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1927

700TH ORDINARY GENERAL MEETING,

HELD IN COMMITTEE ROOM B, THE CENTRAL HALL,
WESTMINSTER, S.W.1, ON MONDAY, APRIL 25TH, 1927,

AT 4.30 P.M.

ALFRED W. OKE, ESQ., B.A., LL.M., F.G.S., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed, and signed.

As the Rev. President M. G. Kyle was in the United States, the CHAIRMAN kindly undertook to read his paper on "Ancient Sodom in the Light of Modern Science."

*ANCIENT SODOM IN THE LIGHT OF MODERN
SCIENCE.*

By THE REV. PRESIDENT MELVIN GROVE KYLE, D.D., LL.D.,
Xenia Theological Seminary, U.S.A.

AN expedition to the Cities of the Plain by Xenia Seminary, in co-operation with the School of Oriental Research at Jerusalem, was planned and organized in the autumn of 1923. The work as planned was carried out the following spring-time, 1924. An official account of the work, somewhat technical in character, has been published in the *Bibliotheca Sacra*, July, 1924, and is soon also to appear in the annual volume of the American School. Those wishing a more technical discussion of the subject are referred to these publications. A somewhat more popular account of this expedition may now be of interest to the Members of the Victoria Institute.

No little preparation is needed to make successful such an expedition. Diplomatic arrangements had to be made at Jerusalem, for, at that time, Transjordan was just being organized as a separate government, now since that time become a part of the Palestine government. It was a rather interesting experience to receive the very first visas ever issued by the Transjordan government to any foreigners to enter the land. Naturally, also, such an experience aroused some apprehension; Moab had borne a bad reputation during some thousands of years for its treatment of strangers, and it was impossible not to wonder a little whether or not these visas might not prove to be mere scraps of paper. It is a pleasure to say that they were honoured to the utmost; everything was done that the Transjordan government in its poverty could do to make us safe and comfortable.

Considerable domestic arrangements also had to be made for our comfort in the region of the Cities of the Plain. Some day in the future that region may be a very popular health resort, but now, to say the least, the hotel accommodations at Sodom are far from luxurious, whatever they may have been in the days of Lot. So we carried along our own cook, and pots and pans for the cook, and victuals to put in the cooking-vessels, and even gasoline to cook our meals. We did, in fact, however, buy some bread in Kerak, and some meal out of which our muleteers baked some thick cakes of bread almost as big around as the head of a barrel, and cooked in the red-hot ashes. We even in extremes bought the thin, black cakes which the Bedouin women bake, very black and very dirty and very tasteless, but supposed, like some other very tasteless things, to be very nutritious. Eggs also we bought, one or two at a time, from the Bedouin women; they were clean on the inside.

Far more important and, for this audience, more interesting than either diplomatic or domestic arrangements was the composition and organization of a staff of experts for such an exploration. Some account of the personality of the staff will at one and the same time assure the strictly scientific character of the work and guard against any charge of sectarian bias in the conclusions reached, and all this to the end that the results of the expedition should receive acceptance in every part of the Biblical world. As the expedition was organized by Xenia Theological Seminary, naturally enough the president of the Seminary was the president of the staff, and as the work was in co-operation

with the American School at Jerusalem it was most appropriate that Dr. Albright, the director of the school and one of the most expert topographical scholars in Palestine, should be director of field operations. Our geologist was Professor Day, of Beyrout College, Syria, a scholar of many years' experience in Palestine, and already very familiar with the region to which we were going. These three in order represent the United Presbyterians, the Methodists and the Congregationalists. The next member of the staff, the proto-archæologist, the flint and old stone expert, was Père Mallon, a Jesuit priest of Ratisbon, Jerusalem; he is the well-known specialist in that field of research, and has many years of experience in Bible lands. A representative of the department of antiquities of the Palestinian government, Naaman Makhouli, who accompanied us, gave something of an official character to the expedition, and by his technical knowledge and perfect command of the local vernacular gave us most valuable assistance. Mr. Makhouli belonged to the Greek Catholic church of Palestine. There were two Fellows also—William Carroll, the Thayer Fellow of the American School, belonged to the Church of God in Ohio; Herbert H. Tay, a Fellow of Xenia Theological Seminary, was of the Brethren of California. Our surveyor and field botanist, Mr. Sukenik, a student of the American School of Jerusalem, was a Russian Jew educated at Berlin, and Mr. Kent, a student of Xenia Seminary, was also of the Brethren of California. In addition to the field staff, we had the advice of Mr. Dinsmore, of the American Colony of Jerusalem, the most expert botanist in the land. We submitted our evidence also on our return to the judgment of Père Vincent, a professor in L'Ecole St. Etienne, Jerusalem, the foremost Palestinian scholar in the world. And also to Phythian-Adams, of the Palestine Exploration Society; he was just at that time being ordained to the priesthood in the Anglican church. It is not likely that anyone will charge this combination of faiths with any sectarian bias. One thing united them all; they were all men of devout reverence for the Old Testament Scriptures, which gives the only ancient account of our field of operations. We all worked together in the utmost harmony, and our conclusions were, I think, without exception, unanimous.

There will be time on this occasion for little more than a statement of the results of the expedition, so that the account of the journey through central and eastern Moab to Kerak, and from that old city down the precipitous mountain side to the plain

down at the Dead Sea, must be passed over very rapidly. The thought of such a journey conjures up visions of camel-trains and flowing robes and black tents of Kedar. Truthfulness, however, requires me to say that the actual journey was much less romantic, for "Uncle Henry" (Ford motor cars) took us around as far as Kerak. We followed the great military road from Jerusalem down to Jericho, across the river by the Allenby bridge, and on by the old Roman highway to the up-land of Moab. At Amman we stopped a couple of days to complete our diplomatic arrangements with the Transjordan government. Mirza Tewfik Pasha, the head of the department of Antiquities at Amman, proved indeed to us a friend at court. He is a genial, cultivated Turkish gentleman with a price on his head in the Turkish Empire, because he was too kindly disposed to oppress peoples. He introduced us to the prime minister, made application for the formal permit for our work, and within an hour there was placed in our hand a letter to the governor of Kerak, empowering and directing him to furnish us a military escort and aid us in every way possible in our expedition. These orders were carried out to the very letter.

We made arrangements at Kerak for muleteers, riding-horses and pack animals, went religiously through a rather formal coffee-drinking with the governor, and after about two days were able to set out to go down, down, down, to the region of the Cities of the Plain. We had come up about 5,000 ft. in travelling 100 miles, and now we descended those 5,000 ft. in going forward only some 10 or 12 miles. Mountain climbing always supplies thrills liberally enough, but going down the pack trail from the heights of Moab to the site of ancient Sodom has peculiar thrills of its own. We dismounted and walked when we could, and climbed when we could not walk, and slid when we could not climb. The mules, trained for their work, would stiffen their fore-legs on the sloping surface of a rock and slide down to solid footing. One mule, like some people in this world, would not keep in the beaten pathway and he went over the precipice; he fell a thousand feet. One of the Arabs recovered his pack, but the mule did not recover. He is a warning to all men and mules that will not keep in the beaten pathway. We were glad to find a camping place on the plain alongside of the camp of a garrison of fifty soldiers. They may not have been needed, but they gave us a comfortable feeling.

When our camp was settled we set out to explore this whole

plain from one end to the other and from the mountains to the sea, 25 miles north and south and from 2 to 5 miles in width, seeking everywhere for evidences of the old Canaanite civilization declared by the Biblical account to have been on the plain in the days of Abraham and of Lot. We rode and walked back and forth, and climbed the foothills and the mountains, traced old aqueducts and reservoirs, explored ruined castles on precipitous cliffs, and followed the water-course from the red sand-stone mountains of Moab to the sea. We dug down in the old ruins to virgin soil to see if any of them showed the civilization of Canaanite times. There were ruins galore, but they were Arab and Byzantine, with perhaps here and there some that were no more than Crusader work, but nothing that went farther back than 600 years A.D. As yet not a trace of ancient Canaanite civilization. All on the surface of the land there, and even in the depths of the ruined cities now there on dry land, is comparatively modern; nothing within 2,500 years of the time of Abraham and Lot.

We determined to search the water of the lower end of the sea that perchance we might find the ruins of the ancient cities under the water. A clumsy, wheezy motor-boat was on the sea; we secured it for a day, and incidentally for about 50 dollars, and set out to explore the shallow water. But that story must wait, for that very morning Père Mallon came into camp with the exciting news that he had found the old Canaanite pottery. The story of that find and the account of all these researches will best be told in the story of the results of the expedition, the story of "Ancient Sodom in the Light of Modern Science."

I.

There is now conclusive scientific evidence that what civilization the Bible represents to have been on this plain in the days of Abraham and Lot, and of Sodom and Gomorrah, was actually here. Even the silence of Scripture concerning the subsequent history of this place becomes, strangely enough, as we shall presently see, also a piece of scientific evidence. Necessarily the first point in the evidence is to establish the actual existence of Canaanite civilization on this plain in the Early Bronze Age, that is to say, the time of Abraham in Biblical history. We had long hunted for this evidence up and down the

plain unsuccessfully, and at last, on the day we set out upon the sea, this evidence came to us unexpectedly, as nearly all archæological evidence does come. It was found at last at Bab-ed-Draa. The place itself was already known, perhaps even the evidence of its antiquity had been observed, but, before the modern development of the science of pottery in Palestine, not understood. Here Père Mallon stumbled upon some open graves where the Arabs had been looking for treasure. Whether or not they got the treasure we have no means of knowing, but they had thrown the pottery out of the grave and this refuse was treasure to us. This pottery was the typical and very distinctive Canaanite product of the Early Bronze Age. It was found that these open graves were part of a cemetery of considerable extent, and alongside of it were the stone circles of a camping place, an open-air settlement. There had never been a city here ; it was not a place of permanent settlement, but a camp-site. Nor, indeed, was there any pottery, except that which came out of the grave. The cemetery and the camping place afforded no explanation in themselves. People camp at a place for a purpose, and they bury at a place that is convenient. Why in both cases here ? Alongside of the camping place were the unmistakable remains of a great Canaanite High Place ; it was typical in its character with its seven sacred pillars. I have said it was a great High Place ; probably it was *the* great High Place of the whole plain ; it was well elevated, as a High Place should be, and conveniently located for access from all parts of the plain. But there was other evidence of the importance of the place. A wall fortification some 1,200 ft. long, now largely a heap of stones, protected the place from encroachment from the wild tribesmen of Moab of the time before Moabite civilization began under Lot. No such costly defence measure would be taken, unless the place itself was of the first importance. This was a great place of worship to which the people came as the Israelites came to Gilgal ; they dwelt in these open-air settlements as the Israelites dwelt in booths at the feast of Tabernacles. Here also a burial place was arranged alongside of the camp and the great High Place of worship. Not all the people were buried here ; the number of the graves was very small in comparison with the population of the plain. Probably only the distinguished dead were buried here at the great place of worship ; here was a kind of Canaanite Westminster Abbey.

So, then, the civilization of the Early Bronze Age at the time

of the Patriarchs and of the great catastrophe of Sodom and Gomorrah, which is represented in the Bible to have been here, was certainly here, and also the few weeks that we searched the plain and found nothing was, after all, not lost. The fact that there is no indication of civilization for the 2,500 years from the destruction of the Cities of the Plain to Byzantine times is exactly in accord with the silence of Biblical history to the end of Biblical times. It is one instance when the argument from silence becomes valid and the absence of evidence of civilization becomes positive evidence. If there be no soot in the chimney, it is evidence there has been no fire kindled in it. Civilization, like fire, always leaves traces. There being no trace of any civilization here from the destruction of the cities to Byzantine times, is exactly in accord with the silence of Scripture for the intervening period.

II.

Another thing concerning this plain is now indubitably established by observation and experience, truly scientific evidence: this, namely, that the description concerning this region "like the garden of the Lord before the Lord destroyed Sodom and Gomorrah," is the only correct description of the natural conditions of life on this plain. This will be a surprise to many as it was indeed to us. Writers who have come to this region, from the time of the early pilgrim down to Lynch and De Saulcy, Robinson and Tristram, on down to more modern travellers and soldiers, have seemed to vie with each other in the description of the horrible conditions of life on the plain. No fin ever cut the waters of the sea, no wing ever disturbed the stagnant air that hung over the plain, and all was death round about; the climate was intolerable, and miasmatic, and pestilential, and the water unfit to drink. Perhaps these writers came here in the hot season; more likely they wrote after they went home and under the spell of the horror of the tragedy that took place here. Our first surprise was to come unexpectedly upon a great water-course filled with boulders, and evidently, at times, the channel of a raging torrent. Even now there ran through it a stream, 1 ft. deep and 25 ft. wide, of as pure sweet water from the red sand-stone mountains of Moab as one might drink anywhere in the world. Little ditches or canals run here and there over the plain, and by this irrigation system fields of excellent wheat

and of grass knee-deep were all around us. The most beautiful fig orchards to be seen anywhere in the world are here, and here also are excellent vineyards and a little indigo cultivation. In Arabic times there was a great sugar industry here ; the aqueducts and reservoirs, and even the old sugar mills themselves, are still to be seen. The Bedouin are indolent and unenterprising and, moreover, have a very poor market for their produce, so they irrigate just enough to provide food and clothing for themselves, and their demands in this respect are easily satisfied. Long centuries have washed the soil pure once again from the salt and the sulphur, and proper irrigation here, making use of the water that is going to waste, could turn ten thousand acres into a veritable tropical garden. The winter temperature here could hardly be excelled anywhere in the world, 75° by day and 65° by night ; it is almost entirely free from mosquitoes, and the scenery is more beautiful and romantic than that of Egypt.

III.

Now the heart of this story of discovery concerning " Ancient Sodom in the Light of Modern Science " is that the great catastrophe did take place exactly as narrated in the Bible. The Biblical story of that event is related entirely from the standpoint of Divine Providence. It draws aside the curtain to let us see what God was doing, but it tells us very meagrely about what transpired in nature. On the other hand, whatever verification of the narrative scientific investigation can give must, of course, relate entirely to the natural effects of the catastrophe as revealed in the neighbourhood. Geologists for many years have been examining this evidence and displaying it to the world ; our expedition only observed it anew, and collated it for purposes of the Biblical narrative. The geologists Wright and Blankenkorn examined this region in the last twenty-five years and reached practically the same conclusion. The Biblical writers tell of the Divine agency ; the geologists know only the effect. The two together make the whole story. According to the Biblical story, a rain of fire and brimstone fell from heaven and destroyed the plain and all the inhabitants of it, except a few members of Lot's family, and consumed all that grew out of the ground. It is evident also from the story in Genesis that salt was mixed with the descending fiery rain. One of the refugees looked back, dallied along the way and was caught in the descending deluge

like some of those at Pompeii, only in this case the laggard was encrusted with salt.

The first fact to be noted is that this whole region was actually ruined and rendered uninhabitable for two millenniums and more. Even the details of the event may be made out with more or less distinctness. The Bible tells us that the deluge came down from the skies, but tells us nothing about how the salt and sulphur got up in the sky to come down. It tells us also of a fire, but gives no intimation of how it was kindled, whether by a Divine fiat directly or the Divine letting loose of lightning. We are also told of a vast column of smoke that went up as from a furnace to heaven, but we are told nothing of the source of the carbon that produced the smoke. The timing of the event is distinctly represented as being entirely in God's hands. The fire was held in leash till Lot be got out. Thus the Biblical story.

Though the Bible does not tell us the origin of the salt and sulphur; it clearly sets them forth as finished products, as real salt and sulphur. The examination of this immediate region throws much light upon the whole event. The findings of the geologists exactly accord with the Biblical story. A stratum of rock-salt lies along the western shore of the waters of the lower end of the Dead Sea, and constitutes the base of the conical mountain called Jebel Usdum; this stratum of salt is 150 ft. thick, and is now visible for about six miles. How much of it may be invisible under the ground at either end it is impossible to say. It is almost absolutely pure rock-salt. Overlying this stratum of salt is a marl filled with free sulphur in a very pure state. If one pick up a lump of it and apply a lighted match it burns very freely and with a horrible stench.

Again, certain changes in superficial geology in this region which have taken place in historical time are well known. The region is a burned-out region of oil and asphalt. The slime pits that were here of old are still evidenced by the asphalt that is found at the lower end of the sea; and that it is an oil region is certified by the expert knowledge of the Standard Oil Company. Before the Great War broke out they had brought in iron pipes for transport of oil from this region; the pipes were turned over to the military authorities to convey water along the route of the advancing army, and some of them may still be seen, now useless, being eaten up by rust, along the route of the march from Egypt to Palestine.

The geologists tell us that at some time which they cannot

determine, but which the Bible announces, something kindled the gases which always collect where there is oil and asphalt; there was an explosion which ruptured the strata, the rupture being now plainly visible, and the salt and sulphur were carried red-hot up into the heaven, and it literally rained fire and brimstone over that whole region. Then followed the smoke; and is there anything that makes a greater and denser volume of smoke than burning asphalt? Thus, while only in the Bible do we get an explanation of the events or learn the agency that brought them about, science is able to certify that the events actually took place.

IV.

But exactly where were the Cities of the Plain? Though the ruins of the cities were well known in ancient times, and are mentioned by Strabo "with a circumference of sixty stadia," by Tacitus (*Hist.* V-VII) and Josephus (*Bel. Jud.* IV, VIII, 4), no one in modern times has certainly seen any of these ruins. The High Place is known as we have seen, and, appropriately, it is a *high place*, and thus above the encroaching water of the lake. The location of the cities themselves must be determined by a process of deductive logic, though it is somewhat the fashion to look with disfavour upon deductive reasoning, because it has too often been based upon a priori premises, hence the result something of an assumption. But if the premises in deductive reasoning be first established by an induction of facts, then the conclusion is not only satisfactory, but is stronger than inductive reasoning, because the conclusion is drawn, not from one set of facts only, but from two or more sets of facts, and that according to the inexorable laws of formal logic.

In this case of the location of the cities the conclusion is drawn from several indisputable facts of different kinds. In the first place, the catastrophe certainly took place where the ruins of the catastrophe now are; ruins do not move around, *they stay put*. Place-names and local traditions may move even for long distances, as the name Zion at Jerusalem, or Megdel at the Lake of Galilee. Now the ruins of the great catastrophe of the Cities of the Plain and all the remaining undisturbed material are right here at Jebel Usdum. Here is the stratum of rock-salt, here the overlying marl mixed with free sulphur, and the region round about attests the disruption of the strata by an explosion

and the scattering of the salt and sulphur far and wide. Indeed, the whole region was so blasted that it took 2,500 years of climatic influence to wash these chemicals out of the soil and restore the plain again to its pristine condition "like the garden of the Lord."

In addition to this initial fact, our investigation established a number of other facts. This plain here is not very wide, seven or eight miles at the most. Lot, when he escaped from Zoar, because afraid to live any longer even there, went up into the mountain of Moab, which is to the east. Therefore the doomed cities from which he fled must have been west of Zoar, which would put them directly in front of this Jebel Usdum. Then the rivers which come down from the mountain to the sea converge on a point also directly in front of Jebel Usdum. Inhabitaney on the plain has always followed the water-courses. We pitched our camp there; the soldiers were camped there, the Bedouin villages are there, the Arabic and Byzantine ruins are there; everywhere in the Orient in ancient times they built near the water-supply. Indeed, the confluence of rivers the world over becomes the most favourable location for cities. So at the confluence of these rivers, once again in front of Jebel Usdum, the ruins of Sodom and Gomorrah are to be expected.

But everything immediately in front of Jebel Usdum is now underneath the water, not in the depths of the sea, however, which is 1,250 ft. deep, but only in a shallow part of the sea varying from a few inches to 35 ft. From the lower end of the sea, looking northward, a strange sight appears—the ghost of a forest, trees dead and bleached with the salt extend out into the sea from both the eastern and the western side. Of course, these trees did not grow in the salt water; they have been engulfed there. Plainly this part of the sea is an overflow and is rising. Within at most a hundred years these trees must have stood upon the shore; the sea, therefore, has been rising, a fact well known to those familiar with the region. I have been making observations on this sea myself for thirty-five years. When I first saw it there was a nice little picnic island in the north end of the sea; in 1912 this island had entirely disappeared, and was said to be under 4 ft. of water. Thus the sea had risen some 8 ft. to 10 ft. This year of the exploration, 1924, our motor came up directly over the place of the island; thus in the last one-third of a century the water has risen from 10 ft. to 12 ft. The causes

of this rise of the water supply the last facts of the minor premise of our syllogism.

The Dead Sea has no natural outlet by river ; thus the problem of the water-level in the sea is the problem of the equilibrium between inflow and evaporation. If inflow exceeds evaporation, the sea fills up ; if evaporation exceeds inflow, the sea tends to dry up. Anything that effects the evaporating surface determines the problem. A smaller pan sends up less steam than a larger one. Anything that will reduce the area of the sea would cause the water to rise. The enormous debris brought down by the Jordan and deposited in the upper end of the Dead Sea is constantly lessening the evaporating area in that part of the sea, and thus causing the sea to rise and extend its borders to establish the equilibrium between inflow and evaporation. In the days of Joshua the sea extended almost six miles further north to the region of Beth Hogla. Thus, as the centuries went by and the sea filled in at the upper end, it rose higher and spread out farther wherever it could, until at last it has run over the edge and recovered the lessening evaporating area. It could not run over the eastern edge, for the wall of Moab was there. It could not run over the western edge, for there was the highland of Judea. It could not run over the northern edge very far, for that was up stream. The only place the sea could enlarge its border much was along the southern edge, and when the water rose high enough, it ran over there on to this plain of the ruined cities and hid their shame from the eyes of the world. Not only were they visible in ancient times, as we have seen, but old men of Kerak still remember the time when camels forded the shallow water at the lower end of the main body of the sea, and an old Roman road is still visible which led down to this point to cross over. Thus all the evidence points to the shallow water in front of Jebel Usdum as the place where the ruined houses of the city rest beneath the flood. The High Place we have found, but it is unlikely that any now living will ever see the ruins of the houses themselves. Schemes for deflecting the water of the Jordan may possibly again lower the level of the sea and expose the ruins, though water used for irrigation is not destroyed, and, if it be not carried away from the neighbourhood altogether, would probably in the long run find its way to the sea as formerly.

V.

One other subject connected with the Cities of the Plain awaits testing by scientific evidence. Lot is called the father of Moab, which, of course, does not mean that every inhabitant of Moab was a lineal descendant of Lot any more than it is implied that every American is a lineal descendant from Washington when he is called the father of his country. Lot was the progenitor of Moabite civilization. This civilization of Moab is also represented in the Pentateuch to have attained a high degree at Kir of Moab in the days of Moses. It is quite possible now to test both this *terminus a quo* and this *terminus ad quem*.

In front of the temple of Luxor there stands the base of a statue of Rameses the Great, which I uncovered in 1908. Around the base of this statue is a line of inscriptions giving the names of peoples whom the Pharaoh boasted as having been conquered by himself or his predecessors. Thus, a little before the Exodus, Moab was of sufficient importance to be the subject of a boastful inscription by Rameses the Great. This confirms the statement in the Pentateuch concerning Moses at Kir of Moab. We desired also to get the material evidence in the ruins at Kerak of this same event. For some days we did not find it, until at last our geologist found the ancient pottery on the precipice east of the town. At first it seems an absurdity that the ruins of the old city could be on the side of the precipice, until Dr. Albright pointed out that the present ruins immediately above this point were built by the Crusaders, who always cleared the ground before they built. They had cast the rubbish of the old Kir of Moab over the precipice, and there it lodged on the side; there was a great heap of it. Now the pottery here was not the pottery of the time of Lot and Abraham, but the pottery of the Early Iron Age or the end of the Late Bronze Age, exactly the time when Moses led the Israelites through this region. From this very point also a rock-cut pathway along the mountain-side led to a good spring of water in the valley, the water-supply of the ancient Kir of Moab. Along this pathway toward the spring we found a cave, and in the cave a passage-way cut through the mountain toward the citadel; we explored it some 600 ft., when it came to an end. They had begun to make a secret passage-way to the spring for water, as was customary in the

ancient walled cities, but, for some reason, the work was abandoned. The High Place of ancient Kerak was also found at almost the very highest part of the mountain on which Kerak is built, a flat rock with libation holes. A smaller High Place nearer the city was later found.

It is not so easy to determine the *terminus a quo* of Moabite civilization. Moab is a large territory; it was impossible that we could explore all of it, so that the evidence has not been exhausted. It is thus impossible to say yet that evidence of an earlier civilization than that of the time of Lot may not appear. We did, however, examine the region immediately above where the Cities of the Plain were located. There an old Moabite temple was discovered at Adar, the only Moabite temple yet known. It lies immediately above the plain, and the pottery showed nothing earlier than the end of the Early Bronze and the beginning of the Middle Bronze Age, which exactly corresponds to the representation of the Bible that Moabite civilization began with Lot's flight from Zoar.

The story of "Ancient Sodom in the Light of Modern Science" is thus a very complete and satisfactory story. The civilization of the days of Abraham, which the Bible represents to have been on the plain at that time, is found to have been actually there, and the absence of any trace of civilization from that period down to 600 A.D. is in exact accord with the silence of Biblical history concerning this plain from the destruction of the city to the end of the history. The natural conditions of life on the plain also, as described in the account in Genesis, are exactly confirmed to-day—"like the garden of the Lord before the Lord destroyed Sodom and Gomorrah." The great catastrophe described in the Bible did actually take place, and the cities are clearly shown to have stood in front of Jebel Usdum, where they lie under the waters to-day. The High Place of the plain, clearly a place of great importance from the fortifications, is now well known. And, last of all, the evidence makes it quite possible that Lot should be the progenitor of Moabite civilization, which certainly had attained considerable importance by the time Moses passed the old Kir of Moab.

Thus the story of "Ancient Sodom in the Light of Modern Science" adds another instance to a long and ever-growing list of evidences of the trustworthiness of ancient documents. Criticism and archæology have been proceeding along parallel lines

in Bible lands. A destructive criticism has started from the presumed untrustworthiness of ancient documents, to essay the task of rewriting the documents and reconstructing the history of Israel. Archæology is proceeding toward the trustworthiness of ancient documents with ever-accumulating evidence. When that trustworthiness is established, any theory based upon the presumed untrustworthiness of ancient documents will come down like a house of cards. *Facts are final.*

DISCUSSION.

The CHAIRMAN moved a vote of thanks to the Lecturer for his deeply interesting paper. He welcomed the strong light thrown by Dr. Kyle upon a Biblical incident of outstanding significance, and recognized the treatment of the subject as having an important bearing upon larger issues. As we get to know more of the background of Bible story, to that degree are we the better prepared to enter into the meaning of the sacred record.

The vote of thanks was carried with acclamation.

Dr. THIRTLE congratulated the author on a paper which, while scientific in character, was cast in the mould of practical experience. Dr. Kyle gives us agreeable glimpses of investigations pursued with enthusiasm, and he succeeds in securing the interest of those who, at a distance, would accompany him in his work of research. It could be said with confidence that the expedition which he led was a pronounced success. It localized ancient Sodom, and threw light on the terrestrial aspect of a tragic occurrence, while by no means excluding from view the divine significance of a terrible judgment.

As a true investigator, Dr. Kyle suggests that there is more to come; further research may yield further light upon the city as it flourished in the days of Abraham. What might be lacking in the completeness of the story was made up by the logical force of the essay as a whole; for not only did the lecturer develop in argument all that he set out to show, but in the concluding paragraphs he rehearsed, in truly effective fashion, the story as previously told in greater detail.

Mr. WILLIAM C. EDWARDS said: Much as we have enjoyed the reading of the paper, I feel sure that the enjoyment would have been

greatly enhanced if we could have had the pleasure of the presence of the Professor. He could have explained some points and expanded others that are all too briefly touched upon in the paper. I think that I am correct in stating that on more than one occasion sceptics have gone to the Dead Sea and come back awed and convinced by what they have seen, that the story of Genesis alone explains the condition of the place. The cause was sin and the result was divine judgment upon a race of people utterly depraved and wicked. The Epistle of Jude (*v.* 7) draws aside the veil, and shows the absolute need for their *extirpation*: they were given over to every vice, even going after "strange flesh." Sodom is set forth as an example, "suffering the vengeance of eternal fire": it will never be restored (Ezek. *xlvi.*, 11).

You will remember that down on the eastern side there juts out into the sea a peninsula. I imagine that that peninsula once extended to what is now the western shore, thus making the Dead Sea separate from the plains to the south of it. As to that Sea, it is one of the mysteries of the world. It lies too low to "draw off" anywhere; it is a sea without an outlet, into which the Jordan basin empties as well as other streams. All the water is evaporated, thus causing a constant and copious supply of dew for the fertilization and refreshment of Palestine, and which once made the plains to be as "the garden of the Lord." I assume that some tremendous volcanic eruption blew "sky high" the dividing hills south of the Dead Sea and north of the plains. Down from the skies came burning sulphur and bitumen: a scalding rain of salt that suffocated, burnt up, and destroyed the wicked cities, letting in the waters of the Dead Sea, which then flowed over the plains. Whilst the Dead Sea north of the peninsula is about 1,400 ft. deep, the part south of the peninsula is in places only a few inches, and seldom more than 13 ft. deep.

I wish to call attention to the reference made by our Lord Himself to the Flood and the overthrow of Sodom. I refer to Luke *xvii.*, 26-29. According to the promise of Gen. *ix.*, 11, the judgment is not this time a flood of water, but a fiery rain; indeed, a foretaste of the final judgment yet to come (2 Pet. *iii.*, 7). Our Lord first describes what is happening on the earth *after* Noah had been shut in the Ark for a week, and then He describes what happened to Sodom *after* Lot had crossed the plain and was entering Zoar. The harvests

being over, all sorts of festivals were in full swing. The antediluvians took new wives into their "harems," and gave their daughters in marriage. "They ate, they drank, they married, and were given in marriage until the day that Noah entered the ark and (until) the flood came."

Think of those gluttonous, drunken, saturnalian feasts ; not one here and there, like the feast of Belshazzar, but almost everywhere ! Imagine how the floods invaded the banqueting halls ! See how the ever-rising waters enter the dancing saloons, and make their way into the nuptial chambers ! No mortal could record the event, but our Lord describes it for us.

Compare this with the overthrow of Sodom, and note the difference in the description. The morning light had come ; it was, say, 6 a.m. The angels lead Lot and his wife and two daughters out of the city ; see him on his weary way across the plain to Zoar. As he entered the little city, the sun rose above the high hills (Gen. xix, 23). Meanwhile, what had been going on in Sodom ? They were feasting (Isa. v, 11) ; "they ate and drank," but for the last time. The markets opened, goods were displayed, "they bought and sold." Outside men are "planting" in their farms and gardens ; workmen have begun their work and are building houses that were never to be finished, or finishing what were never to be occupied. A sudden deafening boom, the bright light of the morning sun is lost in thick darkness, dimly lighted up by burning sulphur and bitumen ; fumes of sulphur overcome every living thing ; from the sky falls a fiery rain, and within two or three minutes all is over, and Sodom and Gomorrah, Admah and Zeboim, burnt up, disappear for ever.

Mr. F. C. WOOD wrote : The paper is further confirmation of the accuracy of the miracle, given in such graphic language in Gen. xix. That chapter raises the important question of, whence did Moses, about four centuries after that historic event, get so many precise details ? This same question may be applied to nearly the whole of the Book of Genesis, and much of other Scripture. Were the details written down at the time by eye- (or ear-) witnesses and handed on from father to son ? Were they matters of tradition, with the danger of much corruption from adding to or taking from, or were these historic matters given to Moses by divine inspiration ?

As the years roll by, I find myself more and more shut up to the latter view and, therefore, I am not in the least surprised to find Scripture in accord with the investigations made about Sodom and Gomorrah as given in the paper.

I have been much impressed with the fact that in nearly every case where discredit has been thrown by criticism on statements in Scripture, the incidents questioned are confirmed by other statements in other parts of Scripture, in the most natural way, and this is beautifully illustrated in the case of the miraculous destruction of the cities of the plain. All through the Bible this catastrophe is referred to, and treated as an actual event, the result of the direct action of God, as anyone may see by reading carefully the corroborating passages. I find from Young's *Analytical Concordance* that there are 29 such passages, and they are found in 15 books of the Bible, viz., Deuteronomy—2, Isaiah—4, Jeremiah—3, Lamentations—1, Ezekiel—6, Hosea—1, Amos—1, Zephaniah—1, Matthew—3, Mark—1, Luke—2, Romans—1, Peter—1, Jude—1, and Revelation—1. I believe this miracle of judgment is also referred to elsewhere, without the names of the cities being mentioned.

It is worthy of particular notice also that nearly all the 19 references in the Old Testament can be shown to be the actual words of Jehovah, while those in the Gospels were the sayings of Christ, and the remainder were by apostles of Christ. Perhaps much of the disbelief of some critics concerning the miraculous element in Scripture might be dispelled, if they could see that nearly all miracle in Scripture is confined by God to His dealings with His miraculous people, Israel, who, according to prophecy, are yet to experience His further miraculous operations. Given fulfilled prophecy, there should be no difficulty about miracle.

Section II of the paper is particularly interesting, as showing that at the present time there are indications that the region of Sodom and Gomorrah was originally as stated in Scripture, as "well watered everywhere . . . as the garden of the Lord"; so good for flocks and herds, that Lot chose that district and separated himself from Abram. The Bible statements concerning that region seem thus to be proved, as might have been expected, and prediction concerning the same region may be near fulfilment. In Ezek. xvi, 53-63, the Lord foretells that that region shall be blessed again, and shall

return to its former estate, at the time of Israel's future national blessing. This is associated with Samaria (synonymous with the Ten Tribes), and as that district is now being re-peopled and is flourishing again, it may indicate that the time is near at hand. The great restoration of the region of the cities of the plain will come about by another miraculous event, *i.e.* by the effect of the waters which will proceed out from under the threshold of the temple in the golden age of blessing, as predicted in the following words:—

“Then said he unto me, These waters issue out toward the east country, and go down into the desert, and go into the sea: which being brought forth into the sea, the waters shall be healed. And it shall come to pass, that everything that liveth, which moveth, whithersoever these rivers shall come, shall live: and there shall be a very great multitude of fish, because these waters shall come thither: for they shall be healed; and everything shall live whither the river cometh. And it shall come to pass, that the fishers shall stand upon it from En-gedi even unto En-eglaim; they shall be a place to spread forth nets; their fish shall be according to their kinds, as the fish of the great sea, exceeding many. But the miry places thereof, and the marishes thereof, shall not be healed; they shall be given to salt. And by the river, upon the bank thereof, on this side and on that side, shall grow all trees for meat, whose leaf shall not fade, neither shall the fruit thereof be consumed: it shall bring forth new fruit according to his months, because their waters they issued out of the sanctuary: and the fruit thereof shall be for meat, and the leaf thereof for medicine.” (Ezek. xlvii, 8-12.)