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*THE WATER SUPPLY OF JERUSALEM.**

By Major-Gen. Sir C. W. WILSON, R.E., K.C.M.G., F.R.S.

ABOUT forty years ago there was a scarcity of water at Jerusalem in consequence of a deficiency in the rainfall of Southern Palestine. The sufferings of the poorer classes, especially amongst the Jews, aroused the sympathy of many charitably disposed persons in this country, and there was a general feeling that some steps should be taken to improve the water supply and sanitary condition of the city. Proposals for their improvement were put forward by Dr. Whitty and Sir John McNeill; but it was soon realized that no scheme could be carried out until an accurate survey of the city and its environs had been made. This was carried out in 1864–65, by the Ordnance Survey Department, at the cost of Lady, then Miss, Burdett-Coutts, and, on its completion, the same generous lady offered to provide the requisite funds for the improvement of the water supply. The offer was rejected for various reasons, amongst which may be mentioned the desire of the Governor to obtain possession of the money and carry out the work himself. In the end, the Governor's suggestion that he might be permitted to raise money locally and repair one of the ancient aqueducts was approved. Money was raised, and the Governor was soon able to report that, as in the days of Solomon, Jerusalem was supplied with spring water. The water ran for about two months: then some evil-disposed person broke the conduit; and, as it was nobody's business to repair it, matters reverted to their previous condition.

In after years the city spread northward and westward beyond its walls, and the water supply question occasionally received slight attention. Twice or thrice the old aqueduct was repaired with the usual result; but it was not until 1888 that a serious effort was again made to improve the water supply. This effort was due to Sir Edmund Lechmere,

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* Being the Address delivered at the Annual Meeting of the Victoria Institute, 26th May, 1902.

whose name is so well known in connection with the Ophthalmic Hospital of the Knights of St. John, at Jerusalem. Sir Edmund, whilst on a visit to the Holy City, had his attention drawn to the great scarcity of water, and, when at Constantinople, he submitted a memorandum to the Grand Vizier on the subject. He at the same time asked the Imperial Ottoman Government to grant him a concession for bringing water into the city, and explained that he was actuated by philanthropic motives and not by any desire for gain. The Grand Vizier and the Minister of the Interior promised a firman for the execution of the work: and H.M. the Sultan, at an audience which he granted to Sir Edmund, expressed his great interest in the undertaking, and said as much as he could without committing himself to a definite promise. On his return to England, Sir Edmund formed a committee for taking over and working the concession: financial support was promised, and a definite project framed which would have supplied water free to the poor by standposts in various parts of the city, and have given every resident a reasonable daily supply. Sir Edmund paid more than one visit to Constantinople and Jerusalem in connection with the enterprise, but failed to obtain a firman. After his death, an application for the concession was made by his son, Mr. Anthony Lechmere, and Lady Lechmere, who had also been kindly received by the Sultan, made a personal appeal to H.I.M. through the British Embassy. The replies were courteous but non-committal. In 1898, after continuous effort to obtain a concession without making any solid progress, the Committee was dissolved. The chief reason for the failure was the old one—the desire of the local authorities to obtain possession of the money and spend it themselves.

Shortly afterwards the Municipality of Jerusalem was authorized to form a company, on which no foreigner was to be a director, to supply the city with water. An appeal for financial assistance was made to some of the members of Sir Edmund Lechmere's Committee; but no satisfactory guarantee could be obtained that the money would be profitably expended, or that the poor of all creeds would receive a gratuitous supply. Before this correspondence was closed, a serious deficiency in the rainfall during the season 1900–01 was followed by a water-famine, and great suffering amongst the poor. The municipal authorities were obliged to take immediate steps to obtain water, and made

arrangements with the railway company to bring up a supply from Bittîr and "Philip's Fountain," and with camel and donkey-owners to carry in water from other springs. The railway company brought the water in tanks to the station on the Plain of Rephaim, and then ran it down through pipes to the low-lying pool, Birket es-Sultân, in the Valley of Hinnom. Thence it was carried up to the city by the water-carriers. About 1,122,000 gallons were delivered at a cost of about £425.

At the same time the municipality arranged with a local engineer to bring water to the city, from Solomon's Pools, in iron pipes. The arrangement ended in a fiasco which has cost more than £6,000 without permanently improving the supply. The ancient low level aqueduct, ascribed to Solomon, which delivered a strong head of fresh cold water, from the pools, in the Ḥarâm esh-Sherîf, or Temple Area, might have been well restored and utilized, as it had been on previous occasions, at a cost of about £600. But, instead of adopting this obvious plan, as a temporary measure, a contract was made with a German firm for the supply of about 12,700 yards of 4-inch iron pipes at a cost more than £300 higher than the estimate of a Birmingham firm. And when the pipes arrived they were laid on the surface of the ground, up hill and down dale, from Bethlehem to Jerusalem. The result has been loss of level and pressure. Feeble streams of water are delivered in the Ḥarâm esh-Sherîf where it is only available for Moslems, and at the Birket es-Sultân whence it has to be carried up a steep hill to the city. To obtain even this small result, the floor of a remarkable rock-hewn tunnel of the ancient aqueduct was lowered and a long narrow reservoir formed in which water is allowed to accumulate during the night so as to keep up a steady stream on the following day. The water running by day through iron pipes exposed to the direct rays of the sun arrives in such a heated state as to be unfit for drinking. No attempt has been made to supply water to any quarter of the city, and the sum expended may be regarded as practically thrown away.

It is well known that the water supply of ancient Jerusalem was ample, and that, at the time of the Turkish occupation of the city, there were still public fountains in the lower parts of the city. The details of the old system of supply are not fully known, but the existing remains of pools, conduits, etc., are sufficient to show that, in

engineering skill and extent, the works connected with it were comparable to those of ancient Rome. An examination of the conditions which governed, and still govern, the water supply, and of the various works constructed during the most flourishing periods in the history of the city, must necessarily precede any attempt to prepare a scheme which will satisfy modern requirements.

Jerusalem stands at the end of a well-defined spur, which lies between the Valley of Hinnom and that of the Kidron and stretches southward, for about $1\frac{3}{4}$ miles, from the ridge that parts the waters of the Dead Sea from those of the Mediterranean. The Kidron, after running eastward for $1\frac{1}{2}$ miles, changes its direction to the south, and separates the Mount of Olives from the lower ground on which the city stands. The Valley of Hinnom, after following a southerly course for $1\frac{1}{4}$ miles, turns eastward, and meets the Valley of the Kidron below the south-east corner of the city. The enclosed space may be described as a small limestone plateau, about 1,000 acres in extent, which falls gradually to the south-east, and terminates in abrupt slopes. The two valleys, at first little more than shallow depressions in the ground, become, as they approach the city limits, rocky ravines, and their point of junction is 672 feet below the ground in which they rise.

The surface of the plateau is broken by two minor ravines which rise in it to the north of the city walls. One, the Tyropœon, runs southward through the city to join the Kidron at Siloam, and divides the lower portion of the plateau into two spurs of unequal size. The western is high and broad-backed, but its continuity is broken by a short ravine, the "Palace Ravine," which falls abruptly eastward from the vicinity of the Jaffa Gate, and joins the Tyropœon about 700 yards above Siloam. The eastern and lower spur, upon which the Temple formerly stood, is for the most part a narrow ridge of rock. The second, of the small ravines, "St. Anne's Ravine," rises in the eastern half of the plateau and, running beneath the north-east corner of the Ḥarâm esh-Sherîf, falls into the Kidron a short distance to the north of the Golden Gate. Those portions of the ravines which lie within the city walls, are now filled with *débris* from 80 to 125 feet deep, and the rocky nature of their slopes is concealed.

The surface of the plateau is composed of thin beds of a hard reddish and grey stone (Upper Hippurite limestone,

locally known as *misse*) which have a south-easterly dip. These strata overlie a thick bed of soft, easily worked stone (Lower Hippurite limestone, locally known as *meleke*), beneath which are beds of pink and white indurated chalk. This formation greatly facilitated the construction of underground cisterns, conduits, and drains, since the soft *meleke* could be quarried away, and the harder *misse* left as a natural roof to protect the water from evaporation and pollution.

The only true spring, at the present day, is the "Fountain of the Virgin" in the Kidron Valley, at the base of the eastern spur. The people principally depend upon wells, upon the rainfall collected in cisterns and tanks, upon flood water impounded in reservoirs and allowed to flow down to the city by gravitation, and upon water brought from a distance by aqueducts. The position of Jerusalem is convenient for the construction of works connected with these artificial sources of water supply.

Rainfall.—This varies greatly. The average for the rainy seasons of the forty years 1860–1900 is 25·7 inches, the minimum 12·5 inches, and the maximum 35·6 inches.

There is no reason to suppose that the laws which governed the growth of Jerusalem differed from those that prevailed at other places. The first settlement would naturally be on the eastern spur in close proximity to the spring; and many of the best authorities believe that the town had not spread beyond the limits of that spur before its capture by David. Possibly the pre-Israelite occupants constructed conduits to carry off the surplus water of the spring to irrigate gardens in the Kidron Valley, and made the rock-hewn shaft, which was discovered by Sir Charles Warren, to reach the water in times of war and siege.

The improvement of the water supply must have kept pace with the growth of the city and the increased requirements of the people. For instance, the rapid extension of the city during the prosperous reigns of David and Solomon, and the institution of the Temple services, must have necessitated the construction of waterworks on a large scale. So also the revival of the services by Hezekiah and his preparations to resist the Assyrian army were accompanied by additions to the works connected with the supply of water. After the fall of the Monarchy, the only pre-Christian building periods of importance were those connected with the names of Nehemiah and Herod the

Great. In Christian times there were the building of Ælia Capitolina by Hadrian and of "New Jerusalem" by Constantine, and the readaptation or reconstruction of the city by Arabs, Crusaders, and Turks. Upon each of these occasions the supply of water must have been a matter for serious consideration; pools, conduits, and cisterns would be restored and possibly new works constructed. Our present knowledge of the works connected with the ancient water supply is very far from being complete, and the identifications proposed in the following notes can only be regarded as provisional.

Springs.—The "Fountain of the Virgin" (the Gihon, and possibly also the Enrogel of the Bible) is the source of a small perennial stream which is increased in volume at uncertain intervals by a sudden rush of water from the spring. During a wet winter the stream floods two or three times a day; in summer only once in two or three days. The spring is dependent upon the annual rainfall, and the water is to a certain extent polluted by its passage through the accumulated refuse of centuries. The water was originally sweet, and digestive properties were attributed to it by the Rabbis. It is now brackish and impure, but is still used, without apparent ill effect, for drinking purposes by the poor of Jerusalem and the villagers of Siloam. The spring cannot thus be utilized in any scheme for a supply of pure water.*

In early days the water from the spring ran down the valley of the Kidron, and perhaps irrigated gardens; then, possibly during the reign of Solomon, it was impounded in a pool in the same valley, which is called "Solomon's Pool" by Josephus (*B.J.*, v. 4, § 2), and has not yet been recovered. Then, apparently for the convenience of dwellers in the lower parts of the city, and to give increased facilities for the irrigation of the king's gardens, a conduit, partly rock-hewn, was constructed to carry the water to a pool in the Tyropœon valley in the position now occupied by the pool of Siloam (*see Q.S. of P.E.F.*, 1886, p. 197; 1891, p. 13; 1902, p. 29). This conduit is perhaps referred to in the words of Isaiah (viii, 6), "The waters of Shiloah that go softly"; and as "the brook that ran through the midst of

* The Editor some years ago endeavoured to explain the cause of the intermittent action of this spring on the syphon principle. He is unable to recall the name of the publication in which the paper appeared.

the land." Lastly, probably during the reign of Hezekiah, the winding rock-hewn tunnel, which still connects the spring with the pool of Siloam, was made, and the water was collected in the two pools of Siloam (*see* Hastings' *Dict. of the Bible*, art. "Siloam").

It is possible that other springs may have existed in the Tyropœon and St. Anne's ravines, but they are not mentioned in the Bible or Josephus, and cannot have been of any importance.

The only *Well* of importance, Bîr Eyûb, or "Job's well," which has claims to be considered Enrogel, is situated below the junction of the Kidron and Hinnom valleys. It is 125 feet deep and is rarely dry. After four or five days' continuous rain it becomes filled with flood-water and a stream runs for a short distance down the valley. There are also in several parts of the city retort-shaped excavations at the bottom of deep shafts for the collection of such water as filters through the beds of limestone. The well that supplies the baths, Hammam esh-Shefa, is merely a shaft in the rubbish which gives access to a small basin in which water running down the Tyropœon valley collects. It is not certain whether the well known "well of spirits" in the Ḥarâm esh-Sherîf is a well or not.

Cisterns for the collection and storage of water, coated with hard durable cement, are found in all quarters of the city and its environs. The oldest are those with natural rock roofs which have been excavated in the *meleke* bed. They are of all sizes, from the small rectangular tank with its single draw-hole to the great storage reservoirs in the Temple area which have their roofs supported by pillars of rock. The finest of these, called "The Great Sea," holds 3,000,000 gallons, and is supposed to be the cistern which Simon covered with plates of brass (Sir. l, 3). Next in date are the rock-hewn tanks with vaulted roofs of masonry: a few of these may date from the second century B.C. Cisterns partly rock-hewn and partly of masonry, and those built in the *débris* of the old city are of later date.

Cisterns are mentioned by Jeremiah (ii, 13), and, under the monarchy, every house appears to have been supplied with one (2 Kings xviii, 31; *cf.* Prov. v, 15; Isaiah xxxvi, 16), for the collection of rain water, which was conveyed from the roof and courtyard by pipes and surface gutters. The water was drawn from the cistern by means of a wheel (Eccles. xii, 6). Water collected, as described above, naturally

carries into the cistern much solid matter, which falls to the bottom and necessitates annual cleansing. It was into an uncleansed cistern in the court of the guard that Jeremiah was lowered (xxxviii, 6). Much of the sickness amongst the poorer classes in summer and autumn is due to the neglected state of the cisterns and want of care in sweeping roofs and pavements before collecting the rainfall.

Pools.—The valleys which enclose and intersect the Jerusalem plateau offer peculiar facilities for the impounding of flood water in pools, or reservoirs, and in each of them there are either the remains of such pools or evidence of their previous existence. The pools are all of great size, and partly rock-hewn; and the dams at their lower ends, where not of rock, are constructed of solid masonry of great thickness.

Near the head of the Kidron Valley are the remains of a large pool well situated for the collection of flood water; but the conduit through which the water ran down to the city has not yet been found. At the lower end of the valley was "Solomon's pool," mentioned above, which is perhaps that referred to by Nehemiah (iii, 16) as "the pool that was made."

In St. Anne's Valley there are the twin pools near the Church of St. Anne which are believed by some authorities to be the Pool of Bethesda, and, lower down the valley, the Birket Israîl, also identified with Bethesda, which in recent years has been filled up with rubbish and refuse. The dam of the Birket Israîl apparently formed part of the *second wall*, and so of the defences of the city.

There is documentary evidence, brought to notice by M. Clermont-Ganneau, of the existence of a pool near the head of the Tyropœon Valley. In a charter dated 1177 it is termed the "lake" of Legerius, and, in some old Arab title deeds, the ground in the vicinity is called Hâret el-Birkeh, the "Quarter of the Pool." There is now no trace of the pool, but it was apparently high enough to supply the ancient rock-hewn conduit on the eastern spur (*see* below), and it may be the "Upper Pool" referred to in Isaiah vii, 3; xxxvi, 2. At the lower end of the valley are the Upper and Lower Pools of Siloam, which were supplied with water from the Fountain of the Virgin by means of the rock-hewn tunnel supposed to have been constructed by Hezekiah. The upper pool, of which the true dimensions were determined by the excavations of Dr. Bliss for the Palestine

Exploration Fund, is probably the Pool of Siloam of the Bible. It is now a small open tank built in the rubbish that fills the old pool. The lower pool, which has not been completely explored, is apparently the reservoir between the two walls mentioned in Isaiah xxii, 11. As in the case of the Birket Israîl, its dam formed part of the defences of the city. It is now used as an open cess-pit for the reception of the drainage of the city. There is some reason to believe that, higher up the valley, between the *first* and *second walls*, there was a fourth pool.

In the short "Palace Ravine" is Hezekiah's Pool, apparently the "Pool Amygdalon" of Josephus (*B.J.*, v, 11, § 4), which receives its water by gravitation from the Birket Mamilla near the head of the Valley of Hinnom. The latter reservoir appears to be the "Serpent's Pool" of Josephus (*B.J.*, v, 3, § 2), and is supposed by some authorities to be the "Upper Pool" mentioned by Isaiah. Much lower down the Valley of Hinnom is the Birket es-Sultân, constructed or restored by German knights in 1170, and repaired by Sultan Suleiman in the sixteenth century.

There were thus ample means for storing water in and near Jerusalem, but, as the town grew, the supply from the rainfall was insufficient and water had to be brought from distant springs by conduits or aqueducts.

Conduits.—The two principal conduits have been distinguished as the high- and low-level aqueducts. The *low-level aqueduct* conveyed water from three pools in Wâdy Urtâs, about seven miles south-west of Jerusalem, to the Temple enclosure on the eastern spur—Mount Moriah. The reservoirs are now known as "Solomon's Pools," and tradition, not without reason, ascribes the construction of one or more of them, and of the conduit which carried their waters to Jerusalem, to Solomon. The pools act as storage reservoirs for the waters of 'Ain es-Sâlih—a fine spring better known as "the Sealed Fountain," and of flood water after winter rains. The conduit starts from the Lower Pool, and almost at once receives a stream from 'Ain 'Atân which rises in a *karîz*, or tunnel, in the vicinity. The aqueduct has a length of about thirteen miles, and passes through the hill on which Bethlehem stands by a tunnel. A second tunnel nearer Jerusalem has been turned into a tank in connection with the new waterworks (*see* p. 15). The conduit crossed the Valley of Hinnom above the Birket es-Sultân, which it probably filled, and, after winding round

the western spur of the plateau, passed over the causeway and Wilson's Arch to the Temple enclosure. It is this conduit, which only supplied the lower quarters of the city and the eastern spur, that has from time to time been repaired. At a later date the supply of the low-level aqueduct was increased by the construction of a reservoir in the Wâdy 'Arrûb, near the road to Hebron, for the collection of spring and flood-water. This pool was connected with the Wâdy Urṭâs system by a conduit 28 miles long, which is possibly that attributed by Josephus (*Ant.*, xviii, 3, § 2; *B.J.*, ii, 9, § 4) to Pilate. It is, however, doubtful whether Pilate did more than restore an existing conduit.

The starting point of the high-level aqueduct is *Bîr ed-Darîje* at the head of a remarkable *karîz*, or tunnel, about four miles long, in Wâdy Bîâr. This tunnel, reached from the surface by numerous shafts, tapped several small springs, and, in winter, collected much flood-water. After leaving the tunnel the conduit carried the water to a pool in which the solid matter settled, and then, passing through a tunnel 1,700 feet long, crossed the Urṭâs Valley above the Upper Pool. Here, where its level is 150 feet above that of the low-level aqueduct, the conduit received the waters of the "Sealed Fountain," and delivered them at Jerusalem, at a level 20 feet above that of the Jaffa Gate. The high-level aqueduct was thus able to supply the western spur, south of the Jaffa Gate, and all that quarter in which the Church of the Holy Sepulchre now stands; it probably also fed the Birket Mamilla.

An interesting feature of this aqueduct is the inverted syphon of perforated limestone blocks, forming a stone tube 15 inches in diameter, by which it crosses the valley near Rachel's tomb. On several of the blocks Latin inscriptions of the time of Severus (A.D. 195), in nearly every case the names of centurions, have recently been found; and this has led some authorities to ascribe the construction of the aqueduct to that period. The objections to this view are:— That the constant supply of running water implied by Josephus' description (*B.J.*, v, 4, § 4) of the fountains and streams in the gardens of Herod's palace could only have been furnished by a high-level aqueduct from perennial springs; that similar stone syphons at Patara, Laodicea, and other places in Asia Minor are of much earlier date than Severus, and possibly of Greek origin; and that at the close of the second century A.D. the level would have been

maintained by building an aqueduct across the valley, and not by a laboriously constructed syphon. A more probable view seems to be that the high-level aqueduct was the work of Herod and that it was restored in the reign of Severus. Both high- and low-level aqueducts must have been seriously damaged during the Jewish revolt in Hadrian's reign; and the low-level aqueduct alone may have been restored on the foundation of Ælia. The great tunnel in Wâdy Bîâr was perhaps constructed at an earlier date to feed the low-level aqueduct, and afterwards utilized by Herod.

It has been conjectured that the low-level aqueduct was popularly called "Tannin" from its serpentine course, and that the "Dragon's Fountain" of Nehemiah ii, 13, was a fountain which it supplied in the Valley of Hinnom. Similarly the "Serpent's Pool" of Josephus (Birket Mamilla) may have received its name from the fact that it was filled by the high-level aqueduct.

Within and near the city several portions of conduits have been found. The oldest are:—(i) The rock-hewn conduit on the eastern hill, which delivered water to the Temple enclosure, and is broken by the ditch that separated Bezetha from the Castle Antonica, and by the *peribolos* wall of the Temple precincts. This was perhaps fed by the "lake" of Legerius, and may have been "the conduit of the upper pool" (2 Kings xviii, 17; Isaiah vii, 3; xxxvi, 2). After the construction of the Antonia, it could only have served the two pools in the ditch of that fortress. (ii) A conduit at a low level in the Tyropœon valley, beneath Robinson's Arch, which was destroyed when the western wall of the Temple enclosure was built. (iii) The tunnel already mentioned as conveying the water of the fountain of the Virgin to Siloam. (iv) The remains of a conduit at a very high level have been found on the western spur, but no clue has yet been obtained to the source of its supply. Bîreh has been suggested, but the remains of a conduit of such length could hardly have escaped notice.

The method adopted for distributing water in the ancient city is unknown; but it seems probable that there were public fountains and small pipes to the palaces and larger houses. The beautiful fountains built by the Arabs are well known to those who have visited Jerusalem.

The steps that should be taken to ensure a water supply which would in some measure meet modern requirements can be only briefly noticed. The question, a simple one

when Lady Burdett-Coutts made her generous offer, has been complicated by the extension of the city over the plateau north of the walls, and over parts of the valley of Hinnom. This has been accompanied by a very great increase in the value of the land, and in the numbers to be supplied; and by the fouling of ground that was formerly clean and suitable for the construction of reservoirs.

The only proper system is to construct reservoirs which can supply the plateau with water by gravitation, and to feed them by pumping up water from lower levels. A supply, amply sufficient for present requirements, could be obtained by repairing the Pools of Solomon; by constructing reservoirs for impounding flood-water in Wâdy Bîâr; by tunneling, three miles, from the springs in Wâdy 'Arrûb to Wâdy Bîâr; and by pumping up water from the spring at Urtâs to the low-level aqueduct. The water could be carried along the line of the ancient aqueduct to a pumping station at the Birket es-Sultân, whence it would be pumped up to the reservoirs. Other springs could be brought into the system when necessary.

It need hardly be said that the proper repair of some of the old works such as Solomon's Pools, the Wâdy Bîâr reservoir and conduit, and the low-level aqueduct; and the establishment of public fountains in the lower parts of the city would give a certain amount of relief. But it would be more economical in the end to construct permanent waterworks for the supply of the rapidly growing city. Pumping operations have been greatly simplified by the construction of the railway. An order compelling the builder of every new house or public building to provide a cistern of proper size might also be suggested.

The provision of proper drainage, for which the position of the city offers certain facilities, is quite as necessary as that of a sufficient supply of water. No serious attempt has yet been made to grapple with this very important matter. The existing drains are bad; the main sewer has its outlet in the lower Pool of Siloam, and the rubbish upon which the city stands is nearly everywhere saturated with the sewerage of centuries. Even in the new quarters outside the walls the arrangements are little better except in those houses which have properly constructed cess-pits that are periodically cleaned and deodorized. The ancient system appears to have centred in a main drain which ran down the Tyropœon Valley to a series of subterranean rock-hewn tanks and

drains discovered by Sir C. Warren near Bîr Eyûb. The solid matter settled down in the tanks, whilst the fluid ran off; and the tanks could be reached by several flights of rock-hewn steps when it was necessary to empty them. The restoration and extension of this system would seem to be the best way of meeting existing difficulties, and of improving the sanitary state of the city.

Discussion.

The Secretary.—Mr. President, ladies and gentlemen: It is my privilege to be allowed to move a hearty vote of thanks to Sir Charles Wilson, for his kindness in delivering this interesting and most instructive address this evening.

Some time ago it occurred to the Council that they might, perhaps, induce Sir Charles, notwithstanding the constant calls upon his time, to give one of our ordinary papers on a subject in connection with Jerusalem, particularly the water supply, in which we are all interested; but, afterwards, we thought on reconsideration that the subject would warrant our asking him to give the annual address, as he has done this evening.

I am sure you will agree with me that the Council came to a wise decision [applause], and that we are greatly indebted to him for the address he has given. Jerusalem is a city of the world to which all eyes are turned, both of Jew and Gentile, and those who have been residents for any time in Jerusalem know how deficient it is in two of the great requirements of a city—viz., water supply and proper sanitary drainage. To myself it has always been a wonder how it is that the inhabitants have not been, from time to time, swept away by typhoid, cholera, or some other disease arising from the want of drainage. If things had been allowed to take the course they ought to have done when Lady Burdett-Coutts so handsomely offered to pay for the restoration of the water supply to Jerusalem from Solomon's Pools—if her wish had been carried out, which was to call in the advice of Sir Charles Wilson himself, who has not mentioned that point (but I believe I am right in saying this)—to put the money into his hands and to have been as adviser and engineer for the carrying out

of this great and desirable system of water supply, restoring it to what it was at the time of Solomon, things would have been very different in the city of Jerusalem from that day down to the present. But we have had this evening a sufficient illustration of the character of Turkish rule in Jerusalem, and, I may say, in almost every part of the world where it is predominant. If British rule had been adopted there, things would have been different in this city, and I venture to say we should have had a proper water supply and an efficient system of drainage. Let us hope that the day may come. We know that the inhabitants would welcome the British suzerainty and authority there to carry out works, instead of the works that are carried out now under the Sultan's authority.

I will now call on you to pass a hearty vote of thanks to Sir Charles Wilson for his address, illustrated as it has been by a very interesting series of photographic pictures.

Dr. PINCHES.—I have much pleasure in seconding the vote of thanks that has been proposed by Professor Hull to Sir Charles Wilson for his interesting address.

[The vote of thanks was then put to the Meeting and carried by acclamation.]

Rev. F. A. WALKER, D.D.—Mr. President, ladies and gentlemen: I have been entrusted with the very pleasing duty of proposing a hearty vote of thanks to our President, Sir George Stokes. We are all aware how often he comes among us from Cambridge, probably constantly leaving his other pressing duties to do so. It needs no words of mine to denote how we value the privilege of having him for our President as one of the leaders in physical and experimental science. Long may he continue with us to help us, and to lead us all more towards the light.

Rev. JOHN TUCKWELL.—I have great pleasure in seconding the resolution which has just been proposed, for no more fitting President of such an Institute could be found. It is a source of strength to us in the work we do in connection with it, to have one so eminently scientific and of such acknowledged eminence as Sir George Stokes presiding over us, and at the same time occupying a position which enables us justly to say, according to the principles of our Institute, that there is no contradiction between the voice of science and the voice of divine inspiration concerning truth of every sort and kind.

I have great pleasure, therefore, in seconding the vote of thanks, and as the President cannot well do so himself, I will now put it to the Meeting.

[The vote of thanks was then carried unanimously.]

The PRESIDENT.—I am very grateful to you, ladies and gentlemen, for the kind way in which you have received this proposal.

I am advanced in years, and I have duties in Cambridge, so that I fear it is only now and then that I have been amongst you. Still I have occasionally and on somewhat recent occasions come up, when most of you have not been aware of it, to take part in important meetings of the Council when I have felt it my duty to be present.

I have endeavoured throughout my office to lead everybody to examine any subject quite fairly and without prejudice, for we may all be sure that truth from one quarter will not contradict truth from another. Let us openly and honestly follow out Truth. (Applause.)

The Meeting then terminated.