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SCIENCE AND THE BIBLE:

Wherein they Differ.

—BY—

CHARLES WATTS

Editor of "Secular Thought."

Author of "*Teachings of Secularism Compared with Orthodox Christianity*,"
"*Evolution and Special Creation*," "*Secularism: Constructive and De-*
structive," "*Gloria of Unbelief*," "*Saints and Sinners: Which?*"
"*Bible Morality*," "*Christianity: Its Origin, Nature and*
Influence," "*Agnosticism and Christian Theism: Which is*
the More Reasonable?" "*Reply to Father Lambert*,"
"*The Superstition of the Christian Sunday: A*
Plea for Liberty and Justice," "*The Horrors*
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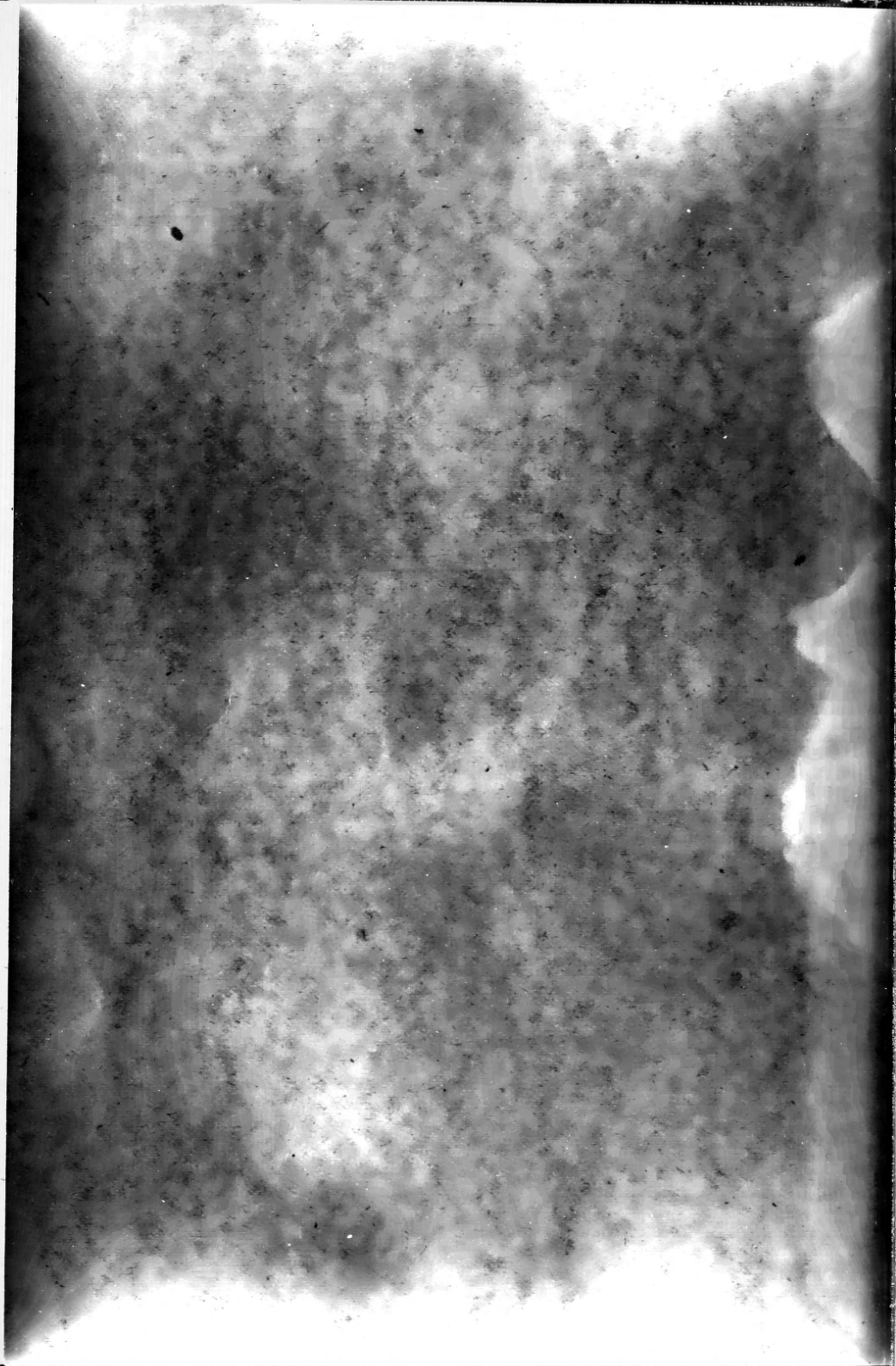
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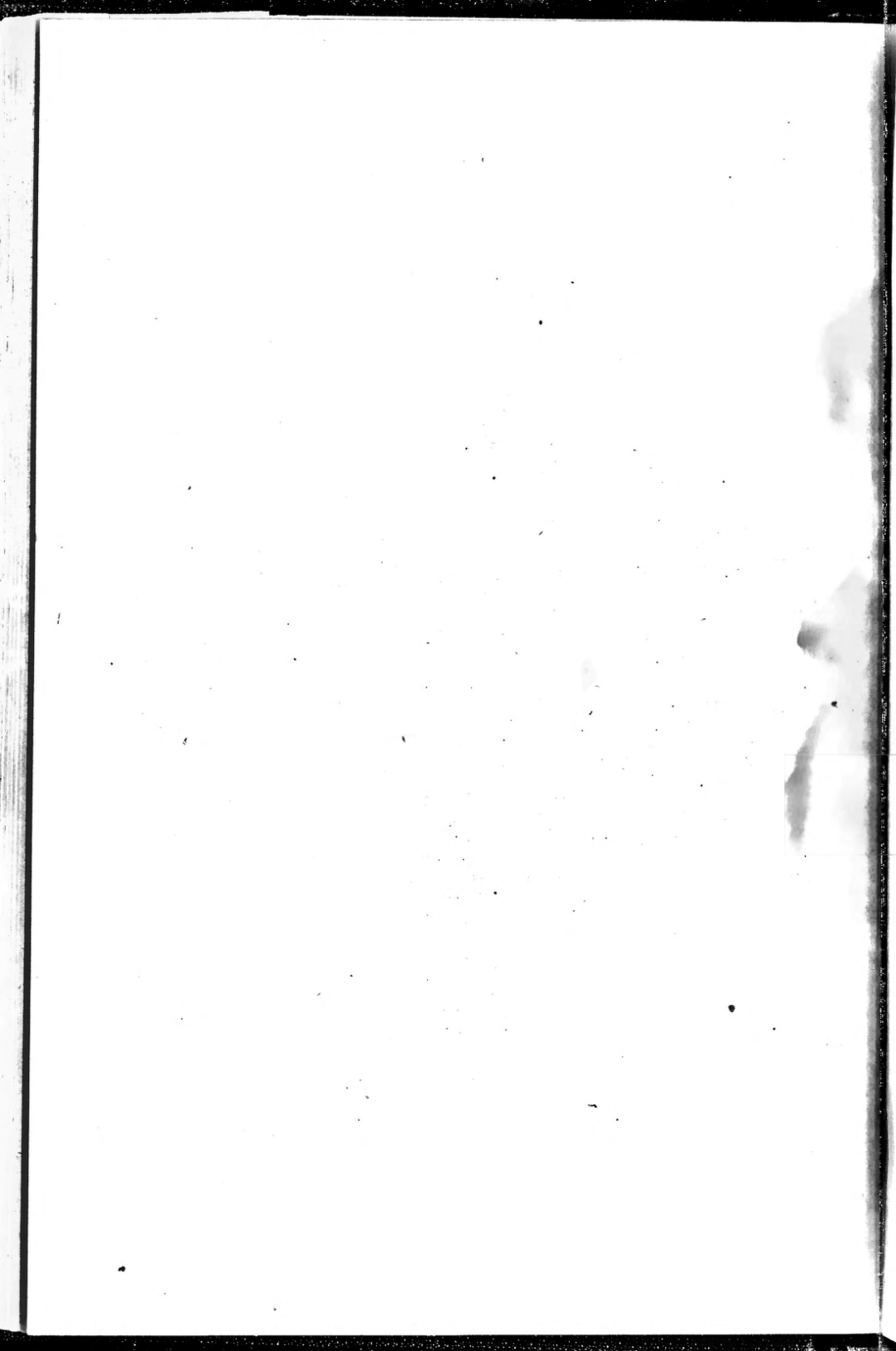
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The Potency of Science.—The distinguishing characteristic of this age is science ; it is essentially an age of invention, experiment and discovery. Knowledge is pushed into the field of physical nature on all hands to such an extent that each day brings to light something both new and unforeseen. We are ever on the alert for wonders in the field of discovery which will not amaze, simply because they are not unusual. All thought to-day is more or less influenced by natural science. Old opinions, not only in the domain of the material, but also in the intellectual and moral, have to be remoulded or abolished in obedience to the dictates of the higher knowledge that we have attained of the workings of natural law. That which cannot reconcile itself to science must disappear as out of harmony with the genius of the epoch. We do not, of course, allege that physical science covers the entire field of knowledge, but we do contend that there is no phase of thought that is not very largely moulded by modern discoveries. Scientific truth can no longer be successfully opposed, even by the most dogmatic theologian, and it is now too powerful and too widely known to allow itself to be even ignored. Hence, whatever opinions are advocated, the pretence put forward in their favour usually is that they are in harmony with science. The difficulty too often lies in making good this claim.

Science may be defined as being an investigation into the phenomena of nature, and the best application of the lessons derived thereby to the requirements of life. It may be further described as meaning facts reduced to a system ; not a fixed, cramped, and exclusive system, but one which expands with the acquirement of additional knowledge. "Science is the enemy of fear and credulity. It invites investigation, challenges the

reason, stimulates inquiry, and welcomes the unbeliever. It seeks to give food and shelter, and raiment, education and liberty to the human race. It welcomes every fact and every truth. It has furnished a foundation for morals, a philosophy for the guidance of man. It has taught man that he cannot walk beyond the horizon—that the questions of origin and destiny cannot be answered—that an infinite personality cannot be comprehended by a finite being, and that the truth of any system of religion based on the supernatural cannot by any possibility be established—such a religion not being within the domain of evidence. And, above all, it teaches that all our duties are here—that all our obligations are to sentient beings; that intelligence, guided by kindness, is the highest possible wisdom; and that ‘man believes not what he would, but what he can.’” It has been said that we can have no complete system of science. To some extent this is true; for no science is perfect, if by perfection is meant that all that is knowable is known. But sufficient information of a positive character has been obtained in many fields of enquiry to justify conclusions that may be regarded as reliable. Science has stamped its valuable impress on the history of the world. By its aid man is enabled to explore hitherto unknown regions; by its aid we can descend into the depths of the earth, and discover truths which destroy theological errors that have too long held captive the human mind; by its aid we can not only avert many of the diseases which “flesh is heir to,” but can even bid the messenger of death pause in its gloomy and desolating march. Science has conferred its manifold benefits upon the king and the peasant, the weak and the strong, the healthy and the decrepit. It has transformed nations from a state of barbarism to partial civilisation, and stimulated man to emancipate himself from the curse of degrading superstitions. That which was hidden from the gaze of the ancient world has, by the magic wand of science, been exhibited to us in all its pleasing aspects. To-day, though separated by the broad and swelling ocean, we can in a few moments of time communicate with our European friends by that cable which connects nation with nation. By the mighty propelling power of steam

we can, in a comparatively brief period, penetrate the very length and breadth of the land. As the late Prince Consort of England said in 1855: "No human pursuits make any material progress until science is brought to bear upon them. . . . Look at the transformation which has gone on around us since the laws of gravitation, electricity, magnetism, and the expansive power of heat have become known to us. It has altered the whole state of existence—one might say, the whole face of the globe. We owe this to science, and to science alone." While contemplating the glorious achievements thus won, it is saddening to remember how their progress has been retarded. In ages long gone, never we hope to return, whenever a scientific truth was manifested, it was sought to be crushed, or its infantine purity was corrupted, either by despotic blindness or ignorant misrepresentation. The history of science has been one continual conflict with religious fanaticism and priestly intolerance. Too frequently its usefulness has been impaired, and its exponents have been tortured, and made to deny the evidences of their own senses. True, from a theological standpoint we could not expect aught else. A study of the histories of orthodox Bible believers will scarcely justify the supposition that they would assist in those discoveries which show so unmistakably the errors of their faith.

The potency of science over the influence of theology was never better presented than in the following eloquent language by Col. Ingersoll: "Science, thou art the great magician! Thou alone performest the true miracles. Thou alone workest the real wonders. Fire is thy servant, lightning is thy messenger. The waves obey thee, and thou knowest the circuits of the wind. Thou art the great philanthropist! Thou hast freed the slave and civilised the master. Thou hast taught men to chain not his fellow-man, but the forces of nature—forces that have no backs to be scarred, no limbs for chains to chill and eat—forces that never know fatigue, that shed no tears—forces that have no hearts to break. Thou gavest man the plough, the reaper and the loom—thou hast fed and clothed the world! Thou art the great physician! Thy touch hath given sight. Thou hast made

the lame to leap, the dumb to speak, and in the pallid cheek thy hand hath set the rose of health. 'Thou hast given thy beloved sleep'—a sleep that wraps in happy dreams the throbbing nerves of pain. Thou art the perpetual providence of man—preserver of light and love! Thou art the teacher of every virtue, the enemy of every vice. Thou hast discovered the true basis of morals—the origin and office of conscience—and hast revealed the nature and measure of obligation. Thou hast taught that love is justice in its highest form, and that even self-love, guided by wisdom, embraces with loving arms the human race. Thou hast slain the monsters of the past. Thou hast discovered the one inspired book. Thou hast read the records of the rocks, written by wind and wave, by frost and flame—records that even priestcraft cannot change—and in thy wondrous scales thou hast weighed the atoms and the stars. Thou art the founder of the only true religion. Thou art the very Christ, the only saviour of mankind. Theology has always been in the way of the advance of the human race. There is this difference between science and theology—science is modest and merciful, while theology is arrogant and cruel. The hope of science is the perfection of the human race. The hope of theology is the salvation of a few and the damnation of almost everybody."

Notwithstanding the value, potency and grandeur of science it is only of comparatively recent date that its usefulness has been fairly acknowledged and its power duly appreciated. Formerly new discoveries were tested by the Bible and encouraged or discouraged according to their agreement or disagreement therewith. Fortunately, the Bible test is no longer accepted as the standard of appeal but the question of utility has taken its place. Science now holds its undisputed sway although many of its revelations contradict the teaching both of the Hebrew and Christian Records.

The Bible and Science.—The Bible has hitherto occupied in the world a very exceptional position, and there is still claimed for it "divine authority and unerring accuracy." In

the multiplicity of tests to which its claims might be subjected, the one above all others which it must face to-day, is that of science. By this it must stand or fall. If true, it should not fear this mode of examination, but whether it does or not it must submit to this tribunal.

That modern science has demonstrated as fallacies much that the Bible contains is now recognised by many professing Christians, hence they assert that the Bible does not pretend to teach science. Such a statement, however, is unfortunate for the orthodox position, inasmuch that the Bible, which is supposed to contain all that is necessary for mankind, ought to inculcate that which has proved the greatest benefit to their general improvement. The national and individual condition of society would be lamentable indeed without the advantages of science. For Christians, therefore, to assert that the Bible ignores science, is to charge their God with being neglectful of the principal wants and requirements of mankind. A book which professes to have been written under divine inspiration for the guidance and instruction of the human race, should not only teach science, but should expound its truths in such a concise and practical manner, that while harmonising with the facts of nature, it should also commend itself to the judgment and intellect of the humblest of the land. But it is not sufficient to say that the object of the book was not to teach science; that it had a far higher and nobler purpose. There might be some weight in such an allegation if all its teachings were confined to regions that lie outside the domain of modern research, though even then such teachings could not escape being tested by the influence which science has exerted over every form of thought, indirect if not direct. Unfortunately, however, for those who take this view, the Bible does refer to scientific subjects, and deals quite largely with matters that fall within the region in which science reigns supreme. This being so, we are certainly justified in ascertaining whether or not the two are in harmony. That such subjects are dealt with no one can doubt who is at all acquainted with the teachings of the book. Kalisch says, "The Bible is not silent upon the creation; it attempts indeed to furnish its history;

but in this account it expresses as facts that which the researches of science cannot sanction." But the subject of creation is not the only topic upon which the book states the very opposite to what is correct. Surely when, and how, man was made, the phenomena of the solar system, and the mode by which disease and death entered the world, are scientific questions. These, with other similar subjects, are dwelt upon in the Bible, and a reference to its statements thereon will show that science and the Bible are not on the most friendly terms. The fact is there have been but few discoveries of any magnitude in science that have not exhibited in some way the fallacy of portions of the Bible. That which in the days of Moses might have been considered right, and in accordance with the laws of nature, science has since proved to be incorrect, and what Christ taught as natural laws, subsequent experience has shown to be in opposition to scientific discoveries. The antiquity of man has been proved to be considerably greater than Moses alleges; geology has demonstrated that the world existed thousands of years before the time of creation stated in the Jewish account; the theory that all mankind descended from one primeval pair is now given up as unreliable; the astronomy of the Bible has long been exploded; the universal flood mentioned in Genesis finds no scientific supporters; the possession of devils by the human body, as believed in by Christ, is regarded as an exploded superstition; the teaching of the New Testament that the world and its contents are to be destroyed by fire, has but few believers; a burning hell for the "wicked souls of the departed" is deemed too revolting and absurd to be regarded as more than a fiction; hence science has practically killed the belief in the devil and firmly closed for ever his supposed illuminated habitation. The Bible teaches that mankind has degenerated from a state of perfection; science, on the contrary, indicates that the career of man has been progressive, and that each age, profiting by experience, has been superior to its predecessor. The Bible affirms that at a certain command the sun and moon stood still; science declares that such an event could never have happened. The Bible asserts that all the kingdoms of the world were exhibited from a cer-

tain high mountain; geography teaches that there are many parts of the world totally invisible from any one elevation. The Bible says that an iron axe floated on the surface of the water; experience proves this to be impossible. In almost every field the "sacred writings" appear to be the very antithesis of the teachings of science.

The entire account of man's early history as given in the Bible is flatly contradicted by scientific research. Many attempts, indeed, have been made to harmonise the two, but without success. Sophistry, equivocation, denunciation, all the engines, in short, of polemical warfare, have been brought forward to disprove the well-attested facts of science; while those who have been honest enough to restrict themselves to argument have usually ended by accepting the facts and giving up the theory. The great strength of a scientific theory lies in the cumulative proof of which, if it be a scientific theory, it becomes capable; while a fact of science may be attested in many ways. For instance, while the geologists have been at work tracing the history of the earth from its earliest beginnings, and in so doing have discovered evidence of the co-existence of man with many of the extinct animals, of whose remote antiquity there can be no doubt, the archæologists have been busy in another field of enquiry, and proving the same fact in another way. When the same fact is thus arrived at by independent enquirers, and different sciences force the mind to the same conclusion, the evidence of its truth is such as to be irresistible. Now the very converse is the case with the orthodox defenders of the Bible. Working in the same field, on the same subject-matter, they arrive at various conclusions, and the best we have is a number of conflicting theories, and if they were to be accepted a means of harmonising the harmonisers must be found. Of course they serve their purpose for a time by deceiving the uninformed and misleading the unenquiring. But for the intelligent and logical enquirer a study of the Hebrew Records themselves is quite sufficient to discredit theology, and to show beyond all reasonable doubt that the Bible and science do not agree; the one is stationary, the other is progressive; the first is bound by the

ignorance of the past, the second is guided by the knowledge of the present. Modern thought has neither hesitation nor regrets in giving up the Bible as a monitor in the practical duties of life, for we have science remaining, and its light will shine with an ever increasing brightness as the years roll on, until theological ignorance and folly shall be replaced by a knowledge of natural forces and a wisdom based on the experiences of a more unfettered intellectual development.

The Bible and Creation.—The supposed creation of the world and the origin of man as narrated in the Bible furnish striking evidence of the contradictory nature of the teachings of that book to the revelations of science. If we accept the chronology of the Hebrew records as being correct, there is no difficulty in ascertaining how long it is according to the Bible since the world and man were created. For instance, in Genesis, we read that when Adam was 130 years old his son Seth was born; when Seth was 105, Enos was born; when Enos was 90, Cainan was born; when Cainan was 70, Mahalaleel was born; when Mahalaleel was 65, Jared was born; when Jared was 162, Enoch was born; when Enoch was 65, Methuselah was born; when Methuselah was 187, Lamech was born; when Lamech was 182, Noah was born. Adding these dates up, we have from the birth of Adam to that of Noah, 1056 years; 600 years after this the flood appears, making from the creation of man to the flood, 1656 years. Then reckoning from the flood to the birth of Christ, 2501, and from Christ to the present time, 1890, we have a total of 6047 years since man first appeared on the earth. Now in Exodus 20 it is said that "in six days the Lord made heaven and earth, the sea, and all that in them is," and in Genesis 1 we read that "God created man on the sixth day." Thus, it is asserted, man was made six days after the creation of the heavens and earth began. Is not this adequate proof that the Bible teaches that the world and man have existed only a little over six thousand years? This was really admitted by the Rev. G. Rawlinson, Professor at Oxford, who, in his famous lecture on "The Alleged Historical Difficulties

of the Old and New Testaments," delivered on behalf of the Christian Evidence Society, said :—" The first difficulty, really historical, which meets us when we open the volume of Scripture is the shortness of the time into which all history is (or at any rate appears to be) compressed by the chronological statements, especially those of Genesis. The exodus of the Jews is fixed by many considerations to about the fifteenth or sixteenth century before our era. The period between the flood and the exodus, according to the numbers of our English version, but a very little exceeds a thousand years. Consequently, it has been usual to regard Scripture as authoritatively laying it down that all mankind sprang from a single pair within twenty-five or twenty-six centuries of the Christian era ; and, therefore, that all history, and not only so, but all the changes by which the various races of men were formed, by which languages developed into their numerous and diverse types, by which civilisation and art emerged and gradually perfected themselves, are shut up within the narrow space of 2,500 or 2,600 years before the birth of our Lord. Now, this time is said, with reason, to be quite insufficient. Egypt and Babylonia have histories, as settled kingdoms, which reach back (according to the most moderate of modern critical historians) to about the time at which the numbers of our English Bible place the deluge. Considerable diversities of language can be proved to have existed at that date ; markedly different physical types appeared not much subsequently ; civilisation in Egypt had, about the pyramid period, which few now place later than B.C. 2450, an advanced character ; the arts existed in the shape in which they were known in the country at its most flourishing period. Clearly, a considerable space is wanted anterior to the pyramid age, for the gradual development of Egyptian life into the condition which the monuments show to have been then reached. This space the numbers of our English Bible do not allow "

Turning to the great book of nature, and reading the geological lessons inscribed therein, we find, in the words of Babbage—a Christian writer—that " the mass of evidence which combines to prove the great antiquity of the earth itself is so irre-

sistible and so unshaken by any opposing facts, that none but those who are alike incapable of observing the facts and appreciating the reasoning can for a moment conceive the present state of its surface to have been the result of only 6,000 years of existence. Those observers and philosophers, who have spent their lives in the study of geology, have arrived at the conclusion that there exists irresistible evidence that the date of the earth's first formation is far anterior to the epoch supposed to be assigned to it by Moses ; and it is now admitted by all competent persons that the formation even of those strata which are nearest the surface must have occupied vast periods, probably millions of years, in arriving at their present state." In reply to this, two different theories have been put forth in defence of the Bible records with a view of bringing them into harmony with science. The first theory is that a long period—countless ages, in fact—elapsed between the time referred to in the 1st and 2nd verses of Genesis, and that the creation spoken of in the first two chapters of that book was only a re-adaptation of the chaos of a previous world. If this were so, how is it no allusion is made to animals or plants as being in existence before the time referred to by Moses ? Is it not said by this writer that light was created on the first of the six days, and the sun on the fourth ? Admit this to be true, and then, previous to that time, there was no light nor heat, a condition of existence which science pronounces an impossibility. Besides, have not geological investigations discovered that the remains of animals and plants found in the strata correspond with species now existing on the earth, indicating thereby that no new creation took place 6,000 years ago ? Clearly there was and could be no such break in the continuity of the chain of geological events as this theory assumes. The remains of animals and plants found in the tertiary are identical with those living to-day, and there was, therefore, no new creation of fauna and flora at the time at which the writer of Genesis declares the origin of the whole to have taken place. If such had occurred evidences of it would be found in those old records written in stone, which cannot err as documents may do that have been produced by human fingers.

Besides, does it not look very much like a childish work of supererogation to create by a special supernatural act a new set of plants and animals exactly like those already existing, who would, as a matter of course, have propagated their species in the ordinary natural way as they had been doing for generations before? Nor is there the slightest intimation in the book that any sort of an interval of long duration occurred between the creation described in the first verse and that enumerated in the subsequent account. It is evidently one continuous record, the whole extending over just six days. The second theory is that the days mentioned in Genesis are not literal days, but long periods extending probably over millions of years. This is the more popular of the two theories amongst orthodox Christians at the present time. But, like the other, it is beset with insurmountable difficulties. The light and the darkness are stated to be synonymous with day and night, which alternate regularly with each other. Epochs of light and equally long epochs of darkness we know did not occur, for such darkness would have been fatal to the vegetation which existed. Then the keeping of the Sabbath day is enjoined on the principle that God worked for six days and rested on the seventh, leaving the inference conclusive that the days in the one case were the same as those in the other. The most fatal objection, however, of all to the entire theory is that the order of creation as described in Genesis and that discovered by geological science are not at all the same. The vegetable kingdom was not in its origin separated by millions of years from the beginnings of animal life, as this theory would make it appear to have been, one entire day or epoch coming between them; neither did the higher and lower forms of land animals make their appearance at the same time. From any point of view, no reconciliation between the Bible and science appears to us possible, at least upon this point.

The Origin of Man.—Whatever lack of information may exist as to the precise time when man first appeared on the earth, it is as certain as anything can be that the human family have been in existence much longer than

the time stated in the Bible. Professor Huxley writes:—
“Sufficient grounds exist for the assumption that man co-existed with the animals found in the diluvium, and many a barbarous race may, before all historical time, have disappeared together with the animals of the ancient world.” Sir Charles Lyell supports the statement, that “North America was peopled more than a thousand centuries ago by the human race.” Dr. Bennett Dowler claims for a human skeleton discovered in the delta of the Mississippi no less than 57,600 years. Baron Bunsen claims an antiquity for the human race of at least 20,000 years prior to the Christian era, and traces in Egypt a double Empire of hereditary kings to 5413 B.C. “It is now generally conceded,” observe Nott and Gliddon, “that there exists no data by which we can approximate the date of man’s first appearance upon earth; and, for aught we yet know, it may be thousands or millions of years beyond our reach. The spurious systems of Archbishop Usher on the Hebrew text, and of Dr. Hales on the Septuagint, being entirely broken down, we turn, unshackled by prejudice, to the monumental records of Egypt as our best guide. Even these soon lose themselves, not in the primitive state of man, but in his middle, or perhaps modern, ages; for the Egyptian Empire first presents itself to view, about 4,000 years before Christ, as that of a mighty nation, in full tide of civilisation, and surrounded by other realms and races already emerging from the barbarous stage. These authorities, in support of the extreme age of the geological era to which man belongs, though startling to the unscientific, are not simply the opinions of a few; but such conclusions are substantially adopted by the leading geologists everywhere. And, although antiquity so extreme for man’s existence on earth may shock some preconceived opinions, it is none the less certain that the rapid accumulation of new facts is fast familiarising the minds of the scientific world to this conviction. The monuments of Egypt have already carried us far beyond all chronologies heretofore adopted; and when these barriers are once overleaped, it is in vain for us to attempt to approximate even the epoch of man’s creation. This conclusion is not based merely on the researches of such archæ-

ologists as Lepsius, Bunsen, Birch, De Longpérier, Humboldt, etc., but on those of also strictly orthodox writers, Kenrick, Hincks, Osburn, and, we may add, of all theologians who have really mastered the monuments of Egypt. Nor do these monuments reveal to us only a single race at this early epoch, in full tide of civilisation, but they exhibit faithful portraits of the same African and Asiatic races, in all their diversity, which hold intercourse with Egypt at the present day. In short, we know that in the days of the earliest Pharaohs, the Delta, as it now exists, was covered with ancient cities, and filled with a dense population, whose civilisation must have required a period going back far beyond any date that has yet been assigned to the deluge of Noah, or even to the creation of the world." The two magnificent works of Nott and Gliddon, entitled "Types of Mankind" and "Indigenous Races," are too little read at the present time. They contain some few errors, no doubt, but on the whole they abound in erudition and furnish overwhelming evidence both of man's early appearance on the earth and of the impossibility of supposing all the races to have had the same origin. The Adam and Eve theory is shattered into fragments by the facts produced in such abundance. No answer to these books has been put forth, and we fail to see that any is possible.

"The theory," say Nott and Gliddon, "that all nations are made of one blood, is entirely exploded." Besides, if it were correct that all mankind emanated from the "transgressors in the Garden of Eden," it would be right to expect that the nearer we could trace back to the original stock, the less diversity of race distinction characteristics would be found. Such, however, is not the case. "We know," observe Nott and Gliddon, "of no archæologist of respectable authority at the present day, who will aver that the races now found throughout the valley of the Nile, and scattered over a considerable portion of Asia, were not as distinctly and broadly contrasted at least 3,500 years ago as at this moment. The Egyptians, Canaanites, Nubians, Tartars, Negroes, Arabs, and other types, are as faithfully delineated on the monuments of the seventeenth and eighteenth dynasties, as if the paintings had been executed by an artist of our present age.

Hence, nothing short of a miracle could have evolved all the multifarious Caucasian forms out of one primitive stock ; because the Canaanites, the Arabs, the Tartars, and the Egyptians were absolutely as distinct from each other in primeval times as they are now ; just as they all were then from co-existent Negroes. Such a miracle, indeed, has been invented, and dogmatically defended ; but it is a bare postulate, and positively refuted by scientific facts. If then the teachings of science be true, there must have been many centres of creation, even for Caucasian races, instead of one centre for all the types of humanity." Dr. Samuel Morton states " that recent discoveries in Egypt prove beyond all question that the Caucasian and the Negro races were as perfectly distinct in that country upwards of 3,000 years ago as they are now. If, then, the difference which we find existing between the Negro and the Caucasian has been produced by external causes, such change must have been effected according to Bible chronology in about 1,000 years. This theory is decidedly contradicted by science and experience." Now, no external causes are known that are capable of producing all the varieties of mankind as we see them to-day. They appear to be separated from each other by broad lines of demarcation which nothing that we are at present acquainted with can bridge over. No consideration of the influence of sun, climate, or geographical position will aid us in solving the problem. If mankind all sprang from the same stock, which of course is very questionable, it must have been tens of thousands of years before the time at which Adam is supposed to have lived. For, as Professor Draper observes :—" So far as investigations have gone they indisputably refer the existence of man to a date remote from us by many hundreds of thousands of years. . . . We are thus carried back immeasurably beyond the six thousand years of Patristic chronology. It is difficult to assign a shorter date for the last glaciation of Europe than a quarter of a million of years, and human existence antedates that. But not only is it that this grand fact confronts us, we have to admit also a primitive animalised state and a slow and gradual development. But this forlorn, this savage condition of humanity is in strong con-

trast to the Paradisiacal happiness of the Garden of Eden, and what is far more serious, it is inconsistent with the theory of the Fall." ["Science and Religion," pp. 199-200.] It is evident, therefore, that the Bible is at fault in reference to man's origin, and no sophistry of explanation will make it agree with the records of science.

Creation: Time and Material.—The disagreement between the Bible and science as to the time occupied in the alleged creation of the world is exceedingly clear. According to the account in the Bible, this event occurred in six days. There it is distinctly stated that the heavens and the earth and all that in them is, were created in six days (Ex. 20 : 11). "For in six days the Lord made heaven and earth, the sea and all that in them is, and rested the seventh day ; wherefore the Lord blessed the seventh day and hallowed it." The Jews understood the word "day" as embracing a common day of twenty-four hours. From the 20th of Exodus it is perfectly certain that it is to be understood literally. God commands the Jews to "Remember the Sabbath-day to keep it holy. Six days shalt thou labour, and do all thy work ; but the seventh day is the Sabbath of the Lord thy God ; in it thou shalt not do any work, thou, nor thy son, nor thy daughter, thy man-servant nor thy maid-servant, nor thy cattle, nor the stranger that is within thy gates." Why ? Because—"For in six days the Lord made heaven and earth, the sea and all that in them is, and rested on the seventh day ; wherefore the Lord blessed the Sabbath-day and hallowed it." "Now," remarks S. J. Finney, "if the word 'day' is an indefinite word, embracing a long and indefinite period of time, how could the Jews know when to work or when to rest, and how do we know when to keep the Sabbath at all ? If it means, according to Dr. John Pye Smith, many thousands or even millions of years, the Sabbath has not yet begun ; men are fooling away one seventh of their time on a false notion that it is 'holy.'" But it has already been shown that the epoch theory entirely breaks down when tested by facts. Mr. Prialx says "that in reviewing this creation we are struck by its division

into days. These days, though several of them are undetermined by any revolution of the earth round the sun, were, nevertheless, no doubt, meant and understood to be natural days of twenty-four hours each." Dr. Chalmers and Dr. Pye Smith represent the creation recorded in Genesis as begun and completed in six natural days, but as cut off from a previously-existing creation by a chaotic period. Geologists, on the contrary, declare that the various early strata of the earth have occupied enormous periods of time during their formation, and that even in the vegetable and animal kingdoms the extinction and creation of species have been, and are, the result of a slow and gradual change in the organic world.

Equally at fault is the Bible with reference to the sequence of events. So diverse, in fact, are the accounts as furnished by the Bible and by science upon this point that all attempts to reconcile them must prove to be time wasted and labour thrown away. Many years ago Dr. Sexton, who although now a Christian is still a scientist, and would find some difficulty in replying to his early writings, wrote as follows in his "Concessions of Theology to Science":—"The greatest objection, and one which is insurmountable to the understanding the term day in the first chapter of Genesis as a long period, and therefore the six days as including all the ages that have passed away, during which those innumerable species of plants and animals have made their appearance on our earth whose remains are embedded in the rocks, will be found in the fact that the order of creation is not the same in the two cases. According to geology, there is a gradual progression from the lowest to the highest, plants and animals running *pari passu* side by side, the simplest being found in the early rocks, and the most complex in those more recently formed. In Genesis, on the other hand, the whole of the vegetable kingdom makes its appearance in one epoch, all the inhabitants of the waters in another—the two separated from each other by a long period, in which nothing was created but the sun—and the land animals in a third. Moreover, the organisms created in the last epoch include animals as low as creeping things, and as high as man, which certainly does not

accord with the facts disclosed by geology; and whales, which are mammals, and therefore considerably high in the scale of existence, are represented as having made their appearance with the fishes, and long before the creeping things, which is also contrary to fact. The sun, too, does not exist till the epoch after the creation of plants, so that an enormous vegetation—such as the immense forests which form the present coal-beds—must have flourished in the absence of the rays of sunlight, which is a perfect impossibility. Nor is the difficulty got over by the theory that light had been previously formed, and that therefore the sun was not requisite, since the actinic part of the sun's rays is equally as indispensable to vegetation as the luminous portion that we call light."

The Bible statement of the material from which man was made differs from the facts discovered by scientific investigation. We read in Genesis that man was made from the dust of the earth; chemical analysis, on the other hand, has proved that dust does not contain the elements found in the human organism. The late Dr. Herapath, one of the leading chemists of the day, wrote thus boldly upon this subject:—"From our days of boyhood it has been most assiduously taught us 'that man was made out of the dust of the earth;' and, 'as dust thou art, so to dust thou shalt return.' Now, this opinion, if literally true, would necessitate the existence of alumina as one of the elements of organised structure, for no soil or earthy material capable of being employed by agriculturists can be found without alumina existing largely in its constitution, and clay cannot be found without it. Therefore, chemistry as loudly protests against accepting the Mosaic record in a strictly literal sense, as geology, geography, astronomy, or any other of the physical sciences so absurdly dogmatised upon weekly from the pulpits by those who have neglected the study of true science, but still profess to teach us that which is beyond all knowledge. That man is not made out of the dust of the earth, but from organic material or vegetable matter, properly digested and assimilated by other organised beings, chemical science everywhere proves to us incontestably." Prof. Carpenter asserts that two-thirds of

the human body by weight is water. Such a proportion of this fluid certainly cannot be found in dust, for we only apply that term to earth that is dry. Dust mixed with twice its own weight of water would cease to be described as dust. Yet there is no escape from the statement made in the Bible that of such material as dust man was formed. The literal reading of the original, as all scholars agree, is "dust from the ground," that is, ordinary dust such as we meet with on the ground. Now, it is certain man was not made from any such material, and by no legitimate stretch of language can it with anything like accuracy or truth be said that he was. The principal elementary substances to be found in human bodies are oxygen, hydrogen, nitrogen and carbon, but these are not to be found in ordinary dust, with the exception of a very trifling modicum of oxygen. Silicon, one of the main ingredients of dust, can hardly be detected in the human organism. The Lamaic creed supposes man is the production of water. Prialux suggests that, had the writer of Genesis adopted this theory, he would have been somewhat nearer the truth.

The Bible Account of the Origin of Death.—The Bible alleges that "by one man sin entered into the world, and death by sin;" that is, that through the supposed disobedience of Adam, death was introduced as a punishment for the alleged offence. In the first place, death, so far from being a punishment, is to many "a consummation devoutly to be wished." Epictetus wrote: "It would be a curse upon ears of corn not to be reaped, and we ought to know that it would be a curse upon man not to die." Are there not thousands who suffer a life-long state of physical pain, who have not the strength or opportunity to obtain sufficient food to satisfy the wants of nature? To such persons as these would not death be indeed a welcome messenger? Besides, upon the Christian hypothesis, how can death possibly be a punishment? To be ushered into realms of bliss, and there to enjoy everlasting happiness, instead of remaining in this "vale of tears," ought certainly to be accepted by the Christian as an improvement upon his condition.

But this theory of Adam being the cause of the introduction of death involves many difficulties. If death had not been introduced, could the world contain its ever-increasing inhabitants? And would it have been capable of producing provisions sufficient to support such an immense multitude? Suppose the serpent had not played its "little game," could a man who had no knowledge of swimming have fallen into the water without the chance of being drowned? Or could a person have remained in a furnace and not be burned to death? Or if he were in a coal mine during an explosion, would he escape unhurt? Further, did the lower animals incur death through the act of Adam? If yes, did Christ give them immortality? Because we read, "As in Adam all died, so in Christ shall all be made alive." If, however, they did not incur death, it may be asked why one of their kind took a prominent part in what is termed "the fall of man?" The fact is, by our nature we must cease to live. Death is a necessity, regardless of what Adam did or did not, and man cannot but experience it while he is what he is. Change is an universal law of existence, and we are no exception to that law. As soon as we enter upon the stage of life we become subject to that change until we progress to a given point; then our organisation begins to lose its vitality, and we slowly but surely exhaust life's power, and death ensues as certainly as a fire will cease to burn when no longer supplied with fuel. This condition of things has always existed so far as science can discover. But the Bible says no; before Adam's "transgression" death was not a necessary consequence of life. Here, then, are antagonistic statements. Which is reliable? If Adam were constituted similar to us, he must have been liable to death. If, on the contrary, his organisation were of an entirely different structure, how could he have been our first parent? Children do not differ in their nature from those whose offspring they are. Certain it is that man's constitution is such that he cannot avoid the liability to death. He is so organised that all the influences operating upon him, while for a time and under certain conditions they afford him sustenance and support, may yet, diverted from their normal purpose, cause him to cease to live. Indeed,

it is impossible even to conceive of a human body which is possessed of immortality. The phrase is used glibly enough, but let one reflect upon it, and ask himself what is the meaning that he attaches to the expression "immortal man." A human being lives by taking food, and that very food diverted from its proper purpose may cause death; anyhow, its absence will produce that effect. Excretions of a poisonous character are continually being eliminated, and should the glandular organ whose function it is to remove these deleterious substances cease to act, then the result is as fatal as though a poison had been swallowed. If it be said that this would not occur because there would be no disease, we reply that there is still the impossibility of supposing an organism, whose existence is dependent on something outside itself, being at the same time independent of all else.

Then there is the important fact that death was in the world millions of ages before the supposed existence of Adam and Eve. There are, indeed, few persons of any education now who can doubt that at least the lower animals died long before man was created. Geology has brought to light their fossil remains entombed in the various rocks which go to make up the crust of the earth. They came into existence, played their brief part on life's stage, and passed away, not simply individually, but in whole races, long before the era dawned which gave man his birth. They preyed on one another then as now, the carnivora devouring the less ferocious tribes; and both together becoming buried in the earth, their remains were preserved to tell their history to future generations of men. Race followed race in long succession, each to pass away as its predecessor had done whilst as yet man had not made his appearance upon the scene.

But it was not simply the lower animals that died before the time assigned to the creation of Adam. It is now demonstrated beyond the shadow of a doubt that man had shared the same fate ages before. If our fabled first parents resided in the Garden of Eden six thousand years ago, they came far too late in the history of the world to be the progenitors of the whole human family. Whole races had flourished and had passed away long before that time. Death had existed whilst the per-

petrator of original sin was not yet born. In no sense, therefore, can it be a fact that Adam's sin was the cause of death.

The Fall itself involves contradictions to science. Take, for instance, the curses pronounced on the ground, the woman, and the serpent: the merest tyro in science knows that all these are simply non-existent. Thorns and thistles are not accursed, on the contrary, they are highly useful plants. Moreover, they were in existence long before the time at which the Fall is said to have occurred. And they most unquestionably made their first appearance, not as the result of any curse of God, but by the ordinary laws of nature. Then the so-called curse on woman is by no means universal. The pains referred to occur in their severe form only amongst civilised peoples, and always as a result of artificial modes of living and the violation of natural laws. Savage women are almost exempt from such pains, and suffer no more than do the lower animals. The curse upon the serpent is still more absurd: "On thy belly shalt thou go," as though serpents ever practised locomotion in any other way. Nor were serpents changed in their organisation at this time—as some have suggested—for the remains of those found in geological strata, whose existence dates back to a period probably a million years before man appeared, show precisely the same kind of organisation as their modern descendants. These curses are, to say the least, very childish, and place the character of the Being who is said to have uttered them in a very contemptible and degrading light. Fortunately, however, according to science, the whole story is regarded as fiction, not as fact.

The Bible Deluge.—Modern researches have unmistakably established the fact that between science and the Mosaic account of the flood there is an absolute antagonism. The Bible statement is, that less than five thousand years ago, God discovered "that the wickedness of man was great in the earth, and that every imagination of the thoughts of his heart was only evil continually." Not two thousand years before this, so the book relates, God had made man pure and

morally upright; had given him the advantage of divine superintendence, and subsequently the edification of the preaching of Noah. These precautions, however, did not, according to the Hebrew narrative, prevent mankind from degenerating so rapidly that the Lord repented "that he had made man, and it grieved him at his heart." God possessed, it is said, infinite power, wisdom, and goodness, yet he either could not, or would not, devise a plan of reformation for the human race, but resolved instead upon wholesale destruction, and so drowned them all except one family. This was a terrible resolve, opposed to every sentiment of justice and to every feeling of benevolence. No being with a spark of humanity in his nature would be guilty of voluntarily exposing millions of creatures, men, women, and children, to the agonies and struggles of a watery grave. Surely an omnipotent God could have found other means to correct the work of his own hands without bringing "a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life, from under heaven." Besides, as a remedy and a warning, the cold water process proved a failure. The people are reported as being no better after the deluge than they were before it.

If this deluge were a fact, what can be said of the God who was the chief actor in it, and who was entirely responsible for the great calamity—an event so fearfully cruel and so revolting that one "cannot think of it without horror nor contemplate it without dismay." How can we reconcile the drowning of a whole world with the justice and goodness of the Almighty One? Say that the wickedness of man was great upon the earth, was that any reason for destroying any chance of repentance? What should we say of an earthly despot who acted in a like manner? The cruelty and supreme wickedness of the action thus attributed to God has never been paralleled or even approached by the greatest monster the world has ever seen; and on the part of infinite power the action must partake of the character of the actor and become infinite in its utter depravity. Say that men were wicked, was it therefore just to overwhelm in a common destruction the son with the sire, the little child who had not yet learned to sin with those who were the real

sinners? In the presence of this narrative, we can only say that, if men were wicked, the being who destroyed them was more wicked still.

Again, according to the orthodox version of this fearful tragedy, man had fallen, Adam for his sin had been cast out of Eden, and the redemption of man was impossible through any efforts of his own. The Redeemer who was necessary had not yet been sent. How, then, could it be consistent with infinite goodness to punish for wickedness which was unavoidable, to destroy man that he was sinful when he could not by any possibility be otherwise? Moreover, be it observed that this narration is a libel upon the character of God in other ways. By this universal deluge a great change was effected, but no improvement. The new generations were as wicked as those which had gone before; nay, the very man Noah, who had found grace in the sight of God, was drunk in his tent immediately, and his son Canaan, another of the saved ones, maketh shame of his father. In the 9th chapter of Genesis the whole disgusting account may be found. The God who drowned the world to cure the evil in it with no better results than this could not be a God of any foreknowledge. Or, if it be said that he knew this would be so, then the utter malignity of the drowning becomes only proportionately increased.

Our present object, however, is not to dwell upon the inhuman character of the flood, but rather to show that the account in Genesis is utterly contrary to the result of modern investigations and the revelations of science. This fact has become so palpable that leading theologians, with a view to save the credit of the Bible story, are driven to assert that the Noachian flood was only partial. Were this assertion correct, the Bible would be in error, inasmuch as it clearly teaches the universality of the deluge, as shown by the following extracts from Genesis, ch. 6 and 7: "And the Lord said, I will destroy man, whom I have created, from the face of the earth; both man and beast, and the creeping thing, and the fowls of the air; for it repenteth me that I have made them." "And, behold, I, even I, do bring a flood of waters upon the earth, to destroy all flesh, wherein is

the breath of life, from under heaven ; and everything that is in the earth shall die." "Every living substance that I have made will I destroy from off the face of the earth." "And all flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of every creeping thing that creepeth upon the earth, and every man. All in whose nostrils was the breath of life, of all that was in the dry land, died. And every living substance was destroyed which was upon the face of the ground, both man, and cattle, and the creeping things, and the fowl of the heaven ; and they were destroyed from the earth ; and Noah only remained alive, and they that were with him in the ark." Bishop Colenso says that the Flood described in Genesis, whether it be regarded as a universal or a partial deluge, is equally incredible and impossible. And the Rev. Paxton Hood, in his work, "The Villages of the Bible," remarks: "I am aware that Dr. Pye Smith and some other distinguished scholars have doubted the universality of the deluge. . . . I need not refer more at length to this matter than to say it seems quite unphilosophical to maintain the possibility of such a partial flood ; this seems to me even more astonishing than the universal." Professor Hitchcock observes: "I am willing to acknowledge that the language of the Bible on this subject seems at first view to teach the universality of the flood unequivocally." Upon the supposition that the flood was partial, it would be interesting to know what prevented the water from finding its level. Moreover, where was the necessity of drowning the innocent portion of the local inhabitants ? It cannot reasonably be supposed that no pure-minded women and guiltless children were to be found. Besides, it was folly building the ark and collecting the animals if this partial hypothesis were true ; as Noah and his family, together with "two of every sort," could have emigrated to those parts which the deluge was not intended to visit.

In speaking of this flood, "Julian," one of the ablest Biblical scholars in England at the present day, in his excellent work, "Bible Words: Human, Not Divine," has the following valuable remarks upon the account as given in Genesis chapters 6, 7, and 8 :

"*Two of Every Sort.*—Chapter 6 is Eloistic: the word 'God' is used. In verses 19, 20, we read: And God said to Noah he was to take into the ark 'two of every sort,' to keep the race alive; the two were to be a male and its female: 'Of fowls after their kind, and of cattle after their kind; of every creeping thing of the earth after his kind, *two of every sort* shall come unto thee. And take thou unto thee of all food that is eaten, which thou shalt gather together for thee and them.'

"This writer evidently supposed that wild beasts and birds of prey could feed on hay and eat 'straw like an ox;' that the number of animals was so small that two of every sort could be stalled in an ordinary-sized church; and that four men would suffice to feed all the animals and remove the filth from the ark. Why, a small travelling menagerie requires more attendants to feed the collection and keep the place clean.

"The writer supposed that wild beasts would consort with their lawful prey—serpents with doves, hawks with sparrows, owls with mice, and insectivorous birds with insects; for, though daily food was to be taken into the ark, only two of every sort of animal were to be saved, just enough to keep the race alive.

"*Seven of Clean Animals and Birds.*—'Two of every sort,' Elohim says, and repeats the injunction—two of every sort, remember; only two, and no more; one male and one female of each species of beast, bird, and reptile. The next chapter (7) is a Jehovistic one; for, instead of God, we read 'Lord,' or the 'Lord God;' and here a distinction is made between clean and unclean beasts, and between quadrupeds and birds. Mark what is said: 'Of every *clean* beast (7: 2, 3) thou shalt take to thee by SEVENS, the male and the female; and of beasts that are not clean by two, the male and his female. Of fowls of the air by SEVENS, the male and the female.'

"Here the direction is seven clean beasts and seven of all species of birds, 'a male and its female.' Now, as seven is an odd number, it was plainly impossible to pair seven animals; so the writer must have meant seven pairs, or fourteen of every clean beast and every fowl of the air. This, of course, would

require a much larger ark, and would greatly increase the daily labour of Noah and his family.

“This wise and sagacious writer saw plainly that birds and beasts of prey could not live upon seed, so he increases the number of animals for food. He also wanted Noah to offer sacrifice after the Flood; and, had he killed one of his two clean beasts, he would have extirpated the race; so he makes Jehovah countermand the order of Elohim, and tell Noah that Elohim made a mistake; that he did not mean ‘two of every sort of beast and bird and creeping thing,’ but only of unclean beasts. All clean beasts and all birds were to be collected by *sevens* (a sacred number); but why seven pairs of eagles, vultures, condors, toucans, parrots, lyre-birds, mocking-birds, cranes, owls, and so on, is a mystery of mysteries.”

Scientific Objections to the Mosaic Account of the Flood.—Among the many scientific objections to the account of the Flood as given in the Bible are the following:

1. *Geological.* The study of this science proves to demonstration that the present diluvian deposits found in the earth are the result of time going back far beyond the Noachian period. The evolutions in sea and on land, that for ages have been progressing, and are still in process, evidently extend in their connection to the pre-Adamite antiquity. “This conclusion,” says the Rev. Alfred Barry, M.A., “is the more undoubted, because so many leading geologists, Buckland, Sedgwick, &c, who once referred the diluvium to the one period of the historic deluge, have now publicly withdrawn that opinion.” Hugh Miller, in his “Testimony of the Rocks,” says: “In various parts of the world, such as Auvergne, in Central France, and along the flanks of Etna, there are cones of long extinct or long slumbering volcanoes, which, though of at least triple the antiquity of the Noachian deluge, and though composed of the ordinary incoherent materials, exhibit no marks of denudation. According to the calculations of Sir Charles Lyell, no devastating flood could have passed over the forest zone of Etna during the last twelve thousand years.” Alluding to the remains to be found in certain

provinces of France, Kalisth, in his *Genesis*, observes: "Distinct mineral formations, and an abundance of petrified vegetable and animal life, bespeak an epoch far anterior to the present condition of our planet. . . . That extraordinary region contains rocks, consisting of laminated formations of silicious deposits; one of the rocks is sixty feet in thickness; and a moderate calculation shows that at least 18,000 years were required to produce that single pile. All these formations, therefore, are far more remote than the date of the Noachian flood; *they show not the slightest trace of having been affected or disturbed by any general deluge*; their progress has been slow, but uninterrupted." Thus geology irrefragably demonstrates that, while the earth has been subject to many floods, it has never been visited by such an one as that described in the Bible.

The evidences of the Flood that have been sometimes quoted are really funny. Not long ago Talmage declared that the flood was proved beyond the possibility of contradiction by the fact that sea shells and other remains of marine animals were often found on the summit of the highest mountains. He forgot to mention that the Flood was said to have been caused by fresh water, and that consequently marine animals could have had no place in its waters. These remains found on mountain tops are due to other and well known causes. Geologically there is not only no evidence that such a flood occurred as that described in the Bible, but there is a mass of undoubted evidence to the contrary. "Julian" observes: "Such a cataclysm as the Flood must have left its marks on the earth; but geologists have not succeeded in finding a single trace—no confusion of animal relics, no huge water gullies, no stratum of alluvial earth, which such a sweep of water would produce. We find relics of marine animals inland, it is true, and on the tops of high mountains; but these fossils are all in order, each in its own stratum. There is no confusion of animals in these rocks, as if a world had been stamped out in forty days."

2. *The Scarcity of Water.* The account says: "And the waters prevailed exceedingly upon the earth, and all the high

hills that were under the whole heavens were covered." Further, "the mountains were covered." Now, the height of Mount Ararat is put down at 17,000 feet; the quantity of water, therefore, required to cover this mountain would be, in the estimation of Dr. Pye Smith, Professor Hitchcock, and many other eminent writers, eight times greater than what already existed. From whence then came the tremendous mass of water required to produce the Flood, and what became of it afterwards? These are questions which Biblical students should answer or confess their inability to do so and admit the absurdity of the record.

3. *The Size of the Ark.* This vessel is alleged to have been not more than 600 feet long, 100 feet broad, and 60 feet high; yet it is said to have held not only Noah and his family, but "two of every living thing of all flesh." According to Hugh Miller, there are 1,658 known species of mammalia, 6,266 of birds, 642 of reptiles, and 550,000 of insects. Is it credible that so small a vessel as the Ark is described to have been could have furnished accommodation for this vast congregation? Space, too, must have been provided for food for the occupants of the Ark. Under such crowded conditions how did ventilation obtain? The atmosphere must have been fatal, at least, to some forms of life. And whence was obtained the food to sustain for so long a period the carnivorous and herbivorous animals—the swallows, ant-eaters, spiders, and flies? The Black Hole of Calcutta would have been a paradise to it. It is monstrous folly to suppose all the animals of the earth, by twos and sevens, could be squeezed into such a space. It is no less folly to suppose that they would not all have been suffocated before one day had passed. There is a little difficulty also about the light. There were, it appears, three storeys in the Ark, and but one window. Now, where was the window positioned? In the upper storey? Possibly, then, the dwellers in the other two storeys of the Ark were in the dark, where many of those have since been who have relied on the Bible instead of profiting by the lessons of science.

4. *The Collecting the Animals.* The difficulties attending the narrative of collecting the live stock into one happy family are thus aptly put by the Rev. T. R. Stebbing, M.A. : " To achieve it he (Noah) must have gone in person, or sent expeditions, to Australia for the kangaroo and the wombat, to the frozen North for the Polar bear, to Africa for the gorilla and the chimpanzee ; the hippopotamus of the Nile, the elk, the bison, the dodo, the apteryz, the emeu, and the cassowary must have been brought together by vast efforts from distant quarters. . . . Sheep, game, caterpillars, beasts of prey, snails, eagles, fleas and titmice must all have their share of attention. Unusual pains must be employed to secure them uninjured. They must be fed and cared for during a journey, perhaps of thousands of miles, till they reach the ark ; they must be hindered from devouring one another while the search is continued for rats, and bats, and vipers and toads, and scorpions, and other animals which a patriarch, especially singled out as just and upright, and a lover of peace, would naturally wish and naturally be selected to transmit as a boon to his favoured descendants."

5. *Atmospheric and Botanical.* The Bible assures us that, after the waters began to subside, the inhabitants of the Ark existed for nearly eight months in the temperature prevailing at a spot " 3,000 feet above the region of perpetual snow." It surely will not be contended that this statement harmonises with science any more than does the record of an olive tree retaining its life after being under the pressure of several tons' weight of water for nearly three-quarters of a year. " Naturalists tell us that sun and air are needful for vegetable life ; but neither sun nor air could get to trees buried seven miles deep in water. And even supposing the trees to have been in leaf, a wind sufficiently high to dry up seven miles of water in 110 days would certainly have stripped the trees, if it had not rooted them up altogether.' Colenso says :—" The difficulty, that so long an immersion in deep water would kill the olive, had, no doubt, never occurred to the writer, who may have observed that trees survived ordinary partial floods, and inferred that they would just as well be

able to sustain the deluge to which his imagination subjected them." Kalisch observes: "It is agreed by all botanical authorities, that, though partial inundations of rivers do not long or materially change the vegetation of a region, the infusion of great quantities of salt water destroys it entirely for long periods. But the earth produced the olive and the vine immediately after the cessation of the Deluge."

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