the waters of the Euphrates so that his soldiers

[1] Boutflower, *In and Around the Book of Daniel*, 1923.
[2] StClair Tisdall, *Journ. Trans. Victoria Institt.*, 1921, liii., p. 206.

could enter by the river-bed. The Annalistic Tablet of Cyrus, found in 1880, does mention Belshazzar by name, tells how Nabonidus, the king and Belshazzar's father, was taken prisoner in Babylon without fighting; that three months later Cyrus entered Babylon; that Gobryas was made governor, and that eight days later he made a night assault (?) and the king's son was slain (?). The tablet is broken at the end, and the last few words are not quite certain. New evidence has come to light to reinforce this; some merchants' contract tablets for that year have been found, which show that even up to the 10th of Marchesvan, the very day before the king's son was slain, Nabonidus was regarded as still king. There is another contract tablet in the British Museum, dated 24th of Marchesvan in the accession year of Cyrus.

The clue to the riddle seems[1] to be that Babylon, as is now known from excavations, was in two parts, separated by the Euphrates; the king's palace was on the eastern side. Evidently, putting all our information together, Gobryas entered the western part of the city without fighting, and, finding Nabonidus there, took him prisoner; Belshazzar still held out in the eastern parts of the city for three months, and the merchants still dated their tablets as in the seventeenth year of Nabonidus. His father being a prisoner, Belshazzar was virtually king. During those three months the Persians were digging to divert the river; then Cyrus came, and on the night of the 11th of Marchesvan, whilst Belshazzar's feast was in progress, the enemy was wading in through the now shallow waters, and he was found standing sword in hand in the palace hall, and was slain. The governorship was deputed by Cyrus to Gobryas, or possibly to Cyaxares,[2] a Median of royal blood. One or other of these must be Darius. It now becomes clear why Belshazzar could only reward Daniel by making him the *third* ruler, he himself being only second. Why he is called the "son" of Nebuchadnezzar we do not know, but it is at least a possibility that the influential queen who figures in Daniel v. may have been daughter to Nebuchadnezzar and mother of Belshazzar,

[1] Robinson, *Journ. Trans. Victoria Instit.*, 1914, p. 9.

[2] For a defence of the Cyaxares theory, see Craig Robinson, *Journ. Trans. Victoria Instit.*, 1922, liv., p. 1.

having married Nabonidus. The latest authoritative writer on the subject, Dr. Dougherty,[1] after collecting all the known historical records and comparing them, concludes that "the fifth chapter of Daniel ranks next to cuneiform literature for accuracy. . . . May be interpreted as excelling."

Dr. Montgomery, after writing on Daniel for the *International Critical Commentary* on critical lines, was constrained in the light of further evidence to admit that "archæology has inspired a considerable revival of the defence of the authenticity of the book, and . . . exhibits the reaction towards the recognition of a far greater amount of historical tradition in the book than the older criticism had allowed it". He speaks of "excellent modern scholars defending the traditional position".[2]

But, it may be objected, whatever the facts may be about the language and history of the Book of Daniel, there can be no doubt about its late date because of its narration of wars between Syria and Egypt, running up to the time of Antiochus Epiphanes, which is bound to be history, not prophecy, and therefore written after the event. To this the reply is that, although we may find it not easy to understand why prophecy should interest itself so extensively in this period (unless, indeed, it is a foreshadowing of some events yet to come), the Book of Daniel does foretell the future, and that in an unmistakable manner. The world-image with the head of gold, the breast and arms of silver, the belly and thighs of brass, and the legs of iron, forecast the empires of Babylon, Medo-Persia, Greece and Rome. The four beasts out of the sea, the lion, the bear raised on one side, the leopard with four heads and four wings, and the fourth beast dreadful and terrible, with great iron teeth, represent the same succession. The little horn out of the he-goat, in the next vision, does refer to Antiochus Epiphanes, the great persecutor, but as long ago as the time of Josephus,[3] in the first century, it had been recognized that the earlier visions refer to Rome. They are therefore predictions of the future even if the book is as late as Antiochus Epiphanes.

[1] Dougherty (Professor of Assyrian at Yale), *Nebuchadnezzar and Belshazzar*, 1929.

[2] "Daniel," *International Critical Commentary*, pp. 58, 109.

[3] Josephus, *Antiq. Jud.*, Book X, ch. xi., par. 7.

To escape the predictive element, critics have been forced to interpret the four kingdoms as Babylon, Media, Persia and Greece. There are other explanations, but this is the favourite. But it is quite impossible. There was no separate Median empire; Daniel always speaks of the Medo-Persian rule as one. The bear was raised on one side because the Persian dominated the Median. The Greek empire of Alexander the Great split into four after his early death; hence the leopard with its four heads and wings must be the Grecian dominion. The four heads represent Greece, Syria, Egypt and the East. So the fourth beast must be Rome. Verse 8 rules out Antiochus himself; besides, he never had a world-empire like the others (in our view, verse 8 is future).

There is another prophecy even more remarkable. It foretells the death of the Messiah, and the date when this shall occur (Dan. ix. 24-26). The starting-point is to be the going forth of the commandment to build Jerusalem. The period is 69 "weeks" —that is, sevens of years. After this time, "Messiah shall be cut off". The commandment to build the walls of Jerusalem was given by Artaxerxes, King of Persia, in his twentieth year (Neh. ii. 1). That was 445 B.C. (so Ewald, Sayce and the general consensus of historians). Now, $69 \times 7 = 483$, and it looks at first sight as if this gave a terminal date of A.D. 39, which is too late. But a correction has to be made because the Greek year was 365 days, but the prophetic year of the Jewish calendar was 360 days. This is well known (*cf.* Rev. xii. 14, "a time, and times and half a time"—*i.e.*, $3\frac{1}{2}$ years; Rev. xiii. 5, "forty and two months"; Rev. xii. 6, 1,260 days. See also Gen. vii. 10, viii. 3, 4, where 150 days equals 5 months). But $5 \times 483 = 2{,}415$ days $= 6{\cdot}6$ years, bringing the time down to A.D. 32, the probable date of the Crucifixion (the Lord's ministry began in the fifteenth year of Tiberius, and apparently lasted $3\frac{1}{2}$ years—*i.e.*, A.D. 29 to 32). Certain authorities differ somewhat on the subject of New Testament chronology, but the prophetic period is evidently very close, and some calculations work it out to the very day.

The long prophecy concerning the destruction of Babylon in Jeremiah l. and li. is so vaguely expressed that it does not read like history written up after the event, and the symbolic action wherein the prophet's messenger was told to take the written doom to

the city, to bind a stone to it, and cast it into the river Euphrates, saying, "Thus shall Babylon sink and shall not rise again," is obviously intended to be a prophecy of something future. Nevertheless, certain details are given, which history and archæology have confirmed. Her sea was to be dried up (li. 36), referring to the deflection of the waters of the river. The city was to be destroyed by fire: "I will make thee a burnt mountain" (li. 25); the bricks of the towers are still to be seen, vitrified by great heat. The desolation was to be final, and so it remains to this day.

Later Egyptian Discoveries

We have some remains of the Jewish colonies which fled to Egypt and Ethiopia at the time of Nebuchadnezzar's invasion. In 1904, at Assouan, some papyri in Aramaic came to light, and during the next few years a Berlin expedition recovered more. These reflected the life of a Jewish colony on the island of Elephantine. The date is around 494 B.C. The papers are business documents and accounts. Many names are the same as those of Old Testament worthies—Nathan, Isaiah, Zechariah, Gedaliah, Haggai. Their worship was a debased form of Judaism, but they had a temple, kept the Passover, and offered various Levitical sacrifices. Mixed with this was a good deal of superstition. There is some evidence that descendants of this Jewish colony are still living in Abyssinia, called Falashas. They still keep the Passover and other Levitical sacrifices.

All this goes to show, first, that the Levitical offerings were well established before the Babylonian Captivity, and that the use of Aramaic in the Books of Daniel and Ezra is just what one would expect if they were written in the early Persian period, in spite of the statements of the critics to the contrary.[1]

The Persian Period

We have now arrived at a stage when Greek writers of history, whose works have been known for centuries, throw much light on the scene, and the dim lamp of archæology becomes of only minor importance. In the Book of Ezra, a number of Persian

[1] StClair Tisdall, *ibid.*; Politeyan, *Biblical Archæology and Hebrew Vocation*, 1930, p. 91.

monarchs are mentioned, and there is fair agreement as to the names under which they appear in Greek history. Thus we have Cyrus, founder of the Persian empire, mentioned in Ezra i., who made a decree that the Jews who wished to do so might return to their home and follow their own religion. There is evidence that this was part of a settled policy. Sir Leonard Woolley found a cylinder of Cyrus in one of the latest deposits at Ur of the Chaldees, speaking of Sin the moon-god, "And I returned the gods to their shrines." It seems that Nabonidus had carried them away to Babylon. The next king was Cambyses. He was followed by a usurper, Gomates or pseudo-Smerdis. There is difference of opinion as to the identification of the Ahasuerus and Artaxerxes of Ezra iv. 6 and 7. It has been suggested by Ewald that they were Cambyses and Gomates, but this seems improbable. Gomates was slain by Darius Hystaspes, and the building of the temple, which had been stopped, was resumed under the exhortations of the prophets Haggai and Zechariah. In the disorders, the original decree of Cyrus had been lost sight of, and only came to light after search at Achmetha—that is, Ecbatana—the Median capital of Cyrus (Ezra vi. 1, 2). It was this Darius who carved the great trilingual inscription at Behistun, which, as we have seen, gave Sir Henry Rawlinson the key to the cuneiform script. Xerxes, famous for his invasion of Greece, followed, and next came Artaxerxes Longimanus. These are probably the two kings named in Ezra iv. 6, 7.[1] It was Artaxerxes who allowed the Jews to return under Ezra (Ezra vii. 1), and in his twentieth year sent his royal cupbearer, Nehemiah (Neh. ii. 1), to build the walls of Jerusalem. The Darius of Neh. xii. 22 would be Darius Nothus. This is confirmed by the Sachau papyri, written in the twentieth year of this Darius, which mention the sons of Sanballat, governor of Samaria, and Jehohanan (Johanan of Neh. xii. 22) as high-priest at Jerusalem.[2]

The Ahasuerus of the Book of Esther is generally believed to be Xerxes, his Hebrew name being a close transliteration of his Persian name. It may be that Esther is his queen Amestris. She

[1] J. Stafford Wright, *Evangelical Quarterly*, January, 1940.

[2] Dick Wilson, articles "Artaxerxes," "Darius," "Ezra," in *International Standard Bible Encyclopædia*. Gives a list of authorities.

is described by Herodotus as a cruel woman. This may be libellous. At first sight the overbearing and unreasonable conduct of the king and the rigid court customs read more like romance than history, but they are true to what we know from other sources. French excavators have laid bare the ruins of the palace of Xerxes at Persepolis, and found that the lay-out agrees well with the descriptions of the book, although it was destroyed by fire within thirty years of Xerxes' time, and a later writer would not know it. They found the remains of the pillars on which the awnings were hung in the court of the garden of the king's palace (Esther i. 5, 6). The inner court where Esther stood was over against the king's house (Esther v. 1), and the king would be able to see her there from his lofty throne in the centre of the farther wall, by looking over an intervening screen. Other details, such as the king's passing from the queen's banqueting-house into the garden, show an exact acquaintance with the palace as it then was. The royal colours as described in the Book of Esther were white and blue; this we have also learned from other sources. The highly-organized postal system, the king's scribes, and the keeping of the chronicles, are also in accord with modern discovery.[1]

REFERENCES

The information is scattered over a wide field; many references are given in the footnotes. Fuller details are given in the following:

T. W. FAWTHROP: *The Stones Cry Out.*

SIR CHARLES MARSTON: *The Bible is True*, 1934; *The Bible Comes Alive*, 1934.

Articles in the *Encyclopædia Britannica* and in the *International Standard Bible Encyclopædia.*

---

[1] J. Urquhart, article "Esther" in *International Standard Bible Encyclopædia.*

CHAPTER X

ARCHÆOLOGY AND THE NEW TESTAMENT

THE light thrown by modern research and discovery upon the New Testament is of a different quality, as a rule, from that which we have been considering for the Old Testament. Digging for buried buildings or inscribed tablets helps us but little. There is far more to be learned from literary discoveries of lost books or fragments; from inscriptions on public monuments; from coins; or from a careful re-reading of the great classical texts. Such is the evidence to be passed in review in this chapter.

Researches into ancient geography have contributed much. Practically all the towns and villages of the Gospels can be identified. In the majority of cases, the modern Arabic names are not unlike the Bible names, but the resemblance is sometimes misleading. In many places in Palestine, the visitor can be reasonably sure that he is treading the same roads, and looking upon the same natural scenery, however much it may be modified by human activity or destructiveness, that were trodden by those Holy Feet, and loved by the One Who taught us and all men to see that Nature is the handiwork of our Father in heaven. The hills around the lake of Gennesaret, covered in springtime with scarlet anemones (*A. coronaria*), the colours of which Solomon's robe-makers strove in vain to emulate; the distant view of snowcapped Hermon away to the north; the steep place by the banks of the lake where the swine raced down, demon-possessed, to perish in the waters; the path leading up to Nain where He met the widow's son carried to his burial; the hill-top rising above Nazareth—these cannot have changed much even in nineteen hundred years. If anyone doubts this, let him visit Hadrian's wall, built in A.D. 122, somewhere in the wilder parts of its course—at Housesteads, for instance—and observe how it still fits exactly the present-day surface of the hills and valleys. No doubt Palestine in our Lord's time looked less desolate; the hills were often covered with forests, the valleys and plains better cultivated, the

towns and villages more prosperous; but the hills, rivers, valleys and main roads were the same.[1]

It is otherwise with the towns, and with the so-called "sacred sites". Jerusalem, for instance, has been destroyed and rebuilt so often, and the rubbish of centuries has so covered the ground and filled up the valleys, that its modern face would probably seem quite unfamiliar to the Apostles. Some of the "sacred sites" of the gospels are either spurious or changed out of all recognition by a mistaken piety. One likes to think that at least the cave at Bethlehem may be the birthplace of the Christmas story, but there is no certainty. We are compensated, to some extent, by the wonderfully full descriptions which have come down to us from classical authors, that enable us to see Rome, or Athens, or Corinth (amongst other places), as they must have displayed themselves before the eyes of Paul the Apostle and traveller.[2]

Actual digging in Palestine has revealed a little, but not much. Clermont Ganneau found in Jerusalem in 1871 a stone tablet, with an inscription in Greek forbidding Gentiles to pass beyond the balustrade dividing the court of the Gentiles from the court of the Jews. According to Josephus, there were several such warning notices, in various languages. The inscription reads: "No stranger may enter within the balustrade round the Temple and enclosure. Whoever is caught will be responsible to himself for his death, which will follow." It is now in a museum at Constantinople. It serves to remind us of the middle wall of partition that separated Jew and Gentile, which was broken down by the work of Christ. The Jews who nearly murdered Paul did so because they thought he had taken Trophimus the Ephesian past the balustrade. This or similar notices were no doubt exhibited in the Temple area in our Lord's time.[3]

The other excavation we shall refer to was at Tell Hum, the site of Capernaum. It will be recalled that the synagogue at

[1] Amongst many other descriptions, we may mention Sir G. A. Smith's *Historical Geography of the Holy Land*; and the writings of H. V. Morton. Also T. W. Fawthrop, *The Stones Cry Out*.

[2] See descriptions in Conybeare and Howson's *Life and Epistles of St. Paul*.

[3] There is a good description of Herod's Temple, mostly derived from Josephus, in *International Standard Bible Encyclopædia*, article "Temple," by W. Shaw Caldecott and James Orr.

Capernaum had a most unusual origin; it was built by a Roman centurion, who afterwards sent to the Lord for help because his favourite servant was very sick (Luke vii. 1-10). Preaching at Capernaum, in the synagogue, the Lord spoke of the Bread of God that came down from heaven, the manna in the wilderness. It is all the more remarkable, therefore, that the remains of a synagogue have been found at Tell Hum, built in the Grecian style with Corinthian columns, not at all like a piece of Jewish architecture. Stones were found therein sculptured with an ark, a pot of manna, Aaron's rod and vine-leaves, so that an illustration of the theme of the sermon was before the eyes of the audience. The evidence, it is true, is complicated by the fact that a later building was erected on the same site. The pottery remains at Tell Hum are of the period of the first century A.D.[1]

There are not many points of contact between the history and geography of the New Testament and what we know of the nations of the Roman world about that time, or at any rate not many points of contact that can be used for the confirmation or the criticism of the Biblical records. Such as there are mostly relate to events mentioned in the third gospel, or in the Acts of the Apostles, which are obviously by the same writer. Not very long ago this writer, declared by early Christian tradition to be Luke, was accused of gross inaccuracy everywhere. "About 1880 to 1890," says Sir William Ramsay, "the Book of the Acts was regarded as the weakest part of the New Testament. No one that had any regard for his reputation as a scholar cared to say a word in its defence." This charge of inaccuracy was also levelled at the third gospel. Two passages in particular came under criticism—Luke ii. 1-5 and Luke iii. 1. The latter can be dealt with quickly, so we will take it first. Our Lord's public ministry began, says the Gospel, when Lysanias was tetrarch of Abilene. We know of a Lysanias of Abilene about fifty years before this time, but history is silent about another Lysanias just where Luke places him, and the accusation is that he was fifty years out in his dating. The charge was weak, because we know next to nothing about the rulers of Abilene. But the question has recently been settled by

[1] R. A. S. MacAlister, *Palestine Exploration Fund Quarterly*, April and July, 1907.

the discovery at Abila of an inscription (C.I.G. 4521) which mentions a Lysanias as tetrarch, the exact title, during the reign of Tiberius Cæsar.[1] So far from being wrong, therefore, Luke has preserved an obscure historical fact.

The other passage under criticism states that when Jesus was born an enrolment was being made, the first, when Quirinius was governor of Syria; that this was as a result of a worldwide decree from Cæsar Augustus; and that as a result everyone had to go to his own city, which was the reason why Joseph and Mary were found at Bethlehem, where their ancestors of the lineage of David had lived. In reply to this the critics declared that history knew nothing of any such enrolment; that Quirinius was governor of Syria, and took up an enrolment in A.D. 6, which event Luke mistakenly puts at least ten years too early; and that it is preposterous to suppose that everyone should have to make a journey to register. To complicate matters, the second-century Christian writer Tertullian says that the census or enrolment at the time of Christ's birth was made when Saturninus was governor of Syria. It is strange that he should go out of his way to insert an apparent contradiction of Luke's gospel, which he knew very well. It is also strange that Luke should trouble to mention Quirinius, if there was any doubt at all about the facts.

Here was a tangle which, as a result of the labours of many scholars, not all Christian apologists, has been largely but not entirely straightened out. Chief in the field have been A. W. Zumpt and Sir William Ramsay. It is a large subject, here only dealt with briefly.[2] Let us begin with the long-known and unquestioned facts. It is certain that Jesus was born before the death of Herod the Great, and that this took place about March in 4 B.C. This is fixed partly by secular history and partly by an eclipse of the sun mentioned by Josephus as occurring just before Herod died. We also know that Saturninus became governor of Syria in 9 B.C., and that he was succeeded by Varus until just after the death of Herod. This seems to leave no room for Quirinius. But

[1] Quoted by J. M. Creed, *The Gospel according to St. Luke*, 1930.

[2] For further details, and references, see Sir William Ramsay, *Was Christ Born at Bethlehem?* and his *Recent Discovery and the New Testament.* Also article "Chronology," 1915, by W. P. Armstrong, in *International Standard Bible Encyclopædia.*

three pieces of evidence have come to light to show that we must find room for him somewhere. The first is, as Zumpt established, that somewhere between 3 B.C. and A.D. 2 Quirinius was the Roman general who conquered a tribe called the Homonadenses in Cilicia, and this tribe belonged to the jurisdiction of Syria. Sir William Ramsay thinks it was earlier, between 10 and 7 B.C. Further, in 1912, Sir William Ramsay found two inscribed stones at Antioch in Pisidia, mentioning Quirinius as a duumvir, apparently a complimentary office for the governor of the neighbouring province of Syria. The date appears to be about 6 B.C. And, thirdly, a much-defaced stone found at Tivoli refers to an official, who is thought by historians to be Quirinius, who was *legatus iterum Syriæ*, twice governor of Syria. The solution of the matter would seem to be that Quirinius was military and Saturninus civil governor of Syria when Christ was born. This would fit the facts, and reconcile the statements of Luke and Tertullian. Roman historians for this period of Augustus Cæsar's reign are singularly few and the records scanty, so there the matter must rest for the present.

We know rather more about the Roman census system. There are references in Pliny and Tacitus to a census in the years A.D. 35, 48, 61 and 74, roughly about every thirteen years. Actual census papers for 34 and 62 have been discovered in Egypt. A papyrus dating from A.D. 104 gives an order from a prefect of Egypt to this effect: "Seeing that the time has come for the house-to-house census, it is necessary to compel all those who for any cause whatsoever are residing out of their district to return to their own homes that they may carry out the regular order of the census."[1] As Ramsay points out, there are two methods of taking a census. The English method is to enrol everyone, wherever they happen to be, on a particular day. But this needs an army of officials, and the Roman emperors were not likely to take all that trouble. The other method is to make everybody go home, and stay there until they can be counted at leisure. Probably the government had an additional object in view, to tie labour to the land, as was done in mediæval England. In any case, Palestine

[1] Deissmann, *Light from the Ancient East*, p. 268; Milligan, *Greek Papyri*, p. 72.

was under Herod's semi-independent jurisdiction, and he may have had good reasons for making his subjects go to their ancestral homes. It may have appealed to their patriotic sense. We know that the second census taken when Quirinius again became governor led to something like a revolution (Acts v. 37; so, too, Josephus). It is true that the historians of the reign of Augustus do not mention this first census, but in the middle of the second century Justin Martyr confidently directed enquirers to the Roman registers, to confirm the statement made by Luke that Quirinius was governor of Syria when Christ was born. We may take this as conclusive evidence that the official documents were available, and consistent with his claim.

Points of contact between secular history and geography and the New Testament narrative become much more abundant in the Acts of the Apostles. A number of persons are mentioned by name: Annas, Caiaphas, Herod Agrippa I and II, Sergius Paulus, Gallio, Felix, Festus, Drusilla, Claudius; concerning all of whom we know something, little or much, from secular sources, and in each case the dating is correct, and the behaviour in keeping with the character so far as known. It is true that there is a real discrepancy between Gamaliel's reference to Theudas (Acts v. 36) and the mention of a Theudas by Josephus, who led an insurrection at least ten years later, when Cuspius Fadus was governor. This difficulty has never been solved; possibly there were two rebels at different times with the name of Theudas. It does not follow, even if Josephus and Luke do not agree, that it must be Luke who is wrong.

It was the Roman custom to govern the provinces of their far-flung empire by continuing as far as they safely could the local system of administration, and consequently the authorities in different districts went by many different names. No one, unless he were either an observant traveller or a painstaking student of records, could possibly give all these gentry their correct denomination. It is one of the most searching tests of Luke's historical sense that he always manages to achieve perfect accuracy. In several cases it is only the evidence of a coin, or an inscription, that has given us the necessary information to check him; the recognized Roman historians do not adventure themselves on such

a difficult terrain. Thus Luke calls Herod and Lysanias tetrarchs; so does Josephus. Herod Agrippa, who slew James with the sword and cast Peter into prison, is called a king; Josephus tells us how he became friendly at Rome with Gaius Cæsar (Caligula) and was rewarded with a royal title when Caligula came to be emperor. The governor of Cyprus, Sergius Paulus, is called proconsul (Acts xiii. 7, R.V. Greek *anthupatos*). Not long before, Cyprus had been an imperial province, and governed by a proprætor or legatus, but in Paul's time, as is shown by Cyprian coins, both in Greek and Latin, the correct title was proconsul. A Greek inscription found at Soloi on the north coast of Cyprus is dated "in the proconsulship of Paulus", probably the same as Sergius Paulus.[1] The magistrates at Philippi are called prætors. Philippi was a Roman colony, and the strictly correct title would be duumvirs, but, as Cicero tells us, these gentry liked to be called prætors. At Thessalonica the city magnates took the quite unusual title of politarchs, a name unknown to classical literature. It would be quite unfamiliar to us, except from Luke's use of it, if it were not for the fact that it appears in inscriptions. There was one such at Thessalonica, over the Vardar gate, giving this title to the seven magistrates. Amongst the names are Secundus, Sosipater and Gaius.[2] When the arch was destroyed, the British consul saved the fragments of the inscription and deposited them in the British Museum. Achaia under Augustus was a senatorial province, under Tiberius it was directly under the emperor, but under Claudius, as Tacitus tells us, it reverted to the senate, and therefore Gallio's correct title was proconsul. Gallio, whose original name was Marcus Annæus Novatus, was a well-known Roman officer, brother of Seneca the philosopher, who had a very high opinion of him. In 1908 a mutilated inscription was found at Delphi stating that the Emperor Claudius appointed Gallio to be governor of Achaia between the summers of A.D. 51 and 52. At Ephesus the prominent people in the narrative of Acts are the town-clerk and the Asiarchs ("chief of Asia"), but the mob were told that the law-courts were open to them, and the proconsuls

[1] Conybeare and Howson, *The Life and Epistles of St. Paul*; D. G. Hogarth, *Devia Cypria*.

[2] E. D. Burton, *American Journ. of Theology*, vol. ii., p. 598.

were sitting. All these officers are known to us from classical sources. The town-clerk was keeper of the archives, and public reader of decrees in assemblies. The Asiarchs were officers elected by the cities of Asia to preside over their games and religious festivals. An inscription found at Ephesus records how the senate of the Ephesians and its temple-adorning Demos consecrated a building in the proconsulship of Peducæus Priscinus, and by the decree of Tiberius Claudius Italicus, the town-clerk of the Demos.[1] It will be noted that not only the proconsul and the town-clerk are mentioned, but also the same Greek word is used, "temple-adorning", which in our version is translated "worshipper" (A.V.) or "temple-keeper" (R.V.). The same word, *neokoros*, occurs on Ephesian coins. The governor of Malta is called "chief man Publius", literally "first". This curious title also has classical authority. Two inscriptions, one Greek and the other Latin, have been found in Malta, at Citta Vecchia, which describe the governor in the same way, and this is confirmed by a further inscription from the nearby island of Gaudus.[2]

Luke is equally happy, equally accurate, in his geography and his travel experiences. Sir William Ramsay records how, when as a young man he had learned from his teachers to hold a very low opinion of the historical worth of the Acts of the Apostles, he was greatly impressed by a small geographical detail. Luke describes how Paul and Barnabas fled from a hostile mob at Iconium, and came to Lystra and Derbe, cities of Lycaonia. Ramsay hazards the very probable opinion that he remembered how they passed a boundary stone, and knew then that they were safe. The statement implies that Iconium, although it lay in the Lycaonian plain, was not a city of Lycaonia, and this indeed is the truth, as there is plenty of testimony to show. It was the capital of a separate territory in Paul's time; the people spoke the Phrygian tongue. Iconium did eventually become a city of Lycaonia in A.D. 372. Luke gives the names of so many towns, always correctly described, which he and Paul passed through in their travels that many of our Bibles contain maps to show the

[1] Boeckh, No. 2960. Quoted in Farrar's *Life and Work of St. Paul.*
[2] Quoted in Alford's *Greek Testament*, vol. ii. Also Boeckh, *C.I.G.*, No. 5, 745.

exact routes followed. He shows the true Greek love for the sea. He constantly, and for no apparent reason, gives the names of islands passed, tells on which side the ship sailed by, whether they ran in a straight course before the wind or whether they tacked, whether the wind was favourable or unfavourable, what ports served inland towns, in which direction the harbour looked, and so on. The account of the voyage from Palestine to Rome is a masterpiece. The able analysis by James Smith,[1] supported by a careful study of ancient ships and sailing, brings out in a fascinating manner the details of the ports touched, the direction of the wind, the fury of the storm, the fears of the sailors, the steps taken to save the ship, and much besides. The soundings given as Malta was approached agree with those in the Admiralty charts, and it is possible from the description to confirm the tradition that the ship came ashore in what is still called St. Paul's Bay. It has been objected that the story is inaccurate because there are no vipers in Malta. One might just as well dismiss as folklore all stories of old England that mention wolves, on the ground that there are none here now. Ramsay thinks that Luke was allowed to travel with Paul, in the character of physician-slave. One of the most exciting of Paul's adventures took place in Ephesus, where the silversmith Demetrius, maker of silver replicas of the famous temple of Diana, raised a riot and held a public demonstration in the theatre. This theatre has been dug up by J. T. Wood. It was, like all Greek theatres, open to the sky, and large enough to hold 25,000 people. The silver shrines of Diana are pictured on Ephesian coins. The temple, also, was without a roof. It had 127 pillars, each 60 feet high. A document has been found, dated A.D. 160, beginning: "Whereas Artemis [Diana], the goddess who presides over this city, is set at naught, not only in our native town, which she has made more glorious than all the other cities . . . so that in many places her sacrifices and honours have been neglected"; and so on. What Demetrius feared had come to pass. So mightily grew the Word of the Lord, and prevailed.

In a commentary which frequently finds fault with Biblical history, Bishop Gore writes: "It should, of course, be recognized

[1] Jas. Smith, *The Voyage and Shipwreck of St. Paul.*

that modern archæology has almost forced upon critics of St. Luke a verdict of remarkable accuracy in all his allusions to secular facts and events. Perhaps the greatest living authority on ancient history, Edouard Meyer, has called the work of Luke 'one of the most important works which remain to us from antiquity', and Meyer has certainly no prejudice in favour of religious tradition."[1]

There is not much in the Epistles which lends itself to archæological investigation, but a few discoveries of great interest have been made. Almost a hundred years ago, a market-gardener digging near the entrance of the Appian Way unearthed slabs of stone roofing a large vault bearing the inscription, "Vault for the members of Cæsar's household." There is evidence that the period of the interments was from some time during the life of Christ up to about A.D. 66. Now, we know that when writing from Rome to the Philippians, Paul concluded his letter with greetings from the saints of Cæsar's household. Evidently, therefore, some of them were Christians. The excavators were greatly interested to find a number of names in the vault familiar to us from Paul's letter to the Romans, and some of these names were not in frequent use. Amongst those recognized were Tryphæna, Tryphosa, Urbanus, Hermas, Stachys, Philologus, Julia, Patrobas.[2] Dean Howson speaks of his "start of pleasure" when he saw with his own eyes the names of Tryphæna and Tryphosa. Other burial-places, called *columbaria* from their resemblance to pigeon-cotes, have been found since, with urns of further members of the imperial "family", and among these also are names from Paul's list of greetings to Christians in Rome, including Amplias and Urban, mentioned together, and Apelles. These burials were rather later, but not so late as to exclude the likelihood of their being known to the Apostle. At one time the theory was advanced that the sixteenth chapter of Romans was no part of the original epistle, a reason given being that, as Paul had never visited Rome, he could not have so many friends there. But, as Bishop Handley Moule suggests, it is very probable that members of the imperial household were moved about in large

[1] Gore, Goudge and Guillaume's *New Commentary on Holy Scripture*, 1928.

[2] Lightfoot, *Excursus to Epistle to Philippians*, 8th edition, p. 171.

detachments, and they may have been first in Philippi, and converted under Paul's preaching or that of his friends, then moved to Rome. When, years afterwards, Paul wrote to the Philippians from Rome, they would be glad to take the opportunity to send a message back. One of Paul's friends at Corinth, present when he wrote the Epistle to the Romans, and sending a salutation, was Erastus, the chamberlain of the city. In 1929, Dr. Shear found at Corinth this inscription: "Erastus, procurator, ædile, laid this pavement out of his own private funds." There is no proof, of course, that all these interments and inscriptions relate to the persons mentioned in Paul's letter, but the association of uncommon names makes it highly probable, and the discoveries do at least show that persons of these names were alive at Rome, and in Cæsar's household, while Paul was on his travels. That being so, it is unreasonable to suggest that Romans xvi. cannot possibly have been addressed to Christians in Rome.

The evidence that the books of the New Testament, with the probable exception of the Epistle to the Hebrews (which is only ascribed to Paul by a late tradition), were written by the men whose names they bear in the English Bible is largely founded on considerations derived from the books themselves, and is outside our present objective. We are concerned with external evidence lately come to light. Internal evidence, however, speaks with no uncertain voice. The writer of the Third Gospel and of the Acts was plainly not an Apostle, but in touch with eyewitnesses of the Lord's works (Luke i. 1-4); he was a travel companion of the Apostle Paul; there are plain internal marks, from the language and the allusions, that he was a medical man; and we know that Luke is the only person mentioned in the New Testament who fulfils all these criteria. If the early Christians had wished to make the gospel respectable by attributing it to a famous author, they would have chosen someone better known than Luke. If anyone thinks the epistles to the Romans, Galatians, Corinthians and Second Timothy were not written by Paul, how can he explain the numerous personal allusions? And so we might go through the whole of the New Testament. But the early date of these books can be tested also by external evidence, and that of several kinds. There has been a renewed interest of late years in

the earliest Christian writings of the post-apostolic age. One of these, the Didache, had been supposed lost, but a copy was discovered about seventy years ago in a monastic library at Constantinople. More accurate texts of other early writings have also been published.

The most important of the early writings are the following:

(i) The *Didache*, or *Teaching of the Twelve Apostles*, discovered in 1873, and published by the Archbishop of Nicomedia in 1883. This most interesting book was written towards the end of the first century, and contains a remarkable picture of the customs of the Church at that very early date.[1]

(ii) *Epistle of Clement of Rome.*—Clement was one of the earliest bishops of Rome, and wrote his epistle before A.D. 120, probably in the year 95. The letter is a brief statement of Christian doctrine and practical exhortations.

(iii) *Letters of Ignatius.*—Ignatius was bishop of Antioch, and was dragged away to Rome to be martyred in the reign of Trajan. The dates given vary from A.D. 107 to 116. In spite of his age (he had been a bishop for forty years), he was cast to wild beasts in the amphitheatre on the last day of the games. He wrote his letters during the journey. They are largely a defence of episcopal authority.

(iv) *Epistle of Polycarp.*—The special interest of Polycarp's testimony is that he lived to unite two ages. He sat at the feet of the Apostle John, and he was himself the teacher of Irenæus. He was bishop of Smyrna, and was martyred in A.D. 155. The story is a very touching one. "Revile Christ, and I will release thee," said the pro-consul. The old man replied: "Six and eighty years have I served Him, and He has done me nothing but good, and how could I revile Him, my Lord and Saviour?" He was burnt at the stake, and his death hastened by a spear thrust.

(v) *Epistle of Barnabas.*—The date of this book is probably before A.D. 120, but there is no reason to believe that it was written by the Barnabas of the Acts; its fanciful interpretations of the Old Testament make this unlikely.

[1] It may be found translated and printed in full in Backhouse and Tylor's *Early Church History*. Recent research as to the date of the Didache has led to various conclusions. According to some, it was written several centuries later.

(vi) *The Shepherd of Hermas.*—This book, written about the middle of the second century, is a collection of visions, commandments and parables. The "Shepherd" is the "angel of repentance" who appeared to Hermas.

Now, none of the above remains of early Christian literature give us a treatise on the books of the New Testament; their quotations are incidental and fragmentary. But, according to a committee of the Oxford Historical Theology Society, reporting in 1905, the following quotations are classified thus:

A.—Quoted by name.
B.—Certainly quoted.
C.—Quotation fairly probable.
D.—Doubtful.

Didache:	B. Common synoptic tradition. C. Matthew. D. Luke, John, Acts, Romans, 1 Corinthians, Hebrews, 1 Peter, Jude.
Clement Rom:	A. Romans, 1 Corinthians, Hebrews. C. Acts, Titus. D. 2 Corinthians, Galatians, Philippians, Colossians, 1 Timothy, 1 Peter, 1 John, Revelation.
Ignatius:	A. 1 Corinthians. B. Matthew, John, Ephesians. C. Romans, 2 Corinthians, Galatians, Philippians, 1 and 2 Timothy, Titus. D. Mark, Luke, Acts, Colossians, Thessalonians, Philemon, Hebrews, 1 Peter.
Polycarp:	A. 1 Corinthians, 1 Peter. B. Romans, 2 Corinthians, Galatians, Ephesians, Philippians, 2 Thessalonians, 1 and 2 Timothy. C. John, Acts, Hebrews, 1 John. D. Colossians.
Barnabas:	B. Romans. C. Ephesians, Hebrews. D. Matthew, Luke, John, 1 and 2 Corinthians, Colossians, 1 and 2 Timothy, Titus, 1 Peter, Revelation.
Hermas:	B. 1 Corinthians, Ephesians. C. Matthew, Mark, Hebrews, James. D. Luke, John, Acts, Romans, 1 Thessalonians, 1 Peter.

Even this list is a very cautious one. For instance, Barnabas says: "Lest, as it is written, we be found many called, but few chosen." This would appear to be a definite quotation from Matthew, but Barnabas' references to Matthew are classified as D. Clement of Rome says: "Remember the words of our Lord Jesus Christ, how He said, 'Woe to that man; it were better for him that he had never been born, than that he should cast a stumblingblock before one of My elect. Yea, it were better that a millstone should be hung about (his neck), and that he should be sunk in the depths of the sea, than that he should cast a stumblingblock before one of My little ones' " (compare Luke xvii. 1, 2).

When we come to the middle of the second century, we have a more abundant and varied literature to draw upon, and the use of the Gospels and Epistles is therefore more evident. It will not be necessary to examine all the witnesses; we will confine ourselves to four—Papias, Justin Martyr, Tatian and the Muratorian canon.

Papias was bishop of Hierapolis in Phrygia, and somewhere about A.D. 140 to 150 (Westcott) wrote five books called *An Exposition of Oracles of the Lord.* These are lost, but Eusebius, the great Church historian, bishop of Cæsarea till about A.D. 340, has preserved for us some very valuable quotations. Papias had been a listener to the Elder John, perhaps not the same as the son of Zebedee, though we know nothing about this Elder except that Papias quotes him: "This also the Elder used to say. Mark, having become Peter's interpreter, wrote accurately all that he remembered, though he did not (record) in order that which was either said or done by Christ. For he neither heard the Lord nor followed Him, but subsequently, as I said, (attached himself to) Peter, who used to frame his teaching to suit (the wants of his hearers), but not as making a connected narrative of the Lord's discourses. So Mark committed no error, as he wrote down some particulars just as he (Peter) called them to mind. For he took heed to one thing, to omit none of the facts that he heard, and to make no false statements in (his account of) them." Papias further states that "Matthew composed the oracles in the Hebrew language, and each reader interpreted them as he could."[1]

[1] Eusebius, *Hist. Eccles.*, ii. 39 (Westcott's translation).

Justin Martyr was a Greek living in Palestine, and from his youth up was a seeker after truth. First he applied to a Stoic, but soon found that he learned nothing of God from him, and his master told him that such knowledge was unnecessary. Next he went to a Peripatetic, "a shrewd man in his own opinion", who annoyed his pupil by displaying too keen an interest in the price of his lessons, so that their intercourse might prove profitable to both. Then he tried a Pythagorean, but he expected from his pupils a prior acquaintance with music, astronomy and geometry. Not possessing this, Justin threw in his lot with a Platonist, and thought that he was growing wiser every day, when he met by the seashore an aged man, who led him from Plato to the prophets and from metaphysics to faith. "Pray before all things," were the parting words of this new teacher, "that the gates of light may be opened to you, for (these truths) are not comprehensible by the eye or mind of man, unless God and His Christ give him understanding." Which prayer is greatly needed to-day. Justin became an active teacher and writer, and several large books of his, dating from A.D. 146 to 148 (Hort; some put his death as late as 165), have been preserved to us. In these he refers repeatedly to the "Memoirs of the Apostles which are called gospels"; they contained a record of all things concerning Jesus Christ; they were universally admitted by all Christians and were read in all the churches; they were composed "by the apostles and those that followed them". This would briefly describe Matthew and John in the one category, and Mark and Luke in the other. His numerous quotations are undoubtedly taken from our four gospels, as Westcott has conclusively proved, though a few extraneous incidents are introduced (as that a fire lit up the waters of Jordan at the Baptism).

Tatian, a disciple of Justin's, composed about A.D. 170 a harmony of the four gospels in Syriac, called the Diatessaron (the name shows its fourfold origin), which was so popular in the Syrian churches that for a time it practically replaced the separate gospels, and they had to be reinstated by various bishops (Theodoret, Rabbula) early in the fifth century. This has come down to us in several forms (Arabic, Armenian, Latin) and proves to be a verbatim copy of our four gospels welded into one

narrative. Thus here we have another testimony to the universal and early acceptance of the four canonical gospels.

A fragment was discovered by Muratori, apparently a Latin translation by an ignorant scribe from a Greek original, written in the times of Bishop Pius I, and probably not later than A.D. 170, though Zahn and Salmon put it after 200. It is incomplete at the beginning, and commences in the middle of a sentence apparently referring to Mark's gospel; then it gives a list of the received books of the New Testament, including Luke, John, Acts, thirteen epistles of Paul which are named, Jude, two epistles of John, and the Apocalypse of John. It omits both Peter's epistles, 1 John, James and Hebrews, but there are chasms in the text of the fragment, so that the omission proves nothing. Certain other books are mentioned as of dubious authority (epistle to Laodiceans, Apocalypse of Peter, Shepherd of Hermas).

Even more striking, perhaps, than the uniform acceptance of our four gospels by the orthodox Churchmen is the fact that each gospel was accepted, sometimes to the exclusion of the others, by one or another of the early heretics. The Ophites, Basilides and the Clementine Homilies show an acquaintance with each of the four gospels and do not question their authority; Valentinus used the Fourth Gospel freely, and Marcion rested on St. Luke's gospel, though he rejected the others. He lived about the same time as Justin Martyr, but was older. Heracleon (early second century) wrote a commentary on St. John's gospel; he also mentions St. Luke.

And what do we learn from all this? That as far back as we have any clear evidence, our four gospels are accepted as authoritative, that they are without rivals, and that in the middle of the second century they are expressly referred to the men whose names they now bear. They were certainly in existence and unquestioningly received soon after the year A.D. 100; that we cannot trace them farther back still is simply due to the fact that no Christian writings are preserved in which they could be mentioned. There is no trace of any difficulty felt in the early Church about accepting them as by Matthew, Mark, Luke and John; the fact is quietly assumed everywhere as unquestionable, though, as we shall see, other New Testament books had a big battle for recog-

nition. It would be difficult to find an ancient document whose authorship is more conclusively proved by external evidence.

There is clear evidence that the Churches in the first three centuries jealously guarded the canon of the acknowledged books, and exercised a keen critical sense as to their authenticity and authority. Writer after writer says of the non-canonical books, even when they bore the name of an Apostle (Peter, Barnabas, etc.), that they were not acknowledged in the Churches. They were, if possible, keener on excluding uncertain books than on including all the truly apostolic writings. The Old Latin New Testament included all the books in the English version except Hebrews, James and 2 Peter. The Syriac New Testament included Hebrews and James, but omitted 2 and 3 John, Jude, Revelation and 2 Peter. No books which are not found in our New Testament ever gained any general acceptance as part of Holy Scripture. It is a remarkable fact that several of the oldest Christian writings expressly admit their inferiority to the genuine apostolic documents.

Although, as we have seen, seven books of the New Testament were only locally received at first, this seems to be due to the fact that they had not travelled to far-away districts, and not to any doubts as to their genuineness as apostolic writings. The personal nature and slightness of the two later epistles of John and the epistle of Jude no doubt account for their restricted circulation at first; nor is it surprising that James and Hebrews, being Jewish in type, should be earlier known in the East than the West. The difficulty about Hebrews was that no one knew who wrote it; Tertullian and the second-century Christians were as much in the dark as we are; but that it was published in apostolic times is certain, for it is quoted by Clement of Rome before A.D. 100, and it seems impossible that it could have been written after the fall of Jerusalem, or the cessation of the Jewish sacrifices must surely have been mentioned somewhere in the epistle, as furnishing the clearest possible evidence that the temple ceremonial had been superseded.

The most difficult book in the New Testament to defend is 2 Peter, because it was not generally received into the canon until the fourth century. Origen (A.D. 186-253) appeared to know it;

in a fanciful exposition of the fall of Jericho he speaks of Paul sounding on fourteen trumpets and Peter on two; in another passage he says that Peter perhaps left a second epistle. The real evidence for the book is internal, not external. The internal evidence that the book was written by Peter is very plain from the personal allusions (2 Pet. i. 1, i. 13-18, iii. 1), unless it is to be regarded as a particularly impudent forgery, but we shall not turn aside to consider it in detail here.

Light has been thrown upon the problems of the date and text of the books of the New Testament from yet another angle. The earliest writings known to archæology were upon potsherds, clay tablets, or stone. But in Egypt strips of the pith of the papyrus plant were gummed together to form a kind of paper, and much longer treatises became possible. These become diffused all over the Greek and Roman world. But papyrus is very perishable, and it is only under exceptional circumstances that it has survived to the present time. The singularly dry climate of Upper Egypt has been kind to it, and to us. Fragments, and even considerable books, have been discovered of late years in Egypt, in tombs, rubbish heaps, as wrappings for mummies, and in ancient libraries. Messrs. Grenfell and Hunt have been most assiduous and successful in collecting and deciphering these remains. Most of them, not all, are written in Greek, and the time of origin extends from the Ptolemaic period, two or three hundred years before Christ, up to six or seven hundred years after. A few papyri are very much older still. Some are literary texts, but the great bulk are private correspondence, receipts, business documents, government decrees, and so on. By study of these fragments, which run to many thousands, we know more about the intimate family and business life of the people of Egypt, over these centuries before, during and after New Testament times, than about any period of ancient history.

This new evidence has thrown considerable light upon the Bible. The writers of the gospels and epistles used to be accused by classical scholars of making many "mistakes" in their use of the Greek language; the papyri show that these books were written in the common speech of the people. The meaning of a number of New Testament words has been elucidated. A few

instances may be given, taken almost at random. The word translated "earnest" (*arrabon*) in Ephes. i. 14 occurs in a number of papyri in that sense; for instance, one reads: "Regarding Lampon the mouse-catcher. I paid him for you as earnest-money 8 drachmæ to catch the mice while they are with young." In modern Greek it means an engagement ring. The "bag" Judas carried was not a bag, but a money-box; the papyri several times use it in that sense. Paul asked the Galatians: "Who hath bewitched you?" A papyrus employs the same word (*baskaino*) as referrring to the superstition of the evil eye: "I pray that you may be in health unharmed by the evil eye." In Rom. iv. 16 we read: "That the promise may be sure." The word used (*bebaios*) is frequently used for legal security; for instance, "That the lease may remain guaranteed to us for the period of five years." Good Greek scholars used to maintain that the word (*diatage*) translated "ordinance" in Rom. xiii. 2 was a purely Biblical or ecclesiastical term, but it occurs in papyri and inscriptions; one example is, "I have sent the steward to make *arrangements* about the vintage."

Not many texts of the New Testament have been discovered amongst the papyri, and, with a few exceptions, the existing remains are mere fragments. Nevertheless, they are not without value. They are often older by a hundred years or more than the great Greek codices, the Vatican and Sinaitic, which are written on vellum and date from the fourth century. They serve to show that however far back towards the originals we go, the text of the books of the New Testament is approximately the same; such variations as do occur are no greater than those shown by the manuscripts on which the English Authorized and Revised Versions are based. One papyrus, now in the British Museum, published in 1935, is written in a hand dating from the first half of the second century, and contains a narrative, derived from all four gospels, of some episodes in the life of our Lord, rather freely rendered. For instance, "Ye search the Scriptures, in which ye think that ye have life; these are they that bear witness of Me. Think not that I am come to accuse you to My Father. There is one that accuseth you, even Moses, in whom ye hope." This is obviously a quotation from John's gospel. There is a tiny

fragment of John's gospel which was brought over in 1920, also in a writing of the first half of the second century, in the Rylands library. These two finds go a long way to confirm the probability that the gospel was written before the end of the first century. Ancient books took time to attain a wide circulation.

The most important of these manuscripts is that known as the Chester Beatty papyrus, published in 1931, and dating from the first half of the third century. It contains parts of the Old Testament, sections of all four gospels, the Acts, parts of the Epistles (placing Hebrews between Romans and Corinthians), and fragments of the Apocalypse. The text agrees with that of the Ferrar group, and the Washington codex, at any rate in Mark. This text appears to be the same as that used by Origen at Cæsarea, about A.D. 250. The group is therefore called the Cæsarean family. Evidently, even at this early date, one hundred years before the Vatican and Sinaitic manuscripts were written, there was a definite agreement as to what books were worthy to be included in the New Testament—that is to say, a canon of inspired books was already taking shape. Also, there was an interest in finding and preserving the authentic and original text.

REFERENCES

C. M. COBERN; *The New Archæological Discoveries*, 1924.
T. W. FAWTHROP: *The Stones Cry Out.*
SIR FRED. KENYON: *The Bible and Archæology*, 1940; *Our Bible and the Ancient Manuscripts*, 1939.
J. H. MOULTON and G. MILLIGAN: *The Vocabulary of the Greek Testament.*
SIR WM. RAMSAY: *St. Paul the Traveller ; Was Christ Born at Bethlehem?*; *Recent Discovery and the New Testament*, 1915.
ROBERTSON: *Luke the Historian in the Light of Research*, 1920.
JAS. SMITH: *The Voyage and Shipwreck of St. Paul.*

CHAPTER XI

RETROSPECT AND PROSPECT

IN view of the widely diverse character of the foregoing chapters, which may be of very unequal interest to the reader, it may be well to conclude with a recapitulation of the arguments. And we shall further enquire what useful end is served by a consideration of the more modern facts which bear upon the reliability of the Bible.

In the Prologue, we emphatically disclaimed any intention of trying to demonstrate the inspiration and accuracy of the Bible by an appeal to modern science or modern archæology. To quote the great authority of Sir Frederic Kenyon: "To my mind, the true and valuable thing to say about archæology is, not that it proves the Bible, but that it illustrates the Bible. . . . The contribution of archæology to Bible study has been to widen and deepen our knowledge of the background of the Bible narrative, and especially of the Old Testament. . . . The trend of all this increased knowledge has been to confirm the authority of the books of the Old Testament, while it illuminates their interpretation. Destructive criticism is thrown on the defensive; and the plain man may read his Bible confident that, for anything that modern research has to say, the Word of our God shall stand for ever."[1]

The true reasons for Christian faith in the Holy Scriptures are as old as the Book itself. They depend on considerations derived from its own claims, its moral power in history, its unity, grandeur and power of foretelling the future, the regard in which it was held by Christ and the Apostles, its personal ministry to ourselves, and much more of the same kind. But the idea has got abroad that men of learning, and especially the scientists, have discovered facts which make the Bible impossible of belief for anyone with

[1] Sir F. Kenyon, *Journ. Trans. Victoria Instit.*, 1941, p. 83.

a modern education. Our purpose is to enquire into this alleged impossibility.

We began by producing evidence that many of the most eminent scientists, more than is generally supposed, have themselves been professing Christians. Many others have declared that they saw no incompatibility between Christian faith and modern learning.

We proceeded to bring to the test of ascertained facts the popular theory of the evolution of religion, that it began with belief in departed spirits and in the unseen powers behind natural phenomena, and passed on through polytheism into monotheism. This appears to be a mere armchair theory. Belief in a supreme God, a Father or Sky-God, is all but universal amongst the most primitive races, and the oldest civilizations we know were monotheistic. Polytheism is a degeneration, not a stage in evolution.

A long chapter follows, in which the question is examined whether modern discovery can offer an adequate explanation of the phenomena of Nature, on the assumption that there has been no plan, purpose or intelligence to guide the process. A Creator, or a Force, which has plan, purpose and intelligence, but is not a Person, will seem to most people to be a contradiction in terms. Eminent opinion is quoted to the effect that the universe has changed and is changing, that it must have had a beginning, and that science, deprived of a Creator, has no satisfactory explanation to offer either of that beginning or of the maintenance of the laws governing the Sun and stars. It is further shown that this planet, Earth, is, as far as we can tell, absolutely unique in the universe. Its strange origin, its equable temperature, the oxygen in its atmosphere, its store of carbon and water—in a word, all those properties that go to make life, as we know it, possible on its surface—are so out of the ordinary, so inexplicable on any other theory, that we are justified in concluding that Earth was designed for the express purpose of supporting a plant and animal population. The chemical elements, which at first sight seem to be totally independent and unrelated, show plainly the marks of an ordered plan.

No adequate explanation, apart from creative activity, has been

offered of the origin of life upon the earth, whether new life began on one occasion, or on many. That all living things change, and have changed in past geological time, is now agreed by almost every student of biology, and to that extent we are ready to admit some degree of evolution. But many eminent biologists, whose reasons are given, are by no means satisfied that Darwin's theory of Natural Selection, or any other self-working mechanism, can explain how new species have originated. This is discussed at considerable length. Entirely new orders and families of plants and animals seem to have appeared on the Earth from time to time, without any known ancestors, and then to have undergone changes, sometimes sudden, sometimes gradual, until modern species were produced. Even if Natural Selection can explain the useful in Nature, it cannot explain the beautiful. Nor can it account for the mind of intelligent man.

Although cosmogony and geology are young sciences, and the order of succession of forms of life in past geological time has only been known for a hundred years or so, the first chapter of Genesis describes an order that, seen from the point of view of an observer on the Earth's surface, exactly accords with that now taught in the textbooks. The question is discussed whether the "days" of Genesis are literal, or whether they represent periods of geological time, as seems more probable. Let it not be forgotten that there was an exceedingly important reason why the Creation-narrative should bring before us six days of activity, followed by one day of rest. It provides the basis of that most necessary and valuable institution, the sabbath, wherein man for all time should lay aside, as far as possible, his ordinary toil and observe one day in seven as belonging to God beyond the others.

The chapter on the problem of man's origin will no doubt be considered difficult and perhaps unsatisfactory. Discoveries have followed an unexpected course. There is good reason to think that human creatures of some sort have lived on the earth for many thousands of years, that there were other and more primitive species of the genus besides *Homo sapiens*, now extinct, but that true fossil links between man and his alleged anthropoid ancestor have not been found. *Pithecanthropus erectus*, the Java ape-man, has been given up even by his discoverer, Dubois. Modern

opinion is ready to allow a much wider gap between ape and man than was taught fifty years ago. How to fit all this into the Biblical scheme is a difficult problem. This volume has attempted to offer some suggestions.

The Bible is sometimes accused of being an unscientific book, but the science of the laws of health, as set forth in the Pentateuch, is astonishingly "modern". With unerring precision and yet with a simplicity suitable to a primitive people, it indicates those animals, birds and fish that are suitable for human consumption, and its lists agree well with those of modern usage, though it is a little stricter, for very good reasons. It forbids the use of the flesh of animals that died of disease, or of polluted drinking water. Its camp sanitation, if observed, would have saved many an army from epidemic disease. The measures for the control of infectious diseases, such as leprosy, though drastic, were necessary and efficient. The account of an epidemic of bubonic plague afflicting the Philistine cities is a model of accurate observation. The difficult question of demon-possession is briefly discussed.

The remaining chapters are concerned with archæological discovery, and do not lend themselves to brief summary. We shall merely indicate a few outstanding observations. There is good reason to believe that Genesis and Exodus were written, if not in Egypt, at any rate under the influence of Egyptian culture, though, in Genesis, older materials appear to have been used. The art of writing was known long before Moses' time; codes of laws, such as Hammurapi's, often closely parallel to Levitical law, were published as far back as Abraham's day, and sacrificial offerings reminiscent of those described in Leviticus were in use at Ras Shamra before the Israelites entered Canaan. We know something of many Bible characters from outside sources, such as Chedorlaomer and Amraphel (probably), Sennacherib and other Assyrian kings, Nebuchadnezzar and others. Bible incidents, such as the Flood, the siege of Jericho, and the diversion of spring water outside Jerusalem by means of a tunnel so as to bring it within the walls, in Hezekiah's time, have been elucidated by the discovery of actual remains. Other Bible incidents are related from the point of view of outside observers, as the invasion of Canaan by the Hebrews, the siege of Jerusalem by Sennacherib,

the capture of Samaria, the Medo-Persian conquest of Babylon, and so on. A great deal of evidence has come to light, illustrating the remarkable accuracy of Luke as an historian. The general trend of archæological discovery has been to confirm the older view of the dating and reliability of Biblical history and to discredit modern critical theories.

Let it not be imagined that in correlating the Bible with observed scientific facts, or archæological discoveries, we are in the least disposed to attempt the impossible task of explaining away the miraculous in the Bible narrative. We firmly believe, we emphasize the fact, that Christ and the Apostles did work miracles. His high claims were supported and substantiated by His mighty works. When a new era of divine dealing is entered upon in the Bible story, as, for instance, when Israel came out of Egypt, when the first Prophets began to preach, when the Apostles entered upon their missionary labours, God confirmed His Word with signs and wonders. But there were long periods when miracles are entirely absent.

Prospect

But, it may be said, whatever the value of the Bible may have been in former ages, we have outgrown it now. These questions about the reliability of the Book, have they not merely an academic interest for the present generation, seeing that we no longer stand in need of it?

We will advance a reply, not from the pen of some professional advocate of Christianity, but in the form of two extracts from Mr. Aldous Huxley:[1] "By the end of the XVII Century, mysticism has lost its old significance in Christianity and is more than half dead. 'Well, what of it?' it may be asked. 'Why shouldn't it die? What use is it when it is alive?' The answer to these questions is that where there is no vision the people perish; and that, if those who are the salt of the earth lose their savour, there is nothing to keep that earth disinfected, nothing to prevent it from falling into complete decay. The mystics are channels through which a little knowledge of reality filters down into our human universe of ignorance and illusion. A totally unmystical world would be a

[1] Aldous Huxley, *Grey Eminence*, 1941.

world totally blind and insane." "In a world inhabited by what the theologians call unregenerate, or natural, men, Church and State can probably never become appreciably better than the best of the states and churches of which the past has left us record. Society can never be greatly improved, until such time as most of its members choose to become theocentric saints. Meanwhile, the few theocentric saints who exist at any given moment are able in some slight degree to qualify and mitigate the poisons which society generates within itself by its politic and economic activities. In the gospel phrase, theocentric saints are the salt which preserves the social world from breaking down into irremediable decay. The theocentric saint is impressive, not only for what he is, but also for what he does and says. His actions and all his dealings with the world are marked by disinterestedness and serenity, invariable truthfulness, and a total absence of fear."

But, it will be objected, allowing that Mr. Huxley offers us a right diagnosis and the only effectual remedy for a corrupted world, there is nothing here about the Bible, or even about the Christian faith. Granted, but the enquiry must be made, if these theocentric saints are to be the salt of the earth, on what kind of a God do they centre? Is each of them to make a god in his own likeness, and find their centre in him, or are we quietly assuming, without saying so, that their God is He Who is set forth in the Old and New Testaments? Mr. Huxley's theocentric saint is unselfish, serene, truthful and confident. Why? How does he *know* his God is like that?

This chapter has taken shape during a country walk on the most brilliant day of an unusually beautiful springtide. The trees are tipped with fresh green. Here is a bank yellow with daffodils, and, opposite, a wood carpeted with wild forget-me-nots. Butterflies flit by—a brimstone, then a peacock. The chiffchaff, the willow wren, the wood wren, the black cap and the cuckoo are back from their winter migration, and one or another of them is constantly in song. The young corn is springing in the field. Everything speaks of peace, joy and a beneficent beauty-loving Creator. Nevertheless, it is a grim day. (Events are moving fast, and by the time this book comes into print the outlook may be much brighter or, for some, grimmer still.) The war situation looks

ugly. Dreadful atrocities, as bad as those of the Dark Ages, have been perpetrated and are probably going on still. Is God responsible? Does He care about these things? What kind of a God are we to believe in, the God of a day in springtime, or the God of volcanoes and earthquakes, which seem to correspond in Nature to the cruel ferocity of triumphant aggressor armies? We repeat, if the only hope of world progress depends on theocentric men and women, on what kind of a God are they to concentrate?

That is where the Bible comes in. It would be useless, if it were just another book of man's imaginations. It must be a divine revelation. It shows us what God is like, in the character, work and teachings of Jesus Christ, and, above all, in His Passion. We shall not argue about Him.[1] He was what man, after seeing Him, instinctively knows God to be like. He was what God desires man to be like. But if we shut the Bible with a contemptuous snap, we lose Jesus. There is scarcely anything to be learned about Him outside the New Testament. And the New Testament stands deeply rooted in the Old. In the Alps there is a little circular church, with statues of the Twelve Prophets ranged around its wall, all pointing with the finger to Christ, as He is portrayed emerging from the tomb on Easter morning. Written above is the text, "To Him give all the prophets witness." The Old Testament moulded the thought of the Jewish nation amongst whom He lived and preached, and Jews reared on the Old Testament were His first missionaries. The witness was reciprocal; He bore testimony that the Old Testament was the Word of God for Him, and so did His Apostles. It may be objected that many men who definitely disbelieve the Christian theory do conceive of God as a righteous and merciful Being, worthy of their worship and service. It will usually be found that they are unconsciously influenced by the Christian teaching about God which has wrapped them round as an atmosphere. Let that atmosphere be dissipated and that teaching be cast away as untrue, and the generality of men will before long conceive unworthy ideas of God or lose Him altogether, and the irremediable decay will have set in. So the Book is in very truth the gospel, the Good News, for the puzzled world

[1] Not that there are not good grounds for accepting Him as historical, and His massive claims as valid. See the writer's *Why Believe?*

to-day. God *is* the God of the springtime beauty, the God of hope. We accept Him as such by faith in His revelation of Himself.

The small service which our previous ten chapters have been seeking to render is to provide demonstration that if we venture to take the Bible at its face value, we shall not need to be hypocrites, pretending to believe what we know to be contrary to facts, nor need we shun all human learning and research as though they were of the devil. The evidence does not compel us. We are not bound, on the other hand, to regard these human achievements as sacrosanct and infallible. Theories come and theories go; old editions of scientific textbooks fetch very small money in the second-hand bookshops. The Bible survives them all.

INDEX