

NARRATIVE OF A SCIENTIFIC EXPEDITION IN THE
TRANS-JORDANIC REGION IN THE SPRING OF 1886.

N.B.—*I have adopted generally, for obvious reasons of convenience, the orthography of proper names used by the P. E. F. in maps and other publications.*

THE object of the expedition, of which the following is a narrative, was the study, in the field, of the Flora of Moab, Gilead, and Haurân, with special reference to the forthcoming Flora of Syria and Palestine, and to observe and collect the birds of the same region, to be added to the collections of the Syrian Protestant College, with a view to the ultimate preparation of a work on the Ornithology of the same district. In addition to these, the prime objects of the expedition, accurate observations were made and recorded of the readings of two aneroids, one of Browning's and the other of Watson's make, with a view to settling the altitude of the places visited. The *personnel* of the expedition consisted of Dr. Thomas W. Kay, Professor of Zoölogy in the Syrian Protestant College, Mr. Daûd Salîm, B.A., an advanced medical student in the same, and the author. The time chosen was that in which the greatest number of plants are in season, some traces of those of the early spring being still found, while the summer plants are in many cases in a sufficiently forward state to enable one familiar with the botany of the country to determine them. As far as the Ghor is concerned, this journey was supplementary to a hasty one made in 1882, but not extended to the Shittim plain.

The barometers used during this journey were observed during the two months preceding at the Observatory of the Syrian Protestant College at Beirût. The mean for the whole of this period, corrected for the sea level, was 30·04 inches. At 5 p.m. of the day we left Beirût for Jaffa it was 29·99 inches. In the following notes B. will stand for Browning's and W. for Watson's barometer.¹

April 19.—As Jerusalem was to be our base of operations, we went first to Jaffa by sea, taking with us only our scientific apparatus and personal baggage, leaving the arrangement of tents, transportation, and provisions to be made at Jerusalem. We had entered upon the season of steady, fair weather, and enjoyed a very quiet sail to Jaffa, arriving early next morning.

April 20.—At 7.30 a.m. we disembarked. Barometers: B., 30·05; W. 29·8; mean, 29·92. This observation was taken exactly at the sea level.

¹ I have chosen to record both readings, as well as to give the mean, owing to the fluctuations, for which I am unable to assign a reason. It had been my intention to take also a portable mercurial barometer, but it was unfortunately broken, and could not be repaired in time. I share the opinion of M. Barbey, expressed in his "Herborizations au Levant," as to the unreliability of aneroids for determination of altitudes.

From Jaffa to Jerusalem we made use of one of the rough wagons belonging to the German colonists, and drove over the ill-kept road, which seems to be worse every time one passes over it. We only noted the plants which lay along our road, as we had no time to go to any distance in search of specimens. We observed in the hedges of Jaffa *Vicia sericocarpa*, *Fumaria Judaica*, *Lycium Barbarum*, *Urtica pilulifera*, and *U. membranacea*, *Acacia Farnesiana* stretching its thorny arms over the road, *Bryonia Syriaca* trailing in and out among the hedges, *Ephedra campylopoda*, *Rubus collinus*, and *Smilax aspera*, var. *Mauretiana*.

Among the plants noted on the road to the foot of the mountain, beside the commoner species of the maritime plain, we find *Silene Palæstina*, *Kruberia peregrina*, *Ferula communis*, *Malcolmia pulchella*, *Cachrys goniocarpa*.

All along the road women and children were seen gathering out weeds, especially tares, from among the wheat. The men were ploughing the ground to prepare it for Sorghum. This seed differs from that of wheat and barley in not requiring rain to cause it to mature, and so may be sown late in the spring, when it will get little or no moisture save that in the soil. The grain is not only fed to camels, but ground to make bread for the peasantry. In one case we passed a single camel yoked to a plough. Sometimes a team is made of a camel and an ass, the former being attached to the shorter and the latter to the longer arm of a rude sort of a yoke.

At Bab-el-Wad, at the foot of the mountains, half-way from Jaffa to Jerusalem, we stopped to bait our horses, who require three feedings to get them to Jerusalem. There is a small hotel here, where a botanist who desires to study the flora of this region may find lodging and a frugal diet. In fact, there were two young Americans then staying there, engaged in collecting flowers for ornamental books illustrative of the flora of Palestine. There is also a miserable café by the roadside. We ordered some coffee, and, being entitled to two piastres in change, we received coppers in nominal value thirteen piastres, and in weight about half a pound. The coinage of Turkey is unknowable. The nominal unit of value is a piastre, but no one has ever seen a coin which represents this unit. It is true that there are numerous coins stamped with the name piastre and fractions of a piastre, but they differ in value in every town. One piece, nominally a piastre, is worth half a piastre in one place and a little less in another, and more in another. A twenty-piastre piece is worth nineteen in one place, twenty-three in another, twenty-six in another, but not these numbers of any actual coin, but of an ideal piastre, which has no existence. In Beirût a Turkish gold medjeedie is worth $123\frac{1}{2}$ piastres, in Jerusalem $124\frac{1}{2}$, and so on. Accurate accounts in such a state of the coinage are quite impossible. There are many coins circulating at half, or a quarter, or even an eighth, of their nominal value. The paper issues of the Government are absolutely worthless.

The way from Bab-el-Wad to Jerusalem lies at first up the valley; it

then passes over several spurs of the mountain, making in some places a considerable descent, with corresponding loss of time in regaining the lost altitude. The most common trees on the road are the terebinth, the ever-green oak, and the olive. The *Arbutus Andrachne* is one of the most conspicuous of the shrubs. There is also an abundance of *Calycotome villosa* and *Rhamnus Palestina*. It soon grew too dark to botanize, and we did not arrive in Jerusalem until half-past ten at night, twelve hours after leaving Jaffa. Barometer : B., 27·37 ; W., 27·20 ; mean, 27·285, at level of second floor of the Mediterranean Hotel.

The birds observed during the day were *Passer domesticus*, *Merops apiaster*, *Alauda cristata*, *Carduelis elegans*, *Accipiter nisus*, *Milvus* sp., *Saxicola* sp. We also saw a few lizards.

Wednesday, April 21, 7 a.m.—Barometer : B., 27·39 ; W., 27·19 ; mean, 27·29, which indicates a height of 2,500 feet. We had received a hospitable greeting the night before from Rev. S. Merrill, D.D., then U. S. Consul at Jerusalem. We had hoped for his company during the journey, but he was unable to leave his post at that season owing to the great number of American travellers in Jerusalem. We thus lost his valuable experience of the country east of the Jordan, in the knowledge of which he is not equalled by any traveller, having spent many years in studying its archaeology, geography, and natural history.

We had great difficulty in arranging for animals to carry our impedimenta and ourselves, as the horses and mules not actually on the march with travellers were all at grass. At last, however, we arranged, through Cook's agency, for the nine animals required, and for a cook, and the stores necessary for a twenty-days' tour. But as there was no hope of our getting off on that or the following day, we had time to see so much of Dr. Merrill's fine collection of bird and animal skins as was not already packed to be shipped. It is, perhaps, with the exception of that of Canon Tristram, the most complete in the world for Palestine. Among other varieties he has the skin of an otter from the Jordan and a wolverene from the wilderness of Judea ; also a lizard from the Syrian Desert, about a yard long, of which a specimen (unnamed) exists in the museum of the Syrian Protestant College. The number and variety of birds' skins is very great. This collection is now at Andover, in the United States.

Thursday, April 22.—Barometer : B., 27·36 ; W., 27·12 ; mean, 27·24. The morning was filled up with arrangements for the journey. Among others, we secured the services of Sheikh Felah Nimr, and his brother, 'Ali Nimr, of the tribe of 'Adwân Arabs in Northern Moab, to conduct us as far as Ma'in on the following terms :—

1st. Three medjeedies (silver) a day during the period of our stay in the dominions of their tribe.

2nd. Should we go further to the southward, as, for example, to Callirrhœ or Kerak, four medjeedies a day.

3rd. They should have no claim to food, but would expect an occasional invitation to a meal. (This practically means that they expected to live off our table.)

4th. At the end of the journey they are to have 5 lbs. of coffee and the same quantity of sugar as a gratuity.

5th. In case of our wishing to pursue our journey into the territories of the Arabs of Gilead, Sheikh Felah agrees to make an arrangement with Sheikh Shibly of that tribe at the same rate.

To confirm our bargain, one Turkish lira was paid down on the spot, and although no contract was written Dr. Merrill assured us that all would be as verbally agreed. We merely noted down the terms as a memorandum to ourselves.

I then made the circuit of the city walls, and found a flora somewhat peculiar to such localities, as *Sisymbrium pumilum*, *Silene apetala*, *S. racemosa*, Willd., *Lepidium sativum*, *Linum Hælava*.

A feature of these plants is that they are more or less stunted by the thinness of the soil and the exposure to the sun. I was unable to complete the circuit of the walls as I had once before done, owing to the peculiar fanaticism of the Moslem pilgrims caused by the return of the sacred banner from Nebi Musa. The annual pilgrimage to Nebi Musa is of modern origin, and was devised by the Turkish Government as an offset to the Christian and Jewish ceremonies of Easter and Passover. For the convenience of the pilgrimage, which would have been difficult, if not impossible, had the shrine been on Nebo, where it ought to be, the story was invented that Moses fled from his impending fate on Nebo, crossed the Jordan into the wilderness of Judea, and was not overtaken by the Angel of Death until he reached the site of the present shrine. During Holy Week the peasants throng into Jerusalem from all directions, and march to the sound of drums and pipes and singing down to Nebi Musa, which is situated on a rocky ledge above the Dead Sea, about three-fourths of the way from Jerusalem to the plain. Each company of pilgrims sacrifices a lamb, and eats it with singing and dancing. The banner, furnished by the Turkish Government, which has been taken down by a squad of Turkish cavalry, is escorted back also by the motley throng of pilgrims, and as the procession files around the shoulder of the Mount of Olives, at the very spot where we may fancy the children meeting our Saviour with their hosannahs, it is greeted with salvos of artillery, posted at St. Stephen's Gate, and the shouts of the multitudes on the hillsides overlooking the Valley of Jehoshaphat and on the walls and towers of the city. The scene has points of resemblance to the triumphal entry of our Lord which make it extremely suggestive, and is one of the most striking spectacles of Passion Week.

Late in the afternoon our riding horses were brought for trial. The Orientals are extremely unfeeling in the matter of riding and loading animals with sore backs; almost all the horses brought for trial had bad ulcers under the saddle pads. At last, after rejecting a considerable number of animals, we found some with backs which, by dint of special padding to avoid the sore places, could bear the saddle.

In the evening I had the pleasure of an introduction to Professor Lewis, of the Committee of the Palestine Exploration Fund, with whom I

had a conversation in regard to the projected journey, and also in respect to the desirability of establishing in connection with the College at Beirût a library of reference composed of works bearing on Oriental research, and a museum of Biblical archæology and natural history for the use of scholars who may wish to pursue their studies in the East.

Friday, April 23.—Barometer: B., 27·38; W., 27·16; mean, 27. No journey in the East can be begun without a controversy the first day in regard to the loads, no matter how explicit has been the bargain; the muleteers always pronounce the loads too heavy, and hope by delays at the last moment to force the traveller to take an extra animal or two. With a little firmness and patience, however, we were under way at half-past nine in the morning.

The vegetation along the road from Jerusalem to Jericho is the same as that of the table-land of Palestine until about half an hour before reaching Khan Hathrârah, when the desert types suddenly begin to appear. The first of these plants that is met is *Statice Thouini*, then *Chenolea Arabica*, *Erodium glaucophyllum*, *Fagonia mollis* and *F. grandiflora*, *Glau-cium corniculatum*. At Khan Hathrârah the mean of the barometer was 29·04, which makes it a little below the level of the sea. This Khan, on the supposed site of the inn where the good Samaritan left the man who had fallen among thieves, had been rebuilt since my visit in 1882. A large quadrangular enclosure has been provided for the accommodation of beasts, while a substantial row of arched chambers and an open court take the place of the ruined building of former days.

The change of flora after passing the Khan is striking and almost complete. Only a few ubiquitous remain to remind one of the vegetation of the hill country and plain, which is replaced by such plants as *Zygophyllum album*, *Haplophyllum longifolium*, *Allium Hierochuntinum*, *Gypsophila Rokejeka*, *Matthiola oxyceras*, *Diplo-taxis Harra*, *Centauria eryngioides*, *Pteranthus echinatus*, *Gymnocarpum fruticosum*, and *Galium Judaicum*. On arriving at the plain, *Zizyphus Spina-Christi*, *Balanites Ægyptiaca*, *Solanum coagulans*, *Boerhavia plumbaginea*, and *Loranthus Acaciæ* become the characteristic plants.

We arrived at the New Bridge at 7 p.m. Barometer: B., 31·6; W., 31·5; mean, 31·55. Our tents were pitched, and the appetising savour of our dinner was puffing out from beneath the lids of our tinned-copper cooking vessels. The flimsy trestle-work bridge, built of the wood of the Jordan valley, may last for a few years, but looks as if the slightest freshet would sweep it down the stream. Two red-legged storks were perched on the top of one of the marl hills, a little to the left of our road as we came into camp, but too far away for a shot, and it was too late to stalk them.

The birds of the day were *Passer domesticus*, *Corvus monedula*, *Turtur auritus*, *T. sp.* *Sylvia sp.*, *Saxicola leucomela*, *Alauda cristata*, *Pterocles Senegalus*, *Accipiter nisus*, *Lanius collurio*, *Falco tinnunculus*, *Neophron percnopterus*, *Gyps fulvus*, *Columba livia*, *Caccabis chukar*. We also bagged a few lizards, which have not as yet been studied.

Saturday, April 24.—Barometer, a.m.: B., 31·55; W., 31·58; mean,

31-565. While the horses were being saddled, and the camp struck, I occupied the time in botanizing in the jungle along the river. *Zollikofferia mucronata*, *Bromus brachystachys* (fine specimens over a yard high), *Tamarix Jordanis*, *Glycyrrhiza glabra*, *Nitraria tridentata*, *Lolium rigidum*, *Asparagus Lownei* (specimens with spurred leaves [in the original description by Baker, founded upon the specimens in Kew Herbarium, which I have since seen, there are no spurs]), *Lolium rigidum* (annual specimens, but in full fruit), *Populus Euphratica* (now past fruiting—I obtained fine fruiting specimens the next day in Wady Nimrîn).

After some bickering between the bridge-tender and our muleteers we crossed into the plain of Shittim. The caravan turned south-eastward toward Tell el-Hammâm, while we rode a little north of east toward Nimrîn. A few hundred feet from the bridge, Dr. Kay shot a bushy-tailed rat, which has not as yet been studied.

The characteristic plants met with in crossing the plain were *Statice Thouini*, *S. spicata*, *Balanites Ægyptiaca* (Zakkûm), *Calotropis procera* ('Ushîr), *Solanum coagulans* (Fikkîs), *Zizyphus Spina-Christi* (Sidr or Nebk), the berries of which are edible, *Mesembryanthemum nodiflorum*, *Atractylis cancellata*, *Tunica Arabica*, *Matthiola oxyceras*.

We lunched at the waters of Nimrîn, and took a rest under the shade of a Nebk tree from the almost tropical heat. We then skirted the Moabite hills, and to our disappointment at the time, reached our camp at Tell-el-Hammâm, at the early hour of 3 p.m. Tell-el-Hammâm is twenty minutes distant from Tell Kefrein, in the valley of the Umm-Hadhar (pronounced by the Arabs M'Hadhar). Our tents were pitched on a hillock just above a morass formed by the water of the Umm-Hadhar, a most insalubrious site, which had been chosen by the obstinacy of our guide, Sheikh 'Ali, who always showed himself less accommodating than his brother, Felah. It had been our intention to encamp at Tell-er-Ramé, an hour further on. As the tents were already pitched, we concluded to make the best of the situation, especially as the swamp gave good promise of game and plants.

The birds of the day had been *Lanius lahtora*, *Coracias garrula*, *Coturnix communis*, *Buteo vulgaris*, *Accipiter nisus*, *Sylvia atricapilla*, *S. Rüpellii*, *Crateropus Acaciæ*, *Carduelis elegans*, *Alauda cristata*, *Ammoperdix Heyi*.

We plunged into the swamp, and secured *Alcedo Smyrnensis*, *Oriolus galbula*, *Lanius Nubicus*, *L. lahtora*, *Buteo vulgaris*, *Turtur auritus*. A herd of six wild swine ran down from the opposite bank into the swamp. Presently the Arabs shot a sow, which furnished us at once with a valuable skin, and a good supply of pork.

The swamp also gave us *Asparagus stipularis*, both the type and the var. *brachyclados*, *Saccharum Ægyptiacum*, *Populus Euphratica*, *Salix* sp. (near *alba*), and at its border we found *Periploca aphylla*, not heretofore found in the Ghor, and fine specimens of *Retama Rœtam* in fruit, also *Trigonella Arabica* and *Daucus Jordanicus*, *Post* (a new species).

The warm spring from which Tell-el-Hammâm takes its name, is on

the hillock opposite that on which our camp was pitched, in a south-easterly direction. It is a spring of foul, ill-smelling water, with a temperature of 100° F.; gas, which we had no means of testing, rose in bubbles from the muddy bottom. Around the pools were numerous plants of *Phelipea lutea*, and overshadowing them a thicket of *Salvadora Persica*, but differing from the type in its long linear-oblong leaves, many of them four or five inches long. Dr. Merrill argues that these were the springs visited by Herod, rather than the almost inaccessible, though more potent, springs of Callirrhoë.

In addition to the insanitary condition of our camp, we were subjected to another annoyance of a botanical character. The whole hill on which we were encamped was covered with a luxuriant crop of *Stipa tortilis*, then in full ripe fruit. The seed of this plant is about a third of an inch in length, and furnished with a needle-like point and retrorse hairs. The long awn is covered with barbed hairs, and sticks fast in the meshes of any fabric with which it comes in contact. Our clothes, bedding, tents, carpets, and wrappings became filled with these needle-like seeds, which tormented us with incessant pricks and scratches. A large part of our time was spent in the vain endeavour to get rid of this pest. Not until several days after we left this camp, and only by dint of incessant picking over of our clothes, tents, and bedding, did we finally clear them all out.

Barometer at 9 p.m. : B., 30·66 ; W., 30·7 ; mean, 30·68.

Sunday, April 25.—We spent a quiet day in camp. Barometer, 7 a.m. B., 30·8 ; W., 30·75 ; mean, 30·775. In a walk which we took in the afternoon we observed, on the hill behind our camp, abundance of *Lygai pubescens*, new for this region. The thermometer at noon stood 92° F. in the shade of our tent, but in the afternoon the heat was moderated by a cool breeze. We saw numbers of wild pigs and many birds during the day. They feed at this season on the barley, and take for dessert the berries of the Nebk. 7.30 p.m., Barometer, B., 30·63 ; W., 30·65 ; mean, 30·64.

Monday, April 26.—We were up betimes, refreshed by the needed rest of the Sabbath. Travellers and explorers lose no time by keeping the day of rest. Six a.m., Barometer, B., 30·72 ; W., 30·68 ; mean, 30·70. More wild pigs.

While the caravan was being loaded I took the accompanying sketch of the range of Jebel Neba.

The whole range bears the name of Jebel Neba. Jebel Stâghah is its western spur. Of these peaks more anon.

Before starting I noted *Notobasis Syriaca*, *Allium Hierochuntinum*.

We started at 6.30 a.m. for Tell-er-Ramé, leaving the train to take the direct road to Ma'in. An hour of shooting and botanizing among the Sidr trees brought us to Tell-er-Ramé. The hill is one of the landmarks of the Ghor, and has on its summit two whitewashed tombs, and many graves. Excavations would probably reveal ancient ruins, as is almost always the case with these isolated truncated tells in the East. Near it.

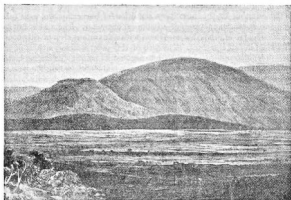
base is a series of pits for storing grain. They are from four to six feet across, and six or eight feet deep. Bits of broken pottery project from the walls of these pits quite to their bottom. It would seem that for a

GENERAL VIEW OF THE NEBO RANGE.

Jebel Sâghah.

Jebel Nêba.

Jebel
El-Mashûbiyah.



The Shittim Plain.

considerable depth the soil is full of sherds, the accumulation of many centuries of *débris* in the neighbourhood of human habitations. Our guides assured us that the grain stored in these pits is quite safe from rats and moisture. The Arabs cover the floor of the pit with cut straw (*tibn*), fill it to the level of the ground with grain, cover the grain with more straw, and then heap a mound of earth over all to a height of some feet above the surface of the soil. The wheat of all the trans-Jordanic region is stored in this way.

The road from the Ghor to 'Ayûn Mâsa is steep and stony. At the foot of Tell-er-Ramé I found *Convolvulus pilosellæfolias*, Dear., a straggler from the distant plains of Mesopotamia, also *Polypogon maritimum* and *Beta vulgaris*, var. *maritima*, all new for this inland maritime plain. Gradually as we ascended, the flora changed. At first we met with the plants of the wilderness of Judea—*Haplophyllum longifolium*, *Allium Hierochuntinum*, *Centaurea eryngioides*, *Ricinus communis*; presently, *Pimpinella eriocarpa* (with fruit resembling that of *Psammogeton*). Soon we began to discover the characteristic plants

of the western slopes of the Palestine range — *Chrysanthemum segetum*, *C. coronarium*, *Senecio vernalis*, *Scolymus Hispanicus*, *Emex spinosus*, *Aphodelus fistulosus*, *A. microcarpa*, *Urginea maritima*, *Linaria Chalepensis*, *Chenopodium murale*, *Beta vulgaris*, *Salvia Horminum*, *Rhamnus Palæstina*, *Atraphaxis spinosa*, *Erodium cicutarium*, *Geranium rotundifolium* and *G. molle*, *Cichorium Intybus*, *Hordeum murinum*, *H. bulbosum*, *Piptatherum miliaceum*, *Pistacia Terebinthus*, var. *Palæstina*, *Saccharum Ægyptiacum*, *Arundo Donax*, *Capparis spinosa*, *Calendula Ægyptiaca*, *Filago prostrata*, *Polygonum aviculare*, *Juncus maritimus*, *Scabiosa prolifera*, *S. argentea*, *Bromus scoparius*, *Nerium Oleander*, *Gundelia Tournefortii*, *Ononis antiquorum*, *O. Natrix*, *Carrichtera Vellæ*, *Rhagadiolus stellatus*, *Ballota saxatilis*, *Teucrium Polium*, *Dianthus multipunctatus*, *Convolvulus althæoides*, *Ephedra campylopoda*, *Muscari comosum*, *Diploaxis Harra*, *Brassica Tournefortii*, *Dactylis glomerata*, *Erodium gruinum*, *Falcaria Rivini*, *Anchusa strigosa*, *Linum pubescens*, *Fumaria micrantha*, *Hymenocarpus circinnatus*, *Avena sterilis*, *Ajuga tridactylites*, *Helianthemum salicifolium*, *Scrophularia xanthoglossa*, *Pallenis spinosa*, *Asteriscus aquaticus*, *Sonchus oleraceus*, *Umbilicus horizontalis*, *Veronica Anagallis*, *Hyoscyamus aureus*, *Iris Sisyrrhinchium*, *Lamium moschatum*, *Carduus argentatus*, *Galium tricornis*, *Parietaria officinalis*, *Caucalis leptophylla*, *C. tenella*, *Poterium spinosum*, *Adonis autumnalis*, *Ornithogalum Narbonense*, *Trifolium tomentosum*, *T. stellatum*, *Silene racemosa*, *S. Atocion*, *Chaetosciadium trichospermum*, *Lagæcia cuminoidea*, *Ranunculus Asiaticus*, *R. myriophyllus*, *Sedum Palæstinum*, *Linum striatum*, *Biscutella Columnæ*, *Valerianella vesicaria*, *Fumaria parviflora*, *Lathyrus Aphaca*, *Geranium lucidum*, *G. tuberosum*, *Lythrum Grafferi*. These, with many others, will serve to give a picture of the floral panorama which unrolled before us as we ascended to 'Ayûn Mûsa.

At 'Ayûn Mûsa we found wild figs almost ripe. In fact some of them were already mellow enough to be eaten.

This fact may shed light on the incident of the barren fig tree, as it was hardly too late for a late Passover season.

We arrived at the fountain at 11.30 a.m. Barometer at the level of the cave, B., 28.5; at upper cave, B., 28.45; W., 28.4; mean, 28.425.

Hanging from the roof of the cavern are splendid fronds of *Adiantum Capillus-Veneris*, and on its floor fine specimens of *Scrophularia macrophylla*, and below the cavern *S. Michoniana*.

We lunched at the southernmost of the fountains, and then started for the summit of *Jebel Sîâghah*, which stood up boldly above us. As we are making the ascent let us review the question of Moses' point of view, for the last time, of the promised land which he was not to enter.

We will assume as a fixed point of departure, what perhaps is nevertheless uncertain, that *Jebel Neba* is *Mount Nebo*. *Sheikh Felah*, our guide, who has taken most of the travellers through *Moab* in recent years, says that the whole mountain mass which looms up above *Wady 'Ayûn*

Mûsa is known by the name of Jebel Neba, as that to the south of it is known by that of Jebel el-Maslubiyah. Khurbet Sîâghah is the name of the ruin which crowns the prominent shoulder of this mass which looms above 'Ayûn Mûsa, and overlooks the Shittim plain, but does not include the highest rounded summit of Nebo. Moses was in the Shittim plain when commanded to ascend Nebo, to **רֹאשׁ הַפִּסְגָּה** the top of the hill, or the top of Pisgah, making the latter a noun proper—the hill, **κατ' ἐξοχην**. If we suppose, as is altogether probable, that he started from the neighbourhood of Tell-er-Ramé, his road would lie as ours did by 'Ayûn Musa, and up the flanks of Jebel Sîâghah, to its top, and thence to the summit of Nebo (the top of the hill) where he met his fate. It is impossible to conceive that he did not continue to pause and cast back his eyes from time to time during the ascent. He would instinctively turn westward at each winding of the road, and look back over the Shittim plain where the great host was encamped; at the green poplars and willows of the Jordan banks, with the silvery water flashing in places through their dense foliage, then across to the glaring desolate rocks of the Judæan wilderness; as he rose higher and higher he would discover the green hills of Palestine. When he reached the bold headland of Sîâghah he would linger to take in the wonderful foreground in which the whole host would now be visible filling the plain, the northern third of the Dead Sea, the Jordan Valley, to the cleft at the bottom of which he knew lay the Sea of Tiberias (albeit invisible from this point of view), and the whole profile of Palestine. Neither from this point, nor from the top of Nebo, which is about 350 feet higher, could he literally see the Mediterranean. The including of the great sea in the prospect must be taken in the same sense as the seeing of all the land. No mountain in Moab is high enough to enable one to see the Mediterranean over the hills of Palestine, nor to see anything but the eastern declivity of those hills and their profile against the western sky.

From Sîâghah Moses would naturally go on to the *top of the hill*, about a mile away, and 350 feet higher. Here his range of vision, although losing the immediate foreground of the Ghor, and the host of Israel encamped there, would take in a more comprehensive profile of the promised land across the Jordan, and in addition the surrounding hills of Moab. Here, if Neba be Nebo, should be placed the site of his last glimpse of the land of Canaan, and of the world in which he had sinned.

The criticism which derives Pisgah from Sîâghah does not find any support in the genius of the Semitic languages. All Hebrew and Arabic words contain three, or at most four, radicals. Those of Pisgah are **פסג**. Those of Sîâghah are **ע = ג = י = ס = ص**. To derive **סיע** from **פסג** follows no known principle of derivation, and cannot be maintained.

Furthermore, there is a fatal scriptural objection to making the *top of*

the hill רֹאשׁ הַפְּסֶקָה Stâghah. Balaam (Num. xxiii, 14) ascended to this point, *i.e.*, the top of the hill רֹאשׁ הַפְּסֶקָה, and from it he saw only the outskirts of the Israelitish camp. Furthermore, it was the express object of taking him there, to prevent him from seeing the whole camp. Had his point of view been Stâghah he would have seen the whole host and not its borders only, whereas from the top of Nebo he would see only the outlying detachments, while Stâghah would hide the main body from his view. We may suppose that it was likewise the object of Jehovah in taking Moses to the top of Nebo, to spare him at the last moment the pain of seeing the host of his brethren, and so mitigate the sorrow of parting.

The attempt to derive Zoar from Stâghah falls to the ground, from philological as well as scriptural reasons. The radicals of Zoar are צוּר, while those of Stâghah are סִיַע = صيغ. Moreover, Stâghah is much too far off from any assignable site of Sodom to suit the narrative.

Our consideration of the walk of Moses would be incomplete, did we forget that he was quite familiar with every coign of vantage for obtaining the best view of Palestine. It must be remembered that Moses made the top of Nebo the first objective in his march into the northern Moab. The host of Israel rolled up the slope of the table-land to the crest of the highlands, and looked over into the promised land. He then addressed himself to the conquest of the country of Heshbon and Elealeh, and then pressed forward into Gilead and Haurân. Weeks, or perhaps months, were occupied in the subjugation of these extensive districts, and much time afterward in rebuilding the cities and putting everything in a posture to favour to the utmost the passage of Reuben, Gad, and the half tribe of Manasseh, across the Jordan with their brethren. During this period Moses and the leaders of the host, doubtless ascended every prominent peak from Nebo to Jebel Kuleib (spelt in the Arabic with ق not with ك), and saw in detail, over and over again, all the panorama of Palestine, and he likewise saw, from the mountains of Bashan, Lebanon and anti-Lebanon, and the Damascus plain, all of which belonged to them by inheritance, clear to the entering in of Hamath northward of Lebanon and anti-Lebanon, and had been searched out as lawful territory by the spies. In going up Nebo from the valley of the Jordan, Moses was to take a *last*, not a *first*, look, and that over scenes now become familiar to him and his people.

Our conversation has lasted longer than the ride from 'Ayûn Mûsa to Stâghah, and we are on the first of the two shoulders of which the headland is composed. We arrived at 1.20 p.m.; barometer: B., 27.68; W., 27.65; mean, 27.665.

There are somewhat extensive ruins on this shoulder. Among them we found *Ferula communis*, and *Crambe Hispanica*.

The view from this point is indeed comprehensive and impressive. It includes the hill country of Judea, the Mount of Olives directly opposite (now crowned with a minaret), the land of Ephraim, Ebal, and Gerizim, and the hill country of Galilee. In the foreground is 'Ayûn Mûsa, the valley of the Jordan, and a considerable part of the Dead Sea. The heights of Nebo cut off all the view to the east. The ruins consist of a deep vaulted chamber, surrounded by rubble walls now fallen and shapeless; also a well with a curb stone. It may well have been one of the many high places of Baal, found all over the country. (*Cf.* Num. xxii, 41.)

We crossed over to the other shoulder of the headland, on which Lieutenant Steever had erected a stone heap as a memorial of his visit. Barometer: B., 27.66; W., 27.63; mean, 27.645. It lies south-west of the other. We found there fine specimens of *Allium Erdelii*, and *Paronychia argentea*. The view is substantially the same as that from the northern peak, but a little more extensive.

The two shoulders of Sîâghah suit well the narrative of Balaam. From the northern summit of Sîâghah, which is, perhaps, the high place of Baal mentioned at Num. xxii, 41, he would obtain a comprehensive view of the Israelites encamped in the plain. From the southern summit he would gain a still more comprehensive one. Both summits have ruins, which may be those of high places of Baal. Just below the top of Nebo, above Sîâghah, is an undulating *wheat field*. This may be the *field of Zophîm on the top of the hill*, ראש הַפְּסִגָּה, and from the top of the hill he would see the outer part of the Israelites' camp and no more (*cf.* Num. xxi, 20, where Pisgah is again mentioned). The heights of Sîâghah effectually hide the foreground of the plain as appears from the accompanying sketch.

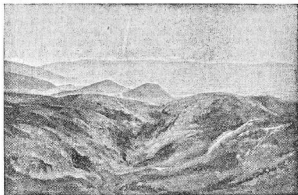
After spending an hour on the peaks of Sîâghah, we rode up to the *top of the hill*, crossing what may have been the field of Zophîm, and reaching the summit at 3 p.m. Barometer: B., 27.26; W., 27.28; mean, 27.27. The view from this point takes in less of the north and south of Palestine than that from Sîâghah, also less of the Dead Sea, and none of the Shittim plain, but includes all the great features of Palestine even better than that from Sîâghah, and also the adjacent regions of Moab. It was by moving from point to point that Moses would take in every possible impression of the landscape, never more to be seen by him.

As soon as we had passed over the summit of Nebo we were in the rolling table-land of Moab. On that side there is no mountain. Scenery, fauna, and flora suddenly changed. The ridge, which is from the side of the ghor the summit of a mountain range, is from that of Moab the brow of the table-land, only slightly elevated above the general level. Nebo, from that direction, is only one of the many waves of that rolling prairie which stretches away to the Euphrates and Tigris, and beyond them to Beloochistan.

The table-land of Moab is destitute of trees, and, with the exception of Mâdeba (Medeba), which is a Christian village, and 'Ammân (Rabbath Ammon), which is a Circassian colony, has no human habitations, except

the black goats' hair tents of the Arabs. As it is for the most part devoted to grazing, the effect of the landscape is dreary and monotonous. We found *Iris Sari*, *Astragalus callichrous*, *A. Alexandrinus*, both the type and var. *elongatus*, *Barbey*, *Rhaponticum pasillum*.

SKETCH OF A PORTION OF MOSES' LAST VIEW FROM NEDO.



N.B.—The two prominent peaks in the centre are those of *Jebel Sîghah*. The white to the left of them is the head of the Dead Sea. The plain to the right is that of Jericho. The mountain range along the horizon is that of Judæa and Southern Samaria. The most prominent peak, just over the left summit of *Sîghah*, is the Mount of Olives. The plains of Moab are hidden by the shoulders of *Sîghah*.

The birds of the day were *Lanius lahtora*, *L. Nubicus*, *L. auriculatus*, *Passer domesticus*, *Sylvia atricapilla*, *Accipiter nisus*, *Columba livia*, *Alauda cristata*, *Saxicola oenanthe*, *Melanocorypha calandra*, *Oriolus galbula*, *Buteo vulgaris*, *Coturnix communis*, *Ciconia alba*, *Alcedo Smyrnensis*.

At 5 p.m. we arrived at Ma'in, the ancient Baal-Meon, and encamped at a little distance from the eastern foot of the tell, by the ancient cisterns, one of which still holds water. Barometer, 6.30 p.m. : B., 27.14 ; W., 27.06 ; mean, 27.1. Nothing about the present ruins indicates high antiquity. There are, however, numerous cisterns cut in the rock, beneath the surface.

Sheikh Felah, our guide, is a man of about 50 years of age, of medium stature, with a mild countenance and gentle speech. He is the

most decided gentleman whom we met among the Arabs. He has a small box full of well-earned testimonials from the distinguished travellers whom he has conducted through Moab. As soon as we arrived at Ma'in, he rode off to arrange for our visit the next day to the hot springs at Callirrhœ. This lies within the territories of the Hamideh Arabs, and the 'Adwân dare not conduct a stranger into their lands.

Tuesday, April 27th, 6 a.m.—Barometer: B., 27·16; W., 27·05; mean, 27·105. Taking an early start, we soon began our descent toward the deep chasm of the Zerka Ma'in. The first part of our way lay over the rocky rolling ground of the plateau. Within an hour we passed an encampment of the Hamideh. It consisted of a single row of tents with the openings toward the east. The usual array of dirty children, barking dogs, and slatternly women presented themselves. They offered us milk to drink, but as we had just taken our coffee we declined.

The flora was, for the first part of the way, the same that we had encountered in coming up the mountain the previous day, but reversed in order. On arriving at the level of the sea, we began to meet the peculiar plants of the Ghor and the deserts: *Erodium hirtum*, *Linaria Hælava*, *Centaurea*, sp., growing on the hot rocks near the road. As we went further down we collected *Alcea rufescens*, *Chardinia xeranthemoides*. At the top of the last hill before arriving at the amphitheatre of Callirrhœ, we met fine specimens of *Cleomia trinervia*, then *Blepharis edulis* (not before noted here), *Reaumuria Palæstina*, *Withania somnifera* (a variety with long peduncles), then *Ochradenus baccatus*, *Helianthemum Lippii*, var. *micranthum*, *Frankenia pulverulenta*, *Moringa aptera*, with panicles of fragrant flowers, *Acacia tortilis*, *Phoenix dactylifera*, *Tamarix mannifera*, *Dæmia cordata*, with its curious twining stems, *Fagonia glutinosa*, *Pentatropis spiralis*, Forsk., growing by the side of the hot water with its sulphury-yellow flowers,¹ *Trichodesma Africanum*, *Aizoon Canariense*, *Iphionia juniperifolia*, *Tetrapogon villosum*, *Atriplex leucocladum*.

The barometers at the main spring at Callirrhœ were: B., 30·20; W., 30·28; mean, 30·24. The principal springs were partly covered with poles and branches of trees, over which the Arabs lie and spread over themselves their thick lambskin cloaks, that they may swelter in the steam bath. The temperature of the principal spring was 138° F. There were several Arabs at the spring at the time of our visit, who had come for the sake of the steam baths. One of them was a young man with Hodgkin's disease (swelling of the lymphatic glands of the neck), and others were afflicted with various diseases, principally rheumatic. They had killed a lamb just before our arrival, and were seething the flesh in sour milk (lebben). The head and intestines were immersed in the hot spring to be parboiled before being cooked in the pot.

¹ This plant would seem to be the *Crucifer* alluded to by Tristram in his "Land of Moab," as no other plant with sulphur-coloured flowers grows by the water. It is, however, an *Asclepiad*, not a *Crucifer*.

I enquired of the Arabs what they knew about these springs. One of them informed me that "Our Lord Solomon" had brought these springs out of the rock. I asked him how Solomon got here over the frightful descent over which we had just come. He informed me that there were good roads through the country in those days. How an invalid like Herod could have reached them is a mystery. There is no trace of any road better than the present one, and down it an invalid could only be brought in a palanquin.

We remained for a couple of hours in the stifling atmosphere, and then set out on our return. As we started the Arabs at the spring attempted to extort black mail. We left the Sheikh to do the talking, simply assuring them that we would pay them nothing. Orientals are best dealt with through a mediator.

Our ride down had taken four hours. The return occupied five and a half, although we stopped but little to collect on our way back. We had expected to return up the wâdy, but found that it was quite impossible to go up its bed. As a detour along the brow of the cliffs which overhang it would have been very long and fatiguing, and we had no provisions for a bivouac overnight by the way, we returned over the same road by which we had come. The climb out of the gorge was excessively fatiguing, and not until we reached the breezy plateau did we regain the elasticity which the stifling air of the valley had quite taken away. On our arrival in camp we found that one of our Arabs was going to Jerusalem early in the morning, and, tired as we were, we were glad to avail ourselves of the chance to write to our friends at home.

The birds of the day were *Ciconia alba*, *Coturnix communis*, *Caccabis chukar*, *Merops apiaster*, *Passer domesticus*, *Alauda cristata*, *Calandrella brachydactyla*, *Saxicola cinanthe*, *Lanius Nubicus*, *L. collurio*, *Corvus frugilegus*, *Milvus*, sp. *Coracias garrula*, *Ammoperdix Heyi*. Two leopards were reported by the Arabs as seen the previous day on the way to the springs.

Barometer, 8 p.m. : B. 27·15 ; W. 27·05 ; mean, 27·10.

Wednesday, April 28.—Barometer, 7 a.m. at camp : B. 27·16 ; W. 27·13 ; mean, 27·145. We went up to the top of the ruins, and found the barometer there B. 27·1 ; W. 7·03 ; mean, 27·065.

The ruins are a confused mass, consisting almost wholly of the remains of the mediæval town, with few, if any, marks of antiquity. A few of the vaulted chambers seem to be used at times as residences, or as stables for cattle.

Before leaving I botanized around the camp, but found nothing of special interest. Our train took the direct route to 'Ain Hesbân, while we struck across the plain in a direction east of north toward Medeba (Medeba). We soon encountered large tufts of *Stipa Lagasæ*, the awns of which are sometimes ten or eleven inches in length. We also met with large tufts of *Phalaris Canariensis*, also *Glaucium Aleppicum*, with large orange-coloured blossoms, *Iris Sari*, *Astragalus Alexandrinus*, var. *elongatus*, Barbey.

From a distance Medeba presents a somewhat striking appearance, but the illusion is dissipated on entering the town. Yet among blind men a one-eyed man is king. Medeba is the only inhabited village on the Moab plateau, and, although the houses are of rough stone put together without mortar, and unplastered or simply daubed with mud, yet, by contrast with the goats'-hair tents of the Arabs, they are pleasing to all but Bedawîn, whom nothing can induce to live within walls. The town contains about a thousand souls, all nominal Christians of the Greek and Latin rite. The complexions of the people are many shades lighter than those of the Bedawîn, and some of the young girls are quite fair and tolerably pretty. We visited the Latin Church, a dismal enough sanctuary as compared with those of civilised countries, and yet an elevating and educating force in such a desolate land as Moab. One can understand better in such circumstances the tolerance in the Divine plan of error and partial truth, when they are antagonised with more radical error or total ignorance like that of the modern Moabite Arabs. We could not but remark what Christianity, even in its imperfect form, had done for Medeba.

The reservoirs of Medeba are on a grand scale, and well preserved. That on the south side is 110 metres in circumference, and could easily be repaired for use again. Those to the east and north are smaller, but also well preserved.

After a few purchases of chickens, eggs, and bread, we turned our faces northward toward Hesbân (Heshbon), which loomed up on a high swell of the table-land. About an hour from Medeba we came to a group of cisterns under the ground, and some subterranean vaulted chambers, one of which was quite extensive and elaborate. These ruins are known as El-Kufeir-esh-Shurki. I am not aware of any biblical or classical site to which they can be referred. The vaults appear to be mediæval. We took our lunch under one of these vaults by the side of the underground chamber above alluded to. Our supply of water being exhausted, we drew a little from one of the cisterns which still holds water, but it was so muddy that we only used it to wash our hands after our lunch. On the waste soil above the vaults we found *Astragalus cruciatus*.

From El-Kufeir-esh-Shurki we reached Hesbân in an hour. From the ruins of this fortress a fine view is obtained of the whole plateau of Moab and the mountain range which culminates in Jebel Husha' (Osha'). The present ruins are not of high antiquity, and it is a difficult task for the imagination to restore to the reservoir to the east of the castle the beauty which made the fishpool of Heshbon a suitable simile for the eyes of Solomon's bride.

From Heshbon we crossed the plane to El-'Al (Elealeh), a shapeless mass of ruins, at the top of which is another of the stone heaps raised by Lieutenant Steever when establishing his base line for the triangulation of Moab. We have already noted one at the top of the southern shoulder of Jebel Sîâghah. Dr. Kay started a fox on the top of El-'Al, but he proved too foxy for us, and escaped among the ruins. From El-'Al we

dropped down to our camp at 'Ain Hesbân, below the crest of the plateau. As soon as we crossed the brow of the table-land we again encountered the familiar flora and rocks of the maritime slopes of the Palestine range and of Lebanon.

We found our tents pitched in a meadow by the stream which flows from 'Ain Hesbân, not at the fountain itself. The water, however, was cool and clear, and very abundant. It was delightful to hear the murmuring of a brook in such a dry and thirsty land. The plants of the day were, in addition to those noted, *Astragalus hamosus*, *Geranium tuberosum*, *Veronica Syriaca*, *V. Cymbalaria*, *Coronilla scorpioides*, *Medicago scutellata*, *Adonis Palæstina*, *Allium Neapolitanum*, *Lagurus ovatus*, *Trifolium scutatum*, *T. clypeatum*, *Mercurialis annuus*, *Scandix Pecten-Veneris*, *Salvia Verbenaca*, *Silene inflata*, *Nasturtium officinale*, *Anthemis altissima*.

The birds of the day were *Ciconia alba*, *Coturnix communis*, *Caccabis chukar*, *Passer domesticus*, *Alauda cristata*, *Calandrella brachydactyla*, *Melanocorypha calandra*, *Columba livia*, *Yunx torquilla*, *Emberiza miliaria*, *Saxicola* sp., *Milvus* sp., *Accipiter nisus*, *Corvus frugilegus*, *Passer Moabiticus*.

Barometer at our camp at 7.30 p.m. : B., 27.56 W., 27.58 ; mean, 27.57.

Thursday, April 29, 6 p.m.—Barometer : B., 27.51 ; W., 27.48 ; mean, 27.495.

During the evening and night the clouds had rolled up heavily, and a few drops of rain fell. The barometer likewise fell during the night. On arriving in camp the night before we had found Sheikh 'Ali, the brother of Sheikh Felah, who gave us rather a sulky greeting. We were not sorry to learn that he was not to accompany us the next day. He is every way inferior as a guide to his polite and good-natured brother, Felah.

The morning was still threatening, so we rolled up our plant presses in the tent carpets to protect the specimens in case of a shower. We sent on our train by the direct road to 'Ammân, while we went around by 'Arak-el-Emîr. We turned northward, and passed over a spur of the mountain to Wâdy Na'ûr. Our road lay for an hour through a beautiful park-like country, sparingly wooded with *Quercus coccifera* and *Q. Ægilops*, and the ground everywhere beset with *Poterium spinosum*. We also saw *Styrax officinale*, and a pure white-flowered form of *Anchusa strigosa*. A lark started up from under the horses' feet, flew a few paces, and alighted in the grass. I dismounted, and almost succeeded in catching it. But suddenly it rose, flew a little distance to lead me on. Dr. Kay then tried a distant shot, but did not hit it, and then the bird flew away out of our sight. Doubtless this was a ruse to protect its young.

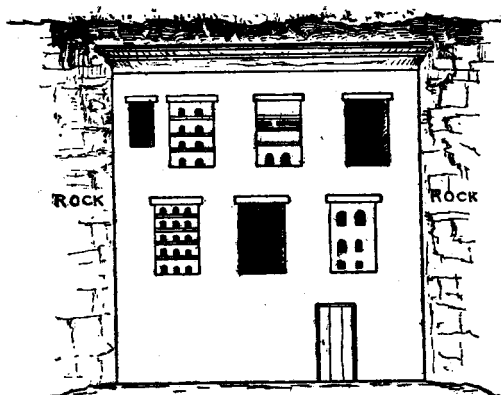
At half-past 11 we arrived at Kasr-el-'Abd, the ruin by 'Arak-el-Emîr. Barometer : B., 28.23 ; W., 28.27 ; mean, 28.25. The air was exceedingly stifling and oppressive. Among the ruins we collected *Trichodesma Boissieri*, Post, a new species with softer indument than *T. molle*, *Cerinthe major*, *Pisum*

elatus. Overpowered by the glare and heat, we were glad to leave these ruins, where the mid-day sun cast no shadow, and made our way toward Wâdy-es-Sîr. We rode up to the caverns of 'Arak-el-Emîr, or Stabl 'Antar, which are now used as cattle-pens, and the talus of manure accumulated at their base overgrown with rank specimens of *Notobasis Syriaca*, taller than a man on horseback. The cliffs above the caverns are full of turtle doves. Daûd bagged three at one shot. As we passed into the beautiful Wâdy-es-Sîr, Dr. Kay stalked and shot a jay, and presently afterward a hawk. The valley is park-like, with here and there groves of trees, *Quercus coccifera*, *Pyrus Syriaca*, *Amygdalus communis*, *Pistacia Terebinthus*, intermingled with open glades and cultivated fields. After half an hour's ride up the valley we sat down to lunch under an evergreen oak, *Qu. coccifera*, by the side of a small mill-sludge, and ate our lunch. All around were fine specimens of *Scilla hyacinthoides*, with long, spike-like racemes of blue flowers. After shooting a few birds, we rode on up the beautiful valley of Es-Sîr (Tyros). The upper part of the valley is well wooded on both slopes, mostly with *Quercus coccifera*. Half-way from 'Arak-el-Emîr, to the head of the valley, high above its left flank in the face of the cliff, is a rock-hewn dove-cote, of which the accompanying sketch will serve to give an idea. The length and breadth of the façade are each about 19 feet. At the bottom is a doorway, which is supplied with a rough wooden door. Some of the windows are entirely open, and others have the original rock pierced with pigeon holes, as indicated in the drawing. The cote is three storeys high, originally with rock floors, which are now for the most part broken away, and in part replaced with rough wooden beams overlaid by brush. A rock-column of an oblong shape, 13 feet 4 inches long and 3 feet 5 inches wide, occupies the centre of the building, as indicated in the accompanying sketch of the ground plan of the second storey. In each storey were six tiers of nests chiselled out of the walls and central column, affording in all accommodation for many hundreds of birds. Being alone, and half an hour behind the party, I had not time to count the number of these nests. At the time of my visit there were no pigeons there, and as there were no persons near from whom to make inquiries, I could not ascertain whether it still served its ancient purpose or no. From the door at the lower entrance, and the existence of a sort of pen in front and traces of manure about, I suppose that the ground floor is now used as a fold for sheep, and the upper for sleeping places for the shepherds. Who excavated it, and when, I have no means of surmising. There was no inscription on the façade or on the rocks near by. This dove-cote had been noted before by Lieutenant Conder, in an unpublished manuscript, of which I have heard, but have not seen, but has not yet been figured in any publication so far as I know.

On the sloping hillside, beneath the dove-cote, in the rich soil, was a large number of *Trachelanthus (Cerinthopsis) pereana* of Paine, which seems to me not to differ specifically from the specimens of *T. Kurdica* in Boissier's herbarium. The single very imperfect specimen of the

latter plant in Kew herbarium differs somewhat from Paine's plant, but is too fragmentary to exhibit the specific characteristics. A little further up the valley I collected, on a shady bank, fine specimens of *Ajuga*

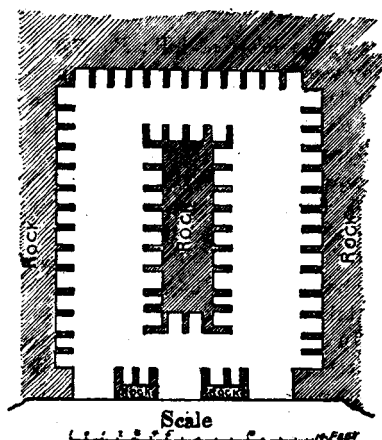
FACADE OF ROCK-HEWN DOVE-COTE IN WÂDY-ES-SÎR.



The lower cut represents the ground plan of the second storey of the same, showing the arrangement of the niches for nests. The central column is of the original rock, left as the pillars in mines to support the roof, and utilised to increase the capacity of the cote.

The upper floor is similar to the middle. The lower is also similar but has no windows.

The wooden door is quite modern.



Orientalis, with large rounded bracts. Further on, large specimens of *Cyperus longus*, and more *Trachelanthus Kurdica*.

Near the head of Wady-es-Sir is a new village of Circassian refugees, laid out with regular streets, neat little cottages, and an air of thrift quite anomalous in this land.

From the romantic scenery of Wady-es-Sir to the bleak plain of Moab, at its head, is a sudden and not agreeable transition. The dreary rolling upland, with no trees, and no relief to the eye but the numerous black goats'-hair tents, wears a featureless aspect, which was the more tiresome to us, as we were no longer rewarded with new and interesting plants, and in fact added nothing to our presses or our game bag. We were very glad when, at about 5 p.m., we arrived at 'Ammân. We found, however, to our disappointment, that our muleteers had pitched on a marshy plain by the great spring of the Zerka, which here bubbles out of the gravel, and flows in a broad sparkling stream through the town. As the camp at this place, beside its unhealthy situation, is half a mile from the ruins, and cut off from a view of them by a sharp turn in the valley, we made up our minds to move the tents to the brow of the hill south of the town, which commands a panoramic view of the ruins and the surrounding hills. While awaiting the re-establishment of our camp Dr. Kay shot a rock owl, which tried to escape by dropping into a cavity among the ruins. A Circassian boy crawled down into the crevice and fished him out with a hooked stick. It was 9 o'clock before we were settled in our camp, and our dinner was of the scantiest, but we were amply repaid for the drawbacks of our removal by the fine outlook over the town. The new Circassian village built among, and in part over, the ruins greatly mars their picturesque appearance, and as it has also been built at the expense of the materials furnished by the ancient buildings, it has largely contributed to their degradation. A generation or two of Circassian occupation will probably complete the destruction of Rabbath Ammon.

Barometer at camp on brow of hill: B., 27.05; W., 27; mean, 27. The birds of the day were *Corvus monedula*, *Lanius auriculatus*, *L. Nubicus*, *Garrulus glandarius*, *Upupa Epops*, *Corvus cornix*, *C. frugilegus*, *Actites hypoleucas*, *Saxicola oenanthe*, *Turtur auritus*, *Columba livia*, *Alauda cristata*, *Gyps fulvus*, *Neophron percnopterus*, *Milvus*, sp., *Accipiter nisus*, *Merops apiaster*, *Ceryle rudis*, *Fringilla*, sp.

Friday, April 30, Camp.—Barometer: B., 27.2; W., 27.15; mean, 27.175. At top of modern Circassian village: B., 27.33; W., 27.33; mean, 27.33.

The great abundance of fish in the stream only half a mile below the spring in which it takes its origin, suggests the idea of a subterranean spawning ground. In the morning, before we started, two boys brought between them three strings, with about a hundred fish, to sell. Unfortunately we had no arrangements to preserve them, and carried away no specimens. The source of supply must be a very abundant one to allow of such a catch at one time. In point of fact the whole stream is alive with them.

After an hour spent in examining the ruins in detail, we started

westward across the dreary plain toward Es-Salt. *Salvia acetabulosa*, *Orchis tridentata*, *O. saccata*, *Fumana glutinosa*, and a few of the roadside ubiquitous, were all that we saw until we cleared the plain and began to cross the spurs at the edge of the table-land. In passing through a scrub recently cleared I found *Orchis punctulata*, var. *sepulchralis*, quite new for the Levant; the sepals and petals of the specimens found were pallid and greenish-nerved. Beyond this scrub we came upon a wooded ridge, an hour and a half south of Es-Salt. *Quercus coccifera* was the principal tree. Here I found *Limodorum abortivum*, parasitic on the roots of *Arbutus*, *Andrachne* and the oaks (new for this region); also *Hesperis pendula*, *Piptatherum holciforme*, *Milium vernale*, *Arrhenatherum elatius*, *Cephalanthera ensifolia*, *Smyrniolum Olusatrum*, *Cistus villosus*, *Lonicera Etrusca*, *Ervum lenticula*, *Pinus Halepensis*, *Papaver Argemone*, *Rubia tinctoria*, *Anagyris foetida*, *Carum ferulæfolium*, *Astragalus cretaceus*. As we left the woods and passed over the naked rocky spurs we again encountered the roadside ubiquitous, which accompanied us fairly within the outskirts of Es-Salt, where our tents were pitched on a shelf of rock, thinly covered with earth, under the Latin cemetery.

The birds of the day were *Passer domesticus*, *Sylvia atricapilla*, *Columba livia*, *Corvus cornix*, *C. frugilegus*, *Upupa Epops*, *Caccabis chukar*, *Melanocorypha calandra*, *Merops apiaster*, *Calandrella brachydactyla*, and *Anthus campestris*.

The savory welcome of the steam of our dinner saluted our nostrils as we passed the cook's tent. We had scarcely seated ourselves before our eyes were greeted with the welcome sight of Dr. Elias Saba, a medical graduate of the College at Beirût, who is acting as medical missionary of the Church Missionary Society at Es-Salt, where he is the associate of Pastor Jemel, the devoted incumbent of that parish. Dr. Saba, with true oriental hospitality, had brought us a lamb, a most welcome addition to our larder, which had been rather a scanty one since we had used up the last of our wild pork. He conducted us to the Turkish postal and telegraph station, where we sent a despatch to Beirût, which, however, was not delivered there until the afternoon of the following day, and the answer did not reach us until after forty-eight hours.

Es-Salt is built on both sides of a steep ravine, so that in many places the roof of one house serves as a platform in front of the one next above. Overlooking the town is a castle, now disused, and partly fallen into ruins.

Before dinner we dismissed our 'Adwân guides. A more courteous, obliging, and satisfactory guide than Sheikh Felah would be difficult to obtain.

Barometer at camp, 6 p.m. : B., 27·23 ; W., 27·2 ; mean, 27·215.

Saturday, May 1, 6 a.m.—Barometer : B., 27·27 ; W., 27·2 ; mean, 27·235. Taking an early start we went, in company with Dr. Saba, to botanize over the top of *Jebel Husha'* (the Arabic form of *Hosea* : it is not *Ausha*, as some have spelled it). The road winds up by an easy ascent. *Andrachne telephioides*, *Cerintho major*, *Rhus coriaria*, *Cyno-*

crambe prostrata, Marrubium cuneatum, Convolvulus Scammonia, Alysium campestre, Hypericum crispum, Anarrhirum orientale, and the ubiquitous. Near the top we found *Onobrychis aurantiaca* (immature), *Astragalus Christianus*, *Limodorum abortivum*, parasitic on *Arbutus Andrachne*, *Sisymbrium Columnæ*, *Valerianella truncata*, *Lolium* sp. At a point near the top is the wely of Nebi Husha'. Barometer: B., 26.48; W., 26.43; mean, 26.455. It is a rectangular whitewashed building, 50 × 25 feet, constructed of rubble stone, with the inevitable dome. Within it is the tomb of the prophet, 31 feet long. The Moslem tradition makes all the prophets and saints exceedingly tall, and their height increases in a direct ratio with their antiquity. The tomb, as is usually the case, was draped with green cloth in a somewhat tattered condition, and sundry rags which had been hung there by the devout. To the east of the weli is a Moslem cemetery, overshadowed by a magnificent *Quercus coccifera*.

The top of *Jebel Husha'* is divided into three peaks, two of which lie along its western brow, overlooking the Ghor, and the other to the north-east. From the southernmost of the western peaks (Barometer: B., 26.27; W., 26.23; mean, 26.245) is seen the finest panorama of the opposite table-land of Palestine obtainable, far finer than that from any part of *Jebel Neba*, including *Siaghah*. It takes in the heights above *Hebron*, the hill country of *Judea*, *Benjamin*, *Ephraim*, *Galilee*, and *Hermon*. From the north-eastern peak (Barometer: B., 26.22; W., 26.19; mean, 26.21) may be seen the whole circle of the *Promised Land*, including the *trans-Jordanic* region. I noted the *Hauran* range, *Jebel 'Ajlûn*, *Hermon*, the mountains of *Galilee*, *Samaria* (the cleft of *Nablus* is exactly opposite), *Carmel*, the hill country of *Judea*, *Moab* to *Jebel Shihân*, and the rolling country which forms the watershed between *Moab* and *Gilead* on the west, and the *Syrian* desert on the east. From this peak the Ghor and the eastern declivity of the *Palestine* table-land is hidden by the two western peaks. Were I seeking for a "Nebo," or "the top of a hill," over against *Jericho*, from the summit of which the most comprehensive as well as the most detailed view of the whole *Promised Land* might be obtained, I would choose *Jebel Husha'*. I am doubtful whether the name *Neba* may not be an accommodation of the Arabs to the wishes of travellers. Certainly nothing but the name entitles it to the preference over *Jebel Husha'* as the site of *Moses'* last view. The north-western peak is precisely the same height by barometer as the south-western, and gives the same view with a little of the *Dead Sea* cut off by the other peak, from which it may be seen to its extreme southern end.

The birds of the day were *Lanius collurio*, *Upupa Epps*, *Carduelis elegans*, *Sylvia curruca*, *S. atricapilla*, *Anthus campestris*, *Coracias garrula*, *Saxicola* sp., *Garrulus glandarius*, *Corvus* sp., *Caccabis chukar*.

6 p.m., Camp.—Barometer: B., 27.2; W., 27.16; mean, 27.18.

Sunday, May 2, Camp, 7 a.m.—Barometer: B., 27.25; W., 27.12; mean, 27.185.

Pastor *Jemel* has gathered about him a considerable congregation of

Protestants in that secluded town, and ministers to them in a most acceptable manner. At his request, after the morning service had been read, I preached to them in Arabic, and a more attentive and devout audience one could not wish to see. As we came out of church a telegram was handed to me; it was a reply to the one I sent to Beirût two days before. Telegrams from Es-Salt go by way of Nabulus, and if they arrive in the evening they cannot be sent until the next day.

After service a great crowd of sick and impotent folk collected in the dispensary, and we spent some hours in caring for their diseases and wounds—a practical exhibition of Christianity worth more than many sermons in the evangelisation of the world.

Pastor Jemel has given special attention to the question of the sites of Penuel and Succoth. He thinks that the former should be at El-Hârât, where there is an ancient ruin, and Succoth at El-Kheimât, which is the Arabic for *Booths* = *Succoth*. He does not regard either Es-Salt or Gerash as Ramoth-Gâlead. He was not prepared to commit himself to any theory as to the site of the latter. He thinks, however, that El-Mastabah, between Es-Salt and Gerash, is Ramoth-Mizpah, which, in his opinion, cannot be Kal'at-er-Rabadh.

In the evening we took a walk up to the castle. Barometer : B., 26·85 ; W., 26·91 ; mean, 26·88.

Monday, May 3.—Camp at Es-Salt. Barometer, 7 a.m. : B., 27·23 ; W., 27·14 ; mean, 27·185.

We engaged the services of a guide to take us as far as Irbid, at the edge of Haurân. His name was 'Ophnân, which signifies *putrid*. Orientals usually give names having some signification, oftentimes a very singular one. One boy in the Lebanon was called Jidri (*Small-pox*), on account of an epidemic of that disease which prevailed at the time of his birth. While we were waiting for the mules to be loaded a crowd of people gathered around us for medical treatment, and I amused myself and my patients by doing an eye operation for one of them.

Dr. Saba rode with us to the top of the pass over Jebel Husha', where we sat for a few minutes under a large *Quercus coccifera*, and then bade good-bye to civilised society before plunging into the land of Gilead.

Our road down Jebel Husha' lay through groves of the above-mentioned oak, *Arbutus Andrachne*, and *Pinus Halepensis*. The open glades were now green with barley and wheat. Besides our ubiquitous plants, we met with *Fumana Arabica* and *F. glutinosa*, *Arum hygrophilum*, *Helicophyllum crassipes*, *Colladonia crenata*. On reaching the ford of the Jabbok, we met with *Lotus tenuifolius*, *L. lamprocarpus*, *Astragalus epiglottis*, *Typha latifolia*, and *Lythrum Græfferi*. We took a refreshing bath in the Jabbok while awaiting our convoy. This *brook* is a noisy, turbulent stream, which at this season was almost a river.

The climb up the opposite hill proved a stiff one. A little way up we met with *Andropogon hirtus*. Several times the loads were brushed off backwards in the narrow passes of the road, or were pushed away by projecting branches, and had to be untied and carried on the backs of the

muleteers beyond the obstruction. We found nothing of interest on the hillside until near its top, where we fell in with *Plantago lanceolata*, var. *altissima*, nearly 3 feet high, *Orchis sancta*, and *Polygala Monspeliaca*. Botanically speaking, this was the least productive day of all our journey. Just before entering the village Daúd shot a large wild cat, the only one we saw during our journey. Two gazelles were startled by the mules, but made off too quickly to be shot.

The birds of the day were *Turdus merula*, *Accipiter nisus*, *Neophron percnopterus*, *Sylvia atricapilla*, *Corvus monedula*, *Merops apiaster*, *Garrulus glandarius*, and a considerable number of small birds seen, but not shot.

We arrived in camp at Burmah at a little before sunset. Barometer : B., 28'03 ; W., 27'98 ; mean, 28'005. Our tents were pitched in a grove of olive trees, by a rivulet which carries water to the village and adjacent fields.

Tuesday, May 4.—Camp at Burmah, 6.30 a.m. B., 28'03 ; W., 27'98 ; mean, 28'005. We had passed a restless night, the air being hot and dry. We again divided our party, the mules and baggage taking the straight road to 'Ajlún and we making a detour by Gerash. Our guide, 'Ophnân, proved ignorant of the road, and we lost our way several times. We kept nearly on a level, along the ridge which forms the left flank of the Wadi-Zerka. As we did not follow the road, we often had to force our way through rocky scrubs. We passed pomegranate bushes, *Tulipa Oculus-solis*, *Celtis Australis*, *Calystegia sepium*, *Torilis triradiata*, *Alsine decipiens*, and *Ceratonia siliqua*. After an hour we sighted the wretched village of Jejazi, a little distance below our path. It is difficult for one not accustomed to botanizing on horseback to appreciate the difficulty of collecting in the East. The restive horse, accustomed to go steadily behind his fellows from morning till night, is quite unable to comprehend why his rider should dismount every few minutes while he plucks up some insignificant weed. He tugs at the bridle, neighs at his companions, paws the ground in his impatience, and often, taking advantage of an unguarded moment, breaks away and starts off at a full gallop, leaving the botanist to follow as he may on foot, and pick up his saddle-bags or their contents strewn along the road.

Our morning's ride gave us, in addition to the afore-mentioned, *Anacamptis pyramidalis*, *Ophrys apifera*, *Silene juncea*, *Bongardia chryso-gonum*.

The first view of Gerash is imposing, and the impression grows as one examines the ruins in detail. The left bank of the stream, opposite the ruins, is occupied by a flourishing Circassian village. On the aqueduct bridge I found a *Celsia heterophylla* growing between the chinks of the stones. Its nearest-known neighbours grow near 'Aintab and Marsh. Dr. Kay shot a bird on top of one of the columns of the Temple of the Sun. As it fell on the edge of the capital he could only get it by sending a well-aimed rifle ball through the edge of the stone, splintering off a small fragment, which carried the bird clear over the other side of

the column. It fell minus a few feathers, and now graces the College collection; it proved to be *Merops Ægyptiacus*.

We lunched at the great fountain. While there we received an urgent invitation from the Kaimakam to take a cup of tea with him, but, knowing the delays and ceremonies of such visits, we respectfully declined, and as soon as possible took up our line of march toward Sûf and 'Ajlûn. Soon after leaving Gerash we passed a *Viscum cruciatum*, parasitic on *Cratægus Azarolus*. Presently the wind veered around to the west, and after the parching heat of the forenoon we had a cool and refreshing breeze for the remainder of the day. Soon we found *Trifolium physodes* on a shady bank by the roadside; then a new *Æthionema* (*Gileadense*, Post), but unfortunately only one specimen, and in a state too advanced for perfect description.

Soon we found a new *Scrophularia* of the scattered sparsely-leaved division (*S. Gileadensis*, Post), a new species well characterised by its large, almost globular flowers, and small scattered, lacinate leaves. After passing Sûf we entered a scrub similar to that of the morning, with plenty of red and white rock rose. Farther on we encountered open groves and grassy glades, in one of which we discovered *Anthriscus sylvestris*. The last hour of our ride was through romantic scenery, at one point through a pass with precipitous moss-covered rocks on either side, crowned with trees and fringed with over-hanging shrubs. From this beautiful glen we emerged rather abruptly into the clearing around the village of 'Ain-Jenneh, opposite which our camp was pitched.

The birds of the day were *Columba livia*, *Turdus merula*, *Turtur auritus*, *Buteo vulgaris*, *Coracias garrula*, *Garrulus glandarius*, *Corvus frugilegus*, *Saxicola cenanthe*, *Alauda cristata*, *Emberiza cæsia*, *Monticola cyanus*, *Lanius auriculatus*, *Corvus cornix*, *Philomela huscinia*.

Our camp lay in a green meadow, opposite the imposing Kal'at-er-Rabadh. Barometer: B., 27.48; W., 27.37; mean, 27.425.

Wednesday, May 5.—Camp at 'Ain-Jenneh. Barometer: B., 27.44; W., 27.33; mean, 27.385. The fall in the barometer during the night corresponded with signs of rain in the sky and air. Fearing for our collections we left the tops of our tents standing over our luggage, with strict injunctions to the muleteers not to take them down until we gave the signal from the top of the hill. We then rode up to the castle (Kal'at-er-Rabadh). Our road lay up a rocky hill, wooded with oaks. Under the trees we found *Erysimum scabrum*, new for this region, *Bellis perennis*, *Trifolium Boissieri*, and in the tank near the castle *Ranunculus aquatilis*, var. *submersus*.

The view from the top of the castle (barometer: B., 26.64; W., 26.50; mean, 26.57) includes a large part of the Dead Sea, *Jebel Husha'*, the whole of the range of Palestine, *Southern Lebanon*, Hermon, all of the Jordan valley except the portion just to the west, which is cut off by a spur of the hill. Galilee is seen with special distinctness. Haurân and Eastern Gilead are not visible from this point. The special interest of

the surrounding region centres in the life of Jephthah and the tragical end of his ill-fated daughter.

The signs of rain diminishing, we sent our guide down to start the cavalcade, but, with the idiosyncrasy of the country, the muleteers and our cook had pre-judged the case, struck the tents, and were already *en route* before we arrived at the foot of the hill. We were soon engaged again in the defile which leads out of the valley, and then turned to the left and pursued our course through a country diversified with clearings and patches of rocky woodland. The flora was in the main identical with that of the rolling uplands of Western Palestine—*Cachrys goniocarpa*, *Leccokia Cretica*, *Trifolium erubescens*, *Medicago pentacycla*, *Synelcosciadium Carmeli*, fine trees of *Juglans regia*. In a pool half-way from 'Ajlûn to Irbid, I found *Alisma natans*, not before noted in the Orient.

Just before reaching the watershed between Gilead and Haurân (barometer : B., 26·22 ; W., 26·15 ; mean, 26·185) we passed out of the woodland. This watershed was named for us by a passing Arab El-Musajjah. From this point there is a fine view of Jebel-ed-Duruz and the green plain of Haurân. We left with regret the fine park-like scenery and cool air of the uplands of Gilead and dropped gradually into the plain, and encamped late in the evening at Irbid.

The birds of the day were *Ciconia alba*, *Coracias garrula*, *Coturnix communis*, *Caccabis chukar*, *Buteo vulgaris*, *B. ferox*, *Accipiter nisus*, *Neophron percnopterus*, *Anthus campestris*, *Alauda cristata*, *Merops apiaster*, *Muscicapa grisola*, *Passer domesticus*. Two large rabbits were seen, but escaped the bag.

Irbid is a postal and telegraph station, and we enjoyed once more the opportunity of communicating with our home. Barometer on the tell overlooking the town : B., 28·03 ; W., 27·93 ; mean, 27·98.

Thursday, May 6, 7 a.m.—Barometer : B., 28 ; W., 27·95 ; mean, 27·975. There is little of botanical interest to be found around the villages of the great interior plains of Syria. Immense heaps of garbage, and the accumulated refuse of many centuries harbour nettles and goose-weeds, and a few crucifers and grasses. Having soon disposed of these, we started across the great plain toward Der'ah, the ancient Edrei. Even the ruins here are in ruin, and little is left to occupy the antiquarian. But our march across the plain began to reveal the rich and interesting vegetation of Haurân. *Astragalus oöcephalus*, with white heads as large as a hen's egg, was the most conspicuous plant of the morning. We also collected *A. cruciatus*, and *A. triradiatus*. We passed the large root-leaves of summer Umbellifers, Composites, and Scrophulariaceæ, but too little developed for collection. Six weeks later a bounteous botanical harvest could be reaped of species seldom well represented in herbaria, many of them doubtless new to science.

The caves at Der'ah were walled up, and inaccessible without more labour and time than we cared to spend in their exploration.

After lunching at the fountain, and watching our caravan file up the

opposite hill and disappear over its crest, we spent a half-hour in observing the clamour and confusion at the well. A special study of Scripture history, with reference to the incidents and customs connected with the drawing of water, would furnish material for a moderate volume. An hour now and then spent at an oriental fountain will shed a bright ray of light on these customs, and reproduce many of the incidents. Women were drawing water, men were jostling and incommoding them; there was the *beginning of strife*, and, in fact, its middle and end; there were water jars (pitchers), and buckets (skins with a metal or wooden hoop at the mouth); some of the pitchers were broken at the cistern; there were flocks, and herds, and watering-troughs; we went up and asked for water, and they let down their jars from the shoulder and gave us to drink; there were women and men *sitting* by the well.

After this instructive half-hour we set out for our camp, four hours distant. Interesting plants began to increase in number, and the birds led us many a long chase into the fields. In our ardour we wandered too far to the south, and finally reached a pool where we found fine specimens of *Butomus umbellatus*, and a number of different species of birds, which Dr. Kay and Daūd commenced to shoot. Suddenly a couple of Turkish soldiers appeared over the brow of the hill and rode towards us and asked us with some anxiety whether we had been shooting. They seemed much relieved when we told them yes, and they told us that there were roving bands of Arab robbers in this region, and that it was highly unsafe. They then directed us to the main road, which lay half-an-hour to the north. Crossing the fields we fell in with *Allium Schuberti*, with its eight to ten-inch long rays, a *Linum* near *L. Austriacum*, possibly new *Silybum Marianum*, *Onopordon Hyricum*, and *O. ambiguum*.

The birds of the day were *Ciconia alba*, *Coracias garrulus*, *Coturnix communis*, *Caccabis chukar*, *Buteo fulgens*, *B. ferox*, *Accipiter nisus*, *Nephron percnopterus*, *Anthus campestris*, *Alauda cristata*, *Merops apiaster*, *Muscicapa grisola*, *Passer domesticus*, *Corvus monedula*.

At 6 p.m. we reached our camp at Et-Tayyibah. Our course for the afternoon had lain through Wady-Zeid, except during our detour to the southward. Barometer: B., 28·06; W., 27·95; mean, 28·005.

Friday, May 7, 7 a.m.—Barometer: B., 28·08; W., 27·99; mean, 28·045. Only to-day did we fairly realise the wealth of the Haurân flora. In the morning we collected—*Linaria Damascena*, *Reseda Luteola*, *Lotus Gebelia*, *Valerianella truncata*, *V. diodon*, *Asphodeline Damascena*, *Salvia acetabulosa*, *S. molucella*, *Lathyrus Cicera*, which is cultivated under the name of *Jilban*; and in the afternoon—*Astragalus conduplicatus*, *A. brachyceras*, *A. triradiatus*, *A. scorpioides* (new for this region), *A. Alexandrinus*, *Mericarpæa vaillantoides*, *Onobrychis Cadmea*, *Teucrium Auraniticum*, *Post* (new), *Smyrniopsis cachroides*, *Cephalaria Syriaca*, var. *sessilis*, *Fritillaria Libanotica*, *Pteroccephalus pulverulentus*, *Smyrnum connatum*, and a large number of other plants

heretofore unknown in this region, beside a long list of those heretofore noted, and included in the list at the end of the article.

Our course lay to the south of Wady-Zeid, and the old Roman road which runs through it.

We stopped in the middle of the day to visit the remarkable ruins of Bosrah, and to replenish our exhausted supply of bread. The most interesting object there is the church, cloister, and house of the monk Bahûrah, from whom Mohammed received so many of his ideas afterward embodied in the Koran.

The birds of the day were substantially the same as those of the day before.

Our camp for the night was pitched at a short distance from the village of Kureyah, the first of the district of Jebel-ed-Durûz. Barometer : B., 26·49 ; W., 26·43 ; mean, 26·46.

Saturday, May 8.—Camp at Kureyah, 9 a.m. Barometer : B., 26·48 ; W., 26·41 ; mean, 26·445. In the place of public assembly of Kureyah there is a portico. On one of the stones is the following inscription, in four lines :—

ΑΤΑΘΗΤΥΧΗ
ΕΚΤΙCΘΗΗΜΛΛΝΕΕΤΟΥCΡΡ
ΤΗCΚΩΛΛΗC✕  ΚΠΡΟΝΟΝ
ΦΛΚΘΡΗΔΙΑΝΟΝΠΠ

We had passed a stone, evidently a tombstone, with an inscription, in the fields between Bosrah and Kureyah, the preceding day, of which the accompanying figure gives the inscription :—

ΛΛΟΜΙ
ΧΟC
ΛΛΟΜΙ
ΧΟΥ

Qurêyah is the first of the villages of Bashan, which we had seen with stone doors and windows in a tolerable state of preservation. In most of the houses of Haurân and the Jebel-ed-Durûz the roofs are composed of slabs of basaltic stone, laid on stone lintels supported by irregular stone pillars. At Qurêyah we discovered *Ferulago Aurantica*, Post.

We broke camp at Qurêyah at 10 a.m., and began a leisurely march to El-Kûfr, at the base of the volcanic cone of Jebel-Kuleib. About an hour above the village we passed a mill. In the wet ground about the mill-race I found *Ranunculus Chærophyllus*, and a little farther on, in the muddy soil along the stream, the new species, *Alopecurus involucreatus*, Post, which seems a connecting link between *Alopecurus* and *Cornucopiæ*. In the neighbourhood of the brook, I found abundance of *Aira capillaris* and

Melica Cupani, and a little further on, in a field, *Trifolium Alsadami*, Post. The road winds through rocky fields and shrubby places. Under a rock, shortly before reaching el-Kúfr, we met with fine specimens of *Anchusa neglecta*, and a variety of *Alkanna Orientalis*, with entire leaves. The only "oaks of Bashan" that we saw during this day were *Q. coccifera*. About el-Kúfr itself we found thickets of *Cratægus Azarolus*, *C. monogyna*, *Pistacia Terebinthus*, *Rhus Coriaria*. Growing from the rocks by the roadside were fine specimens of *Scrophularia variegata*, *M. B. var. Libanotica*. In the fields we found *Salix fragilis*, *Fumaria officinalis*, *Alyssum umbellatum*, *Lithospermum incrassatum*. The plain about el-Kúfr, at the base of the cone of Jebel Kuleib, is cut up into quadrangular enclosures by stone fences, which are generally lined by shrubbery. These copses abound in birds.

The bag of the day was *Neophron percnopterus*, *Ciconia alba*, *Lanius collurio*, *Emberiza melanocephala*, *E. miliaria*, *Linota cannabina*, *Hirundo rustica*, *Melanocorypha calandra*, *Sylvia atricapilla*, *S. orpheus*, *Hypolaïs elaïca*, *Buteo ferox*, *Oriolus galbula*, *Saxicola oenanthe*, *Saxicola sp.*, *Muscicapa grisola*, *Milvus sp.*, *Coturnix communis*.

We arrived at an early hour in the afternoon, and encamped in a field just outside the village, by the mountain rill which supplies it with water. The proper name of the village is el-Kúfr, which means *unbelief* or *infidelity*, but as this name is one of ill repute in the East, it is softened in ordinary usage to el-Kefr, which signifies *the village*, and is so found in the maps. An hour to the south is the village of Hebrân, which we did not visit.

The latter part of the afternoon was spent in the much-needed work of sorting our specimens and papers, writing up memoranda and labels, and packing such specimens as were sufficiently dry not to require farther attention. The barometer at 7 p.m. stood : B., 25·50 ; W., 25·43 ; mean, 25·465. A drizzling rain prevented our doing any outside work, and especially from sunning our specimens, which had not been overhauled during the week of travel.

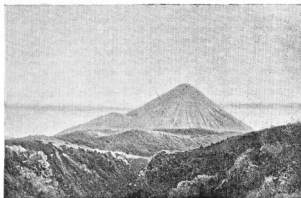
Our camp was in full view of the cone of Jebel Kuleib, of which I made the sketch which appears on the following page.

During the night there was a high wind, but no rain. Sunday, May 9. Notwithstanding the wind of the preceding day, the morning broke clear and bright. Barometer : B., 25·49 ; W., 28·39 ; mean, 25·44. The Sheikh of the village invited us to dine with him, but we declined the invitation. Daúd Salím, however, went to visit some of his Durúz relations at Sohwat-el-Blât, a village two hours to the north-west, at the base of Jebel Kuleib. He found that they were engaged in the wedding festivities of one of the young men of his family. He gave us the following account of the feast.

After the reception and formalities of salutation, a cup of water was brought to him by an attendant, who also carried a basin, and he was told to pour the water over his right-hand as an act of ablution. A huge platter 6 feet in diameter, made of tinned copper, was then brought in,

on which was piled a mountain of boiled crushed wheat mingled with morsels of boiled meat. When this had been set in place, a dish of melted clarified butter was poured over the wheat until it was quite

SKETCH OF JEBEL KULEIB FROM EL-KUFR.



saturated. Leaves of bread in the form of cakes were placed by the side of the platter, and the guests, rolling up their sleeves, proceeded to help themselves with their fingers, and consumed the provisions, as is usual, in silence. Water and soap were then passed around to the guests, who washed off the remains of their greasy meal, after which coffee and pipes were served. It was not till rather a late hour that he rode back to camp, somewhat fatigued by the ceremonious attentions which he had received. As most of the people of el-Kúfr had gone to the reception, we were unable to assemble them for any religious services in camp.

7 p.m.—Barometer: B., 25.43; W., 25.35; mean, 25.39.

Monday, May 10th.—Barometer, 5.30 a.m.: B., 25.43; W., 25.43; mean, 25.43. On this, as on several other occasions, the behaviour of our barometers was such as to cause us to doubt the value of the aneroid for accurate determinations, either in meteorology or height of location. The morning broke windy and cloudy, and we felt many misgivings about the journey of the day, especially as to exposing our collections, which, however, we sent around by the short road to Suweidah, while we planned the long journey over Jebel Kuleib and el-Jowaili, to Konawát, and so back to Suweidah.

The first part of the ascent from el-Kúfr to Jebel Kuleib lay through stony fields, with copses of the various shrubs and trees mentioned in the narrative of yesterday. On the way up we collected *Cerastium*

anomalum, *Hypericum scabrum*, *Poterium verrucosum*, *Rosa canina*, *Glaucium Arabicum* (a species of which the range extends from Sinai to two days north of Damascus), *Hippomarathrum Boissieri*, *Prangos ferulacea*, then a fine new *Verbascum* (*Qulebicum*, Post) with cob-webby indument, and a tall stiff compound panicle, *Nepeta marrubioides*, *Muscari longipes*, *Bromus Haussknechtii*, and here and there dwarf specimens of *Pistacia Terebinthus* (var. *Palæstina*). The ascent of the cone is steep. The declivity is covered with pumice, and furnishes rather an infirm foothold for the feet of either horses or pedestrians. Half way up the main cone is a small shelf, doubtless once a side vent of the ancient volcano. It is now a low truncated cone with an inconsiderable ruin, which we did not examine, at its apex. The crater at the top is nearly filled up with scoræ and soil, and lined with a thicket of *Pistacia Terebinthus* and *Quercus coccifera*. We found at and near the top an immature species of *Dianthus* near *D. Libanotis*, *Cotoneaster nummularia*, *Bromus erectus*, and several other plants too immature for determination. The middle or end of June would be the time for the harvest at the top of Kuleib. Passing over the summit and down the northern declivity of the cone we found among the pebbles of pumice *Thalictrum isopyroides* (quite new for the Levant), *Vicia tenuifolia*, *Geranium tuberosum*, *Anthriscus nemorosa* (new for Syria), *Solenanthus amplifolius*, *Lonicera mummularifolia*. Near the base *Astragalus Bethlehemiticus*, *A. Aintabicus*, *A. deinacanthus*, *A. angustifolius*, *Allium Erdelii*, *Myosotis refracta*, *M. hispida*, *Cratægus monogyna*.

The barometer at the top of *Jebel Kuleib* stood : B., 24·37 ; W., 27·43 ; mean, 24·40. The morning was misty and windy, and the air at the top of *Jebel Kulêb* was raw and searching. The road from Kuleib to el-Jowalîl was over a plateau, with rolling volcanic hills rising confusedly on every side, nearly bare of vegetation. El-Jowalîl (Barometer, 12 a.m. : B., 24·21 ; W., 24·19 ; mean, 24·20), is naked, with the exception of a few scrubby trees, among which we noted an obtuse mucronate-leaved variety of *Pyrus Syriaca*. The peak has lost its crateriform summit, and is not picturesque or striking in any way. Arab encampments were to be seen in several of the plains between the hills, and flocks of cattle and goats were browsing on the scanty herbage. We found *Arabis auriculata*, *Alyssum Szowitsianum*, and *Holosteum liniflorum* on the top. The wind was so strong that our horses could not face it, and we were obliged to climb rather than walk to the summit. We were glad to get down from the bleak mountain top into the valley to the north of the peak. We followed this valley down to Konawât.

The clouds, which had been threatening us all day, began to pour down rain just as we entered Konawât. We were obliged to make a hasty and unsatisfactory inspection of the magnificent ruins, and found only one botanical specimen of interest, *Melissa officinalis*. From Konawât to Suweidah we rode in a cold driving rain, and notwithstanding our india-rubber clothing, arrived drenched and chilled to the bone. Fortunately our camp had been pitched before the storm, and our bedding

and collections were dry. We encamped in a field east of the town. We had hardly entered our tent before the teacher of the village school called and politely invited us to dine. In our chilled and wearied state we felt obliged to decline his invitation. In the evening I again tried the telegraph, but with the same result as in all my previous efforts east of the Jordan. We tried in vain to wake up the operator at Damascus, and get the wire through to Beirût. I left my message to go as early as might be in the morning, hoping to receive an answer at Damascus after two days, a hope doomed to disappointment, as our message was two days in arriving. I have known one to be a week in getting from Alexandria to Beirût.

The barometer at 8.30 p.m. in our camp stood : B., 26.35 ; W., 26.30 ; mean, 26.325.

The birds of the day were *Oriolus galbulus*, *Emberiza miliaria*, *Anthus campestris*, *Coturnix communis*, *Caccabis chukar*, *Turtur auritus*, *Ciconia alba*, *Gyps fulvus*, *Milvus* sp., *Calandrella brachydactyla*, *Alauda cristata*, *Saxicola* sp., *Hirundo rustica*.

Tuesday, May 11.—Camp at Suweidah. Barometer, 6.30 a.m.: B., 26.38 ; W., 26.33 ; mean, 26.355. The morning rose misty and cloudy, but the sun gradually dispersed the vapour, and partly dried our well-soaked tent. By 9 o'clock we were on our way. The road at first passes between two stone walls. We found at this point *Stachys Libanotica*, a variety with densely woolly calyx, and an undeveloped *Delphinium*, probably *D. orientale*, J. Gay.

After an hour we passed through the village of 'Atil, with a ruined temple, and later through Suleim. Near the latter we collected *Nigella oxypetala*, *Ranunculus arvensis*, L., var. *rostratus*, *Lisæa Syriaca*, *Turgenia latifolia*, *Valerianella vesicaria*. Soon after leaving Suleim we began to approach the volcanic cones about Shuhba. Just before reaching the old crater to the south of the village we found on the pumice *Centaurea Trachonitica*, Post, a species near to *C. Hellenica*, but differing in the strigose indument, longer peduncles, and the pappus.

The volcanic centre, by the lava overflow of which the Leja was formed, consists of a series of craters in the neighbourhood of Shuhba. Of these three retain their crateriform shape. The southernmost, El-Gharârat-el-Kibliyah, is situated south-east of the town. The central is nearly due west. Both of these are black truncated cones, with a funnel-shaped excavation at the top, and sides at an angle of about 30°. The northernmost, Tell-Shihan, was originally a cone, but the west wall has been forced out by the great lava stream, so that it now resembles a great arm-chair, with its back toward Shuhba, and its seat toward the lava bed of the Leja, which seems to have flowed principally from this aperture. Around the crater of El-Gharârat-el-Kibliyah is a wilderness of lava crags and peaks of most grotesque and rugged forms, and almost barren of vegetation. The lonely hollows of this lava waste are the chosen home of partridges. We started a covey of them as we entered the defile which leads up to Shuhba.

The lava stream from these craters is one of the most remarkable in the world. It is of a triangular form, with the apex toward the craters, and the base toward the Jordan valley and Hermon. The sides of this triangle are about thirty miles in length. The surface is like that of a storm-tossed sea, the waves of which have been suddenly turned into stone. Even the foam of the waves is represented in the jagged crests of these grey rock billows. The surface of the Leja is everywhere fissured by tranverse crevasses, in the centre of which are the places of defence and concealment which have given the district its name of *el-Leja*—the *Refuge*, and which have enabled the Druzes to defy and often to destroy the Turkish forces sent to reduce them to submission. The lava bed of the Leja is the most recent outpour, and overlies the great bed of volcanic rock which extends from northern Gilead to Aleppo.

The ruins of Shuhba are impressive, and very extensive. Among them I found a new *Nepeta* (*N. Trachonitica*, Post) with fine heads $1\frac{1}{2}$ inch in length and 1 inch in diamener, and pink flowers.

We crossed the broad shallow wâdi which separates Shuhba from Tell-Shihân. By the side of the torrent, and in its then dry bed, I found *Salvia Russelii*, a stranger not formerly observed south of Aleppo and Aintâb. The flanks of Tell-Shihân are steep, and covered with pumice. We found on the way up *Gypsophila viscosa* (*Prangos meliocarpus*, var. *Trachonitica*, Post) with pruinose leaves and large brown fruits, and at the top, near the well, *Sisymbrium Sophia*. The view from the summit is very extensive, embracing all the Leja, the northern part of Haurân, and the southern part of the Damascus plain, and the opposite ranges of Anti-Lebanon, Hermon, and the mountains of Galilee. The range of Gilead shuts off the view to the south. Barometer at summit, B: 26·27.

After enjoying this unique view, we led our horses down the steep sides of the northern face of the cone, and a little before sunset reached our camp at Umm-ez-Zeitûn—the Mother of Olives. Barometer: B., 27·06; W., 27·03; mean, 27·045.

The birds of the day were *Milvius Ægyptiacus*, *Caccabis chukar*, *Coturnix communis*, *Saxicola* sp., *Anthus campestris*, *Accipiter nisus*, *Buteo* sp., *Oriolus galbulus*, *Ciconia alba*, *Turtur auritus*, *Hirundo rustica*, *Passer domesticus*.

Wednesday, May 12.—Camp at Umm-ez-Zeitûn, 6.30 a.m. Barometer: B., 27·13; W., 27·15; mean, 27·14.

We were annoyed in the morning by the petty thefts of the people of Umm-ez-Zeitûn, and were obliged to keep a guard over our portable property, which had not been necessary during all our previous journeys. We were told that thieving ways are quite characteristic of the inhabitants of the Leja, a peculiarity doubtless attributable to their isolated position and political immunities. The number of small articles which they appropriated during the packing of our camp furniture was considerable, and at an earlier stage of our journey would have been much more annoying.

The Leja, with the exception of a little soil formed in the crevasses by the disintegration of the softer sorts of lava, is quite barren. Hence most

of the villages are along its edge, and live by the produce of the fertile plain of older volcanic rock and soil, over which the later desolating stream has flowed. It took us seven hours to pass the eastern side of the great triangle. The villages, mostly in ruins, are all about a quarter of an hour west of the road which separates the barren lava from the wheat-fields. On the way I collected a new *Astragalus* (*A. Trachoniticus*, Post) near Sowarat-el-Kebirah, and in a wheat-field, to the right of the road near Sowarat-es-Saghîrah, *Malcolmia Aurantica*, Post, unfortunately a single and undeveloped specimen. Otherwise the day yielded nothing of special interest except *Allium Sindjarense*, and *A. Hierochuntinum*, until we reached Brak. In crossing the scorched lava beds near that place, I found a well-pronounced variety of *Thymus Syriaca*, which is described among the new plants. Professor Oliver, of Kew, prefers to regard it and *T. Syriaca*, Boiss., as varieties of *T. lanceolata*, Sm. At Brak is a large stone building, erected by the Turkish Government as barracks for the soldiers now quartered there to overawe the Druzes and Arabs of the Leja. The barometer at 8.30 p.m. was B., 27.95; W., 27.89; mean, 27.92.

The birds of the day were *Corvus monedula*, *Saxicola* sp., *Pterocles Senegalus*, *Alauda cristata*, *Anthus campestris*, *Emberiza miliaria*, *Passer domesticus*, *Saxicola œnanthe*.

Thursday, May 13.—Camp at Brak, 5 a.m. Barometer: B., 27.97; W., 27.88; mean, 27.925.

While the muleteers were striking camp at an early hour in the morning, I started alone across the plain in the direction of Damascus. The air was fresh, and my jaded horse was able to gallop to the base of the hills which bound the plateau of Haurân. To the left of the road, on the flanks of Hermon, lay the rocky hills covered with *Poterium spinosum*, from the Arabic name of which the district takes its name, Aklîm-el-Billân. The look back over the table-land, before entering the chain of hills which separates it from the Damascus plain, is extensive. Beyond the green foreground of the wheat-fields of Brak lies the black, rugged, triangular lava sea of the Leja, and far away at its eastern angle the three craters from which it issued. Still more distant is the jagged range of the Jebel-ed-Durûz, with its numerous volcanic cones, ending in the striking peak of Jebel Kuleib. The plain of Haurân could be distinguished from the intervening Leja by its misty veil, which hid its greenness.

Soon after entering the range of hills, I passed a rounded headland to the left, with a single tree near its top. So striking an object as a tree in this desolate region is sure not to escape the Arabs, who have named the hill Tell-esh-Shajar (Hill of the Tree). I did not turn aside to identify it, but suppose from its shape that it must be one of the many oaks (*Qu. coccifera*), which form so striking a feature of the landscapes of Syria and Palestine.

The plants of this region are few. I found *Lepidium Aucheri* near Nedjhah. *Haplophyllum Buxbaumii* covers the stony fields with a mass of yellow waving flowers. The road, however, passes most of the way through the stony border of the plain, and not until arriving in the

irrigated gardens near Bab-Allah did I find any considerable number of plants. As it was not my object to include in this sketch the flora of Damascus, I did not stop to collect or record the numerous plants growing near the city. At 11.30, I arrived at the Victoria Hotel, where I lunched and remained until the caravan came up, in the middle of the afternoon. Barometer, 12 m.: B., 27.65; W., 27.67; mean, 27.66. Dr. Kay and myself took the night coach to Beirût, and arrived the following morning, after an absence of twenty-four days. Mr. Daûd Salim assumed charge of the caravan, which arrived safely Monday evening, the 17th, without accident or injury to the collections.

The birds of the last day between Brak and Damascus were *Emberiza melanocephala*, *E. cæsia*, *Aëdon galactodes*, *Pterocles Senegalus*, *Alauda cristata*, *Anthus campestris*, *Corvus cornix*, *Corvus* sp., *Turtur auritus*, *T.* sp., *Passer* sp.

It will be seen from the foregoing narrative that the flora of Eastern Palestine differs from that of Palestine proper, in the addition of a large number of the plants of the table-land of Damascus. The considerable number (fifteen species) of new plants, besides many new varieties of well-known species, discovered in so short a journey, encourage the hope that more comprehensive and repeated tours will add very considerably to our list of Oriental plants, as well as contribute to the definition of their range and distribution.

Of the barometric observations, a table of which is appended, I can only remark that it furnishes another illustration of the idiosyncrasies of aneroids, and the inaccuracy of this mode of determining altitudes.

TABLE OF BAROMETRIC OBSERVATIONS.

Date.	Hour.	Place.	Browning.	Watson.
April 19	5 p.m.	On boat, going to steamer (Beirût)	30.08	29.90
" 20	7.30 a.m.	On boat, going to shore (Jaffa)	30.05	29.80
" 20	10.30 p.m.	Second storey of Mediterranean Hotel, Jerusalem	27.37	27.20
" 21	7 a.m.	Do. do. do.	27.39	27.19
" 22	7 a.m.	Do. do. do.	27.36	27.12
" 23	7 a.m.	Do. do. do.	27.38	27.16
" 23	7.30 p.m.	New Bridge, Jordan Valley ..	31.60	31.50
" 24	6 a.m.	Do. do. ..	31.55	31.58
" 24	9 p.m.	Tell el Hammâm, Jordan Valley	30.66	30.70
" 25	7 a.m.	Do. do. do.	30.80	30.75
" 25	7.30 p.m.	Do. do. do.	30.63	30.65
" 26	6.30 a.m.	Do. do. do.	30.72	30.68
" 26	12 m.	'Ayûn Mûsa, at level of cave	28.50	—
" 26	12 m.	'Ayûn Mûsa, upper fountain	28.45	28.40
" 26	1.20 p.m.	Jebel Siâghah, ruins	27.68	27.65
" 26	2 p.m.	Jebel Siâghah, south peak ..	27.66	27.63
" 26	3 p.m.	Jebel Neba, highest point ..	27.26	27.28
" 26	6.30 p.m.	Ma'in, in camp by cistern ..	27.14	27.06
" 27	6 a.m.	Do. do. ..	27.16	27.05

Date.	Hour.	Place.	Browning.	Watson.
April 27	12 m.	Callirrhoë, chief spring ..	30·20	30·28
" 27	8 p.m.	Camp at Ma'in.. ..	27·15	27·05
" 28	7 a.m.	Do.	27·16	27·13
" 28	7.30 a.m.	Top of ruins at Ma'in.. ..	27·10	27·03
" 28	7.30 p.m.	Ain Hesbân, on the stream near the road	27·56	27·58
" 29	6 a.m.	Do. do. do.	27·51	27·48
" 29	11.30 a.m.	Kusr-el-'Abd	28·23	28·27
" 29	8 p.m.	Camp on hill W.S.W. of 'Ammân	27·05	27·00
" 30	7 a.m.	Do. do. do.	27·20	27·15
" 30	9 a.m.	At level of highest house in Ammân	27·33	27·33
" 30	6 p.m.	Camp at Es-Salt, on platform, below Latin cemetery ..	27·23	27·20
May 1	6 a.m.	Do. do. do.	27·27	27·20
" 1	1.30 p.m.	Height of the Wely on Jebel Husha'	26·48	26·43
" 1	3 p.m.	Height of the northern peak on Jebel Husha'	26·22	26·19
" 1	4 p.m.	Height of the southern peak on Jebel Husha'	26·27	26·22
" 1	6 p.m.	Camp at Es-Salt	27·20	27·16
" 2	7 a.m.	Do.	27·25	27·12
" 2	7 p.m.	Castle of Es-Salt	26·85	26·91
" 3	7 a.m.	Camp at Es-Salt	27·23	27·14
" 3	7.30 p.m.	Camp at Burmah	28·03	27·98
" 4	6.30 a.m.	Do.	28·03	27·98
" 4	7 p.m.	Camp at 'Ajlûn	27·48	27·37
" 5	7 a.m.	Do.	27·44	27·33
" 5	8 a.m.	Top of Kal'at-er-Rabadh ..	26·64	26·50
" 5	12 m.	Height of land on road from 'Ajlûn to El-Husn.. ..	26·22	26·15
" 5	9 p.m.	Camp at Irbid	28·03	27·93
" 6	7 a.m.	Do.	28·00	27·95
" 6	6.30 p.m.	Camp at Tayyibah	28·06	27·95
" 7	7 a.m.	Do.	28·08	27·90
" 7	8 p.m.	Camp at Kureiyah	26·49	26·43
" 8	9 a.m.	Do.	26·48	26·41
" 8	7 p.m.	Camp at El-Kufr	25·50	25·43
" 9	7.30 a.m.	Do.	25·49	25·39
" 9	7 p.m.	Do.	25·43	25·35
" 10	5.30 a.m.	Do.	25·43	25·43
" 10	9 a.m.	Top of Jebel-Kuleib	24·37	24·43
" 10	12 m.	Top of Jebel-el-Jowailî ..	24·21	24·19
" 10	8.30 p.m.	In camp at Suweidah	26·35	26·30
" 11	8 a.m.	Do. do.	26·38	26·33
" 11	4 p.m.	Top of Tell Shihân	26·27	—
" 11	7 p.m.	Camp at Umm-az-Zeitûn ..	27·06	27·03
" 12	6.30 a.m.	Do. do.	27·13	27·05
" 12	8.30 p.m.	Camp at Brak	27·95	27·89
" 13	5 a.m.	Do.	27·97	27·88
" 13	12 m.	Damascus, second storey Hotel Victoria	27·65	27·67

LIST OF PLANTS collected (or, in case of the more familiar species, observed) by the Author during a journey from April 23 to May 11, 1886, principally in Moab, Gilead, and Haurân. As the number of plants not heretofore noted in this region so largely exceeds the rest, they are not generally indicated. Plants found west of the Jordan are only mentioned if new in the region specified; new species and varieties are indicated by italics. The new species and varieties are published in the Transactions of the Linnæan Society for 1888.

I.—RANUNCULACEÆ.

1. *Clematis cirrhosa*, L. Thickets, Gilead.
2. *Thalictrum isopyroides*, C. A. M. Among pumice gravel on the northern slope of the cone of Jebel Kuleib.
3. *Adonis Palæstina*, Boiss. Plain of Sharon; table-land of Moab.
4. *Aleppica*, Boiss. Plain of Sharon.
5. *autumnalis*, L. Common in Moab, Gilead, and Haurân.
6. *æstivalis*, L. Ascent from Jordan valley to Moab, Haurân.
7. *var. squarrosa*, Boiss, Haurân.
8. *dentata*, Del., *var. subinermis*, Boiss. Haurân.
9. *Ranunculus aquatilis*, L., *var. heterophyllus*, D. C. Haurân.
10. *var. submersus*, Gr. et Godr. Gilead, Haurân.
11. *calthæfolius*, Jord. Haurân.
12. *Damascenus*, Boiss. et Gaill. Haurân.
13. *Asiaticus*, L. Moab, Gilead.
14. *Chærophyllus*, L. Haurân.
15. *myriophyllus*, Russ. Moab, Gilead, Haurân.
16. *var. Hierosolymitanus* (*R. Hierosolymitanus*, Boiss). Moab, Gilead.
17. *lomatocarpus*, F. and M. Everywhere.
18. *arvensis*, L., *var. rostratus*, Post. Haurân.
19. *Ceratocephalus falcatus*, Pers., *var. exscapus*, Boiss. Haurân.
20. *Nigella oxypetala*, Boiss. Between Suweidah and Shuhbah, Haurân.
21. *ciliaris*, D. C. 'Arâq-el-Emîr.
22. *Delphinium* sp., probably *Orientalis*, J. Gay (immature). Suweidah, Haurân.

II.—BERBERIDACEÆ.

23. *Leontice leontopetalum*, L. Gilead, Haurân.
24. *Bongardia Chrysogonum*, L. Gilead.

III.—PAPAVERACEÆ.

25. *Papaver Rhæas*, L., var. *Syriacum*, Boiss. Moab, Gilead, Haurân. This species includes *P. stylatum*, Boiss. et Bal., *P. umbonatum*, Boiss., and *P. clavatum*, Boiss. et Haussk., and probably *P. conmutatum*, F. et M., and *P. polytrichum*, Boiss. et Ky., all of which have intermediate forms connecting the series.
26. *Argemone*, L. Moab, Gilead, Haurân, Damascus.
27. *Rœmeria hybrida*, L. Moab, Gilead, Haurân.
28. *Glaucium corniculatum*, L. Khan Hathrurah, between Jerusalem and Jericho.
29. *Arabicum*, Fresen. Southern slope of Jebel Kuleib; plain of Damascus as far as Deir 'Atiyah. Heretofore only observed in Sinai.
30. *grandiflorum*, Boiss. et Huet. Haurân.
31. *Hypecoüm procumbens*, L. Moab, Gilead, Haurân.
var. *grandiflorum* (*H. grandiflorum*, Benth.).
Gilead.

IV.—FUMARIACEÆ.

32. *Ceratocapnos Palæstina*, Boiss. Gilead.
33. *Fumaria officinalis*, L. Fields near El-Kufr, Jebel Kuleib.
34. *micrantha*, Lag. Moab, Gilead.
35. *parviflora*, Lam. Ascent from Jordan to Moab.

V.—CRUCIFERÆ.

36. *Matthiola bicornis*, Sibth et Sm. Khan Hathrurah, Shittim plain.
37. *oxyceras*, D. C. Shittim plain, Callirrhoë. A very variable species. Farther study will probably cause it and *M. livida*, Del., to be considered as varieties of *M. bicornis*.
38. *Nasturtium officinale*, R. Br. Wet places; Moab, Gilead, Haurân.
39. *Arabis auriculata*, Lam. Top of Jebel-el-Jowailf.
40. *Notoceras Canariense*, R. Br. Shittim plain; lower slopes of Nebo.
41. *Hesperis pendula*, D. C. Woods south of Es-Salt. Prof. Paine notes *H. secundiflora*, Boiss. et Sprun, in the neighbourhood of Jebel Husha', and in the Wady-ez-Zerka. The writer, after much search, failed to find this species either in Gilead or Moab.
42. *Malcolmia Africana*, L. Plain of Damascus.
43. *Auranitica*, Post. In a wheat-field by the roadside, east of Sowarat-el-Saghîri.
44. *torulosa*, Desf. Table-land of Moab and northward.
45. var. *leiocarpa*, Boiss. Haurân.
46. *crenulata*, D. C. Haurân.

47. *Sisymbrium pumilum*, Steph. Wall of Jerusalem near Tower of David ; Haurân.
48. Sophia, L. Haurân ; top of Tell Shihân, Wady-el-Karn, Anti-Lebanon.
49. Irio, L. Moab, Jordan valley.
50. Columnæ, Jacq. Gilead, Haurân, Wady-el-Karn.
51. *erysimoides*, Desf. At the bottom of the descent from Jerusalem to Jericho, at the edge of the plain.
52. *Damascenum*, Boiss. et Gaill. Wady-el-Karn.
53. *officinale*, L. Everywhere.
54. *runcinatum*, Lag. Haurân.
55. *Erysimum repandum*, L. Moab, Gilead.
56. var. *rigidum*, Boiss. Moab, Gilead, Haurân.
57. *scabrum*, D. C. Kal'at-er-Rabadh, Gilead.
58. *crassipes*, C. A. M. Mountains and table-land of Moab and Gilead.
59. *Brassica Tournefortii*, Gou. Flanks of Nebo, Moab.
60. *adpressa*, Moench (*Hirschfeldia adpressa*, Moench in Boiss. Fl. Or. I. 390). Common throughout.
61. *Sinapis arvensis*, L. Moab, Gilead.
62. var. *Orientalis*, Boiss. Haurân.
63. *alba*, L. Moab, Gilead, Haurân.
64. *Diplotaxis viminea*, L., var. *foliosa*, Post. Plain of Sharon.
65. var. *integrifolia*, Boiss. Khan Hathrûrah.
66. Harra, Forsk. Khan Hathrûrah, and thence to Jordan plain. In all the hot wadies opening into valley of Jordan and Dead Sea.
67. var. *glabra*, Post. Wady-el-Karn.
68. *erucoides*, L. Moab, Gilead, Haurân.
69. *Eruca sativa*, L. Moab, Gilead, Haurân. This species has, in Syria and Palestine, light-yellow lilac-veined petals. E. Cappadocica, Boiss., would seem, then, to be a variety with somewhat longer pods and larger seeds. The foliage of *E. sativa* varies, as does that of many crucifers.
70. *Carrichtera Vellæ*, D. C. Jabbok valley ; flanks of Nebo ; valleys on both sides of Dead Sea and Jordan.
71. *Fibigia clypeata*, L., var. *eriocarpa* (*F. eriocarpa*, D. C.). Jebel Husha'.
72. *Alyssum umbellatum*, Desv. Roadside in El-Kûfr.
73. *Szowitsianum*, F. et M. Jebel-el-Jawailîl.
74. *campestre*, L. *genuinum*, Boiss. Gilead, Haurân.
75. *aureum*, Fenyl. Haurân.
76. *meniocoides*, Boiss. Damascus plain.
77. *Capsella Bursa-Pastoris*, L. Everywhere.
78. *Lepidium sativum*, L. Walls of Jerusalem.
79. *spinescens*, D. C. Gilead, Haurân.
80. *Aucheri*. Between Nedjha and Tell-esh-Shajar, on the road between Damascus and Brak.

81. *Lepidium Draba*, L. Moab, Haurân.
82. *Chalepense*, L. Gilead. Probably a narrow fruited variety of the last.
83. *crassifolium*, W. K. Merj of Damascus.
84. *Æthionema heterocarpum*, J. Gay. Gilead.
85. *Gileadense*, Post. In a thicket by the roadside at the edge of the table-land, two hours from Es-Salt.
86. *Biscutella Columnæ*, Ten. Moab, Gilead, Haurân.
87. *Peltaria angustifolia*, D. C. Jebel Kuleib, Haurân.
88. *Clypeola jonthlaspi*, L. Gilead.
89. *Isatis Aleppica*, Scop. Moab, Gilead, Haurân.
90. *Neslia paniculata*, Desv. Moab, Gilead, Haurân.
91. *Texiera glastifolia*. Haurân, Wady-el-Karn.
92. *Calepina Corvini*, All. Ped. Moab, Gilead, Haurân.
93. *Ochthodium Ægyptiacum*, L. Moab, Gilead, Haurân.
94. *Crambe Orientalis*, L. Haurân.
95. *Hispanica*, L. Moab, Gilead.
96. *Rapistrum rugosum*, L. Moab, Gilead, Haurân.
97. *Enarthrocarpus strangulatus*, Boiss. Wady-Zerka-Ma'in.
98. *Erucaria Aleppica*, Gaertn. Moab, Gilead, Haurân.
99. *var. horizontalis*, Post. Pods horizontal. Nedjha, Damascus plain.
100. *Raphanus sativus*, L. Everywhere.

VI.—CAPPARIDEÆ.

101. *Cleome trinervia*, Fresen. On the steep hill side, going from Ma'in down to Callirrhöë.
102. *Capparis spinosa*, L. Hanging from face of cliffs and walls, common.

VII.—RESEDACEÆ.

103. *Ochradenus baccatus*, Del. Valley of Zerka-Ma'in, about Callirrhöë.
104. *Reseda alba*, L. Wady-Kelt, Moab, Haurân.
105. *lutea*, L. Moab, Gilead, Haurân.
106. *muricata*, Presl. Wady-Kelt.
107. *Luteola*, L. Haurân.

VIII.—CISTINEÆ.

108. *Cistus villosus*, L. Mountains of Moab and Gilead.
109. *salviæfolius*, L. Mountains of Moab and Gilead.
110. *Helianthemum Niloticum*, L. Gilead.
111. *var. microcarpum*, Cors. Lower Jordan.
112. *salicifolium*, L. Moab, Gilead, Haurân.
113. *Ægyptiacum*, L. Jerusalem.

114. *Helianthemum Kahiricum*, Del. Wadies about Dead Sea.
 115. *var. depauperatum*, Post. Callirrhoë.
 116. *Lippii*, L. Callirrhoë.
 117. *var. micranthum*, Boiss. Callirrhoë.
 118. *vesicarium*, Boiss. Mountains of Moab.
 119. *Fumana Arabica*, L. Moab, Gilead.
 120. *glutinosa*, L. Moab, Gilead.

IX.—POLYGALEÆ.

121. *Polygala Monspeliaca*, L. Grassy places; Gilead.

X.—FRANKENIACEÆ.

122. *Frankenia pulverulenta*, L. Tell-el-Hammâm, Callirrhoë.

XI.—SILENEÆ.

123. *Dianthus multipunctatus*, Ser. Flanks of Nebo.
 124. *var. pruinus*, Post. On hot rocks below Khan Hath-rûrah in Wadi-Kelt.
 125. *Auraniticus*, Post. Haurân, between Irbid and Bosrah.
 126. sp. probably *Libanotis*, Labill., but without flowers. At the top of the cone of Jebel Kuleib.
 126A. *Gypsophila Rokejeka*, Del. Hot rocks on road from Khan Hath-rûrah to Jordan plain; Haurân.
 127. *Damascena*, Boiss. Table-land of Moab.
 128. *viscosa*, Murr. Tell Shihân.
 129. *Saponaria Vaccaria*, L. Everywhere.
 130. *oxyodonta*, Boiss. Fields, Es-Salt.
 131. *Silene conoidea*, L. Nebo, Es-Salt.
 132. *macrodonta*, Boiss. Tell-er-Ramé, Nebo.
 133. *muscipula*, L. Plain of Sharon.
 134. *goniocalyx*, Boiss. 'Ajlûn.
 135. *racemosa*, Otth. Wall of Jerusalem.
 136. *apetala*, Willd. Wall of Jerusalem.
 137. *hirsuta*, Lag., *var. Sibthorpiana*, Boiss. Flanks of Nebo. This plant may be distinguished from *T. hispida*, Desf., by the fact that it has no alar flowers, that its calyx is not contracted in fruit, and the calyx teeth are obtuse.
 138. *Behen*, L. Plain of Sharon, Gilead, Moab.
 139. *Palestina*, Boiss. Plain of Sharon.
 140. *Oliveriana*, Otth. Es-Salt, el-Ghor, Plain of Moab.
 141. *bipartita*, Desf. Everywhere.
 142. *Atocion*, Murr. Moab, Gilead, Haurân.
 143. *inflata*, Sm. Everywhere.

144. *Silene longipetala*, Vent. Jebel Kuleib, Jebel Husha'.
 145. *juncea*, Sibth. Gilead.
 146. *Tunica pachygonia*, F. et M., var. *scabra* (T. Arabica, Boiss). Shittim plain, between Nimrîn and Tell-el-Hammâm. This species is also found about Aintâb. The intermediate forms are such as to make T. Arabica an untenable species.

XII.—ALSINEÆ.

147. *Holosteum liniflorum*, Stev. Flanks and top of El-Jowailil.
 148. *Cerastium dichotomum*, L. Gilead, Haurân.
 149. *anomalum*, W. K. Jebel Kuleib.
 150. *vulgatum*, L. Moab, Gilead.
 151. *Stellaria media*, L. Everywhere.
 152. *Arenaria leptoclados*, Rchb. Gilead.
 153. *graveolens*, Schreb, var. *minuta*. Jebel 'Ajlûn.
 154. *Alsine decipiens*, Fenzl. Moab, Gilead.
 155. *Smithii*, Fenzl. Jubel Kuleib.
 156. *picta*, S. et Sm. Nebo, near ruins of Siâghah ; Haurân.
 157. *tenuifolia*, L. Common.
 158. *Spergula arvensis*, L. El-Ghor.
 159. *diandra*, Guss. El-Ghor, Wilderness of Judea.

XIII.—PARONYCHIEÆ.

160. *Herniaria cinerea*, D. C. Gilead, El-Ghor.
 161. *hemistemon*, J. Gay. Khan Hathrûrah.
 162. *Paronychia argentea*, L. Common throughout.
 163. *nivea*, D. Moab, Gilead.
 164. *var. obtusa*, Post. Ain-Hesban to Ammân.
 165. *var. attenuata*, Post. Ain-Hesban to Ammân.
 166. *Gymnocarpum fruticosum*, Pers. Wilderness of Judea.
 167. *Pteranthus echinatus*, Desf. Wilderness of Judea.

XIV.—TAMARISCINEÆ.

168. *Tamarix tetragyna*, Ehr. Damascus.
 169. *Jordanis*, Boiss. At Pilgrim's bathing place, and along the Jordan.
 170. *mannifera*, Ehr. Callirrhœ.
 171. *Reaumuria Palæstina*, Boiss. Wilderness of Judea, Callirrhœ.

XV.—HYPERICINEÆ.

172. *Hypericum scrabrum*, L. Jebel Kuleib.
 173. *crispum*, L. Jebel Husha'.

XVI.—MALVACEÆ.

174. *Alcea acaulis*, Cavan. Moab, Gilead, Haurân.
 175. *setosa*, Boiss. Moab, Gilead.
 176. *rufescens*, Boiss. On the road from Ma'in to Callirrhoë.
 177. *Malva rotundifolia*, L. Everywhere.
 178. *Cretica*, Cavan. Moab.
 179. *parviflora*, L. New bridge over the Jordan.
 180. *oxyloba*, Boiss. New bridge over the Jordan.
 181. *sylvestris*, L. Gilead.
 182. *var. oxyloba*, Post. Tell-er-Ramé. A specimen of this
 variety is also found in Kew Herbarium.
 183. *Malvella Sherardiana*, L. Gilead, Haurân.

XVII.—LINACEÆ.

184. *Linum strictum*, L. Moab, Gilead.
 185. *nodiflorum*, L. Moab, Gilead.
 186. *Syriacum*, Boiss. et Gaill. Moab, Gilead.
 187. *pubescens*, Russ. Moab, Gilead.
 188. *sp. near Austriacum*. Haurân.

XVIII.—ZYGOPHYLLÆ.

189. *Nitraria tridentata*, Desf. El-Ghor.
 190. *Zygophyllum dumosum*, Boiss. Lower part of road from Khan
 Hathrûrah to el-Ghor.
 191. *Fagonia glutinosa*, Del. Callirrhoë.
 192. *grandiflora*, Boiss. Lower part of Wilderness of Judea.
 193. *mollis*, Del. Between Mar Saba and Dead Sea.
 194. *Peganum Harmala*, L. Ascent from el-Ghor.

XIX.—GERANIACEÆ.

195. *Geranium tuberosum*, L. Ascent from el-Ghor to Nebo.
 196. *rotundifolium*, L. General.
 197. *molle*, L. General.
 198. *lucidum*, L. Ascent from el-Ghor to Nebo.
 199. *Erodium Romanum*, L. 'Ammân.
 200. *dissectum*, L. Moab.
 201. *cicutarium*, L. Moab, Gilead, Haurân.
 202. *cichonium*, L. Haurân.
 203. *gruinum*, L. Moab, Gilead.
 204. *laciniatum*, Cav. Flanks of Nebo.
 205. *moschatum*, L. Moab.

206. *Erodium malacoides*, L. Gilead.
 207. *hirtum*, Forsk. Hot valleys debouching into Dead Sea.
 208. *glaucophyllum*, Ait. Near Khan Hathrârah. The size of the leaves in this species varies in different specimens from 5 lines to 3 inches long.

XX.—RUTACEÆ.

209. *Haplophyllum Buxbaumii*, Poir. Ascent to Nebo, Haurân.
 210. var. *corymbulosum*, Boiss. Shittim Plain.
 211. *longifolium*, Boiss. Hot rocks on both flanks of el-Ghor.

XXI.—SIMARUBEÆ.

212. *Balanites Ægyptiaca*, Del. Plain of Jericho.

XXII.—TEREBINTHACEÆ.

213. *Rhus Coriaria*, L. Jebel Husha', Jebel-ed-Durûz.
 214. *Pistacia Terebinthus*, L., var. *Palæstina* (P. *Palæstina*, Boiss).
 Moab, Gilead, Jebel-ed-Durûz.

XXIII.—RHAMNEÆ.

215. *Zizyphus Spina-Christi*, L. El-Ghor on both sides of Jordan.
 216. *Rhamnus punctata*, Boiss. Moab, Gilead.
 Palæstina, Boiss. Ascent to Moab.

XXIV.—MORINGEÆ.

217. *Moringa aptera*, Gæerta. Callirrhoë, on the road to Ma'in, a few hundred yards from the springs. I met with only one tree, and close by it a tree of *Acacia tortilis*.

XXV.—LEGUMINOSEÆ.

218. *Anagyris fœtida*, L. Woods south of Es-Salt.
 219. *Retama Rœtam*, Forsk. El-Ghor, and the lower mountains flanking it.
 220. *Ononis Natrix*, L. Moab, Gilead.
 221. var. *stenophylla*, Boiss. Moab.
 222. var. *laxiuscula*, Post. In pumice near Shuhba, Haurân.
 223. *Antiquorum*, L. Ascent to Nebo.

224. *Ononis ornithopodoides*, L. Khan Hathrûrah.
 225. *biflora*, Desf. Ma'in.
 226. *pubescens*, L. Gilead.
 227. *hirta*, Desf. Haurân, Plain of Sharon.
 228. *serrata*, Forsk. Ma'in.
 229. *Calycotome villosa*, L. Moab, Gilead.
 230. *Trigonella astroites*, F. et M. Haurân.
 231. *spinosa*, L. Moab.
 232. *monantha*, C. A. M. Haurân.
 233. *Trigonella Cœle-Syriaca*, Boiss. Haurân, var. with pods constricted
 between the seeds.
 234. *Hieroslymitana*, Boiss. Moab, Gilead.
 235. *Kotschyi*, Fenzl. Moab, Gilead.
 236. *spicata*, L. Moab, Gilead.
 237. *Arabica*, Del. El-Ghor.
 238. *radiata*, L. Haurân.
 239. *Medicago scutellata*, All. Moab, Haurân.
 240. *rotata*, Boiss. Ma'in to Callirrhœ.
 241. *denticulata*, Willd. Gilead, Haurân.
 242. *pentacycla*, D. C. Gilead.
 243. *tuberculata*, Willd. Haurân.
 244. *coronata*, Lam. Moab.
 245. *Trifolium arvense*, L. Haurân.
 246. *stellatum*, L. Flanks of Nebo.
 247. *angustifolium*, L. Moab, Gilead, Haurân.
 248. *Haussknechtii*, Boiss. Haurân.
 249. *Asadami*, Post. In a field near the mill above Kureiyah,
 on the road to El-Kûfr, at the base of Jebel-ed-Durûz.
 250. *scutatum*, Boiss. Moab.
 251. *clypeatum*, L. Gilead.
 252. *scabrum*, L. Gilead.
 253. *pilulare*, Boiss. Moab, Gilead, Haurân.
 254. *globosum*, L. Haurân.
 255. *physodes*, Stev. Gilead, Jebel-ed-Durûz.
 256. *spumosum*, L. Haurân.
 257. *resupinatum*, L. Common throughout.
 258. *tomentosum*, L. Ascent from el-Ghor to Nebo.
 259. *xerocephalum*, Fenzl. Jebel-el-Durûz.
 260. *repens*, L. Moab.
 261. *Boissieri*, Guss. 'Ajlûn, Gilead.
 262. *erubescens*, Fenzl. Gilead.
 263. *procumbens*, L. Gilead.
 264. *Hymenocarpus circinnatus*, L. Common throughout.
 265. *Lotus Creticus*, L. Gilead.
 266. *tenuifolius*, Rechb. Ford of Jabbok.
 267. *lamprocarpus*, Boiss. Ford of Jabbok.
 268. *Gehelia*, Vent. genuinus, Boiss. Haurân.

269. *Lotus conimbricencis*, Brot. Moab.
 270. *peregrinus*, L. Mountains of Moab.
 271. *Tetragonolobus* *Palæstina*, Boiss. Moab. This species should probably rank only as a variety of *T. purpureus*, Moench.
 272. *Psoralea bituminosa*, L. Moab, Gilead.
 273. *Glycyrrhiza glabra*, L., var. *violacea*, Boiss. New bridge of the Jordan.
 274. *Astragalus epiglottis*, L. Ford of Jabbok.
 275. *tribuloides*, Del. Salihfyah, Damascus.
 276. *cruciatus*, Link. Moab, Gilead, Haurân.
 277. *triradiatus*, Bge. Haurân.
 278. *Damascenus*, Boiss. et Gaill. Haurân.
 279. *callichroüs*, Boiss. Khan Hathrûrah. Plain of Moab.
 280. *conduplicatus*, Bertol. Haurân.
 281. *brachyceras*, Ledeb. Moab.
 282. *hamosus*. Moab.
 283. *scorpiodes*. In wheat-fields between Bosrah and Kureiyah, Haurân.
 284. *cretaceus*, Boiss. et Ky. Woods near Es-Salt.
 285. *vexillaris*, Boiss. Bosrah to Kureiyah, near the latter, in a field by the path.
 286. *Christianus*, L. Top of Jebel Husha', near the Nebi.
 287. *Alexandrinus*, Boiss. Moab, Gilead, Haurân.
 288. *Alexandrinus*, Boiss., var. *elongatus*, Barbey. Moab, Gilead.
 289. *neurocarpus*, Boiss. Bosrah.
 290. *Bethlehemiticus*, Boiss. Moab, Jebel Kuleib.
 291. *Aintabicus*, Boiss. Jebel Kuleib.
 292. *deinacanthus*, Boiss. Woods near Es-Salt; Jebel-ed-Durûz.
 293. *Forskahlei*, Boiss. El-Ghor, 'Ayun Musa.
 294. *oocephalus*, Boiss. Haurân.
 295. *sanctus*, Boiss. Khan Hathrûrah. Moab, Gilead.
 296. *Trachoniticus*, Post. Sowarat-el-Kebîrah.
 297. *angustifolius*, Lam. Jebel Kuleib.
 298. *Dorycnium lamprocarpum*, Boiss. Ford of Jabbok.
 299. *Scorpiurus sulcata*, L. New bridge, Jordan.
 300. *Biserrula Pelecinus*, L. Haurân.
 301. *Coronilla scorpioides*, L. Moab, Haurân.
 302. *Onobrychis Crista.-Galli*, L. Everywhere.
 303. *æquidentata*, S. and Sm. Gilead.
 304. *gracilis*, Bess. Moab, Gilead.
 305. *Cadmea*, Boiss. Moab, Gilead, Haurân.
 306. *aurantiaca*, Boiss. Gilead.
 307. *Vicia sericocarpa*, Fenzl. Moab.
 308. *sativa*, L. Everywhere.
 309. *lathyroides*, L. Woods between Amman and Es-Salt.

310. *Vicia peregrina*, L. Woods south of Es-Salt. Haurân.
 311. *Narbonensis*, L., var *pilosa*, Post. Woods south of Es-Salt.
 312. *serratifolia*, Jacq. Leaves serrate from middle to apex.
 Haurân.
 313. *tenuifolia*, Roth. Jebel Kuleib.
 314. *Ervilia*, L. Moab, Gilead, Haurân.
 315. *Palæstina*, Boiss. El-Ghor, Moab, Gilead.
 316. *gracilis*, Loisel. Moab, Gilead.
 317. *Ervum Lenticula*, Schreb. Woods south of Es-Salt.
 318. *Leus*, L. Cultivated everywhere, and escaped.
 319. *Cicer arietinum*, L. Cultivated everywhere, and run wild.
 320. *Lathyrus aphaca*, L. Moab, Gilead.
 321. *amœnus*, Fenzl. Moab, Gilead, Haurân.
 322. *Cicera*, L. Haurân.
 323. *Hierosolymitanus*, Boiss. Gilead.
 324. *Orobus sessilifolius*, S. and Sm. Woods south of Es-Salt.
 325. *Pisum elatius*, M. B. Moab, Gilead.
 326. *humile*, Boiss, et Noë. Haurân.
 327. *Ceratonia Siliqua*, L. Gilead.
 328. *Prosopis Stephaniana*, M. B. Jordan valley.
 329. *Acacia tortilis*, Hayne. Jordan valley, Callirrhœ.

XXVI.—ROSACEÆ.

330. *Amygdalus communis*, L. Gilead.
 331. var. *minor*, Post. 'Ayun Musa.
 332. *Potentilla reptans*, L. Gilead.
 333. *Poterium verrucosum*, Ehr. Gilead, Jebel Kuleib.
 334. *spinosa*, L. Common on rocky hill sides.
 335. *Rosa canina*, L. var. *coriacea*, Boiss. Jebel Kuleib.
 336. *Rubus tomentosus*, Borckh. Moab, Gilead.
 337. *Syrica*, Boiss. El-Jowailîl. A specimen with obtuse obliquely mucronate leaves.
 338. *Cratægus Azarolus*, L. Moab, Jebel Kuleib.
 339. *monogyna*, Willd. Haurân, Jebel-ed-Durûz.
 340. *Cotoneaster nummularia*, F. and M. Jebel Kuleib.

XXVII.—GRANATEÆ.

341. *Punica Granatum*, L. Gilead.

XXVIII.—MYRTACEÆ.

342. *Myrtus communis*, L. Gilead.

XXIX.—CRASSULACEÆ.

343. *Umbilicus intermedius*, Boiss. Moab, Gilead.
 344. *lineatus*, Boiss. Shubbah, at the edge of the Leja. This should be regarded only as a depauperated cymose variety of *U. Libanotica*, Labill.

XXX.—LYTHRARIÆ.

345. *Lythrum Græfferi*, Ten. Moab, Gilead.

XXXI.—CUCURBITACEÆ.

346. *Citrullus Colocynthis*, L. El-Ghor.
 347. *Bryonia multiflora*, Boiss. et Held. Gilead.

XXXII.—FICOIDEÆ.

348. *Mesembryanthemum nodiflorum*, L. El-Ghor, Callirrhoë.
 349. *Aizoön Canariense*, L. Callirrhoë.

XXXIII.—UNBELLIFERÆ.

350. *Eryngium glomeratum*, Boiss. Haurân.
 351. *Creticum*, L. Moab, Haurân.
 352. *Buplevrum nodiflorum*, L. Gilead.
 353. *Astoma seselifolium*, D. C. Es-Salt, Haurân.
 354. *Scaligeria Cretica*, Un. Gilead.
 355. *Lagœcia cuminoides*, L. Mountains of Moab.
 356. *Smyrniium connatum*, Boiss. et Ky. Haurân.
 357. *olusatrum*, L. Woods near Es-Salt.
 358. *Smyrniopsis* (*Opoponax* ?) *Syriaca*, Boiss. Haurân.
 359. *cachroides*, Boiss. Haurân.
 360. *Conium maculatum*, L. Gilead.
 361. *Lecockia Cretica*, Lam. Woods, Gilead.
 362. *Hippomarathrum Boissieri*, Reut. Jebel Kuleib.
 363. *Colladonia crenata*, Fenzl. Moab, Gilead.
 364. *anisoptera*, Boiss. Haurân.
 365. *Apium graveolens*, L. Tel-el-Hammâm.
 366. *Pimpinella corymbosa*, Boiss. Table-land of Moab, Haurân.
 367. *eriocarpa*. Ascent from El-Ghor to 'Ayûn Musa.
 368. *Synelcosciadium Carmeli*, Boiss. Gilead.
 369. *Bifora testiculata*, L. Haurân.
 370. *Carum elegans*, Fenzl. Gilead ; Haurân, near mountains.
 371. *Ammi majus*, L. Common throughout.
 372. *Visnaga*, Lam. Common throughout.

373. *Falcaria Rivini*, Host. Moab.
 374. *Anthriscus nemorosa*, M. B. Jebel Kuleib.
 375. *sylvestris*, L. Sûf to 'Ajlûn, in open glades in the woods.
 376. *lamprocarpa*, Boiss. Wadi-es-Sîr.
 377. *Physocaulos nodosus*, Tourn. Jebel Husha', Wadi-es-Sîr.
 378. *Prangos ferulacea*, L., var. *scabra*, Boiss. Jebel Kuleib.
 379. *meliocarpa*, Boiss., var. *Trachonitica*, Post. On the volcanic scorïæ, on the sides and at base of Tell Shihân, Lejâ.
 380. *Cachrys goniocarpa*, Boiss. Gilead.
 381. *Ferula communis*, L. El-Ghor, Moab.
 382. *Ferulago Auranitica*, Post. Kureiyah, Haurân.
 383. *Exoacantha heterophylla*, Lab. Moab.
 384. *Kruberia peregrina*, L. Haurân, Common on Philistine plains.
 385. *Ainsworthia trachycarpa*, Boiss. Moab.
 386. *Tordylium Ægyptiacum*, L. Moab, Gilead.
 387. *Malabaila Sekakul*, Russ. Flanks of El-Ghor.
 388. *Daucus Jordanicus*, Post. El-Ghor
 389. *Chætosciadium trichospermum*, L. Mountains of Moab.
 390. *Daucus subsessilis*, Boiss. Jebel Husha'. A plant not heretofore observed in the East.
 391. *Caucalis tenella*, L. Mountains of Moab.
 392. *leptophylla*, L. Haurân.
 393. *Torilis triradiata*, Boiss. et Held. Burmah, Gilead.
 394. *neglecta*, Roem. et Sch. Gilead.
 395. *nodosa*, L. Gilead.
 396. *Turgenia latifolia*, L. Gilead, Haurân.
 397. *Lisæa Syriaca*, Boiss. Haurân.

XXXIV.—CAPRIFOLIACEÆ.

398. *Lonicera Etrusca*. Woods south of Es-Salt.
Lonicera mummularifolia. At northern base of cone of Jebel Kuleib.

XXXV.—RUBIACEÆ.

399. *Rubia tinctorum*, L. Moab, Gilead.
 400. *Callipeltis Cucullaria*, L. Moab, Gilead.
 401. *Vaillantia hispida*, L. Moab, Gilead.
Galium verum. Jebel Kuleib.
 402. *tricornis*, With. Moab, Gilead, Haurân.
 403. *murale*, L. Moab, Gilead.
 404. *Aparine*, L. Moab, Gilead, Haurân.
 405. *spurium*, L., var. *Vaillantii*, Gr. et Godr. Moab, Gilead.
 406. *nigricans*, Boiss. Haurân.

407. *Galium Judaicum*, Boiss. Moab, Khan Hathrûrah to Jericho.
 408. *setaceum*, Lam. Ascent from El-Ghor to Nebo. Fruiting
 pedicels of this variety 2 to 6 times as long as fruit.
 409. *coronatum*, S. and Sm. Moab, Gilead, Haurân.
 410. *articulatum*, L. Moab, Gilead, Haurân.
 411. *Meriarpæa vaillantoides*, Boiss. Haurân.
 412. *Asperula arvensis*, L. Moab, Gilead, Haurân.
 413. *Sherardia arvensis*, L. Moab, Gilead, Haurân.

XXXVI.—VALERIANACEÆ.

414. *Valerianella diodon*, Boiss. Haurân.
 415. *Orientalis*, Schlecht. Gilead.
 416. *truncata*, Rechb. Gilead, Haurân.
 417. *coronata*, Willd. Moab, Gilead.
 418. *vesicaria*, Willd. Moab, Gilead, Haurân.
 419. *Kotschyi*, Boiss. Haurân.
 420. *Boissieri*, Krok. Haurân. Should be a mere variety of
 the last.

XXXVII.—DIPSACEÆ.

421. *Cephalaria Syriaca*, L. Moab, Gilead.
 422. *var. sessilis*, D. C. Haurân.
 423. *Scabiosa Ucranica*, L. Moab, Gilead.
 424. *prolifera*, L. Moab, Gilead, Haurân.
 425. *Palestina*, L. Moab, Gilead, Haurân.
 426. *Pterocephalus plumosus*, L. Moab, Gilead, Haurân.
 427. *pulverulentus*, Boiss. et Bl. Haurân.

XXXVIII.—COMPOSITÆ.

428. *Erigeron Canadense*, L. Common along roadsides.
 429. *Bellis perennis*, L. Gilead.
 430. *Asteriscus aquaticus*, L. Common.
 431. *graveolens*, Forsk. Moab.
 432. *Pallenis spinosa*, L. Moab.
 433. *Iphiona juniperifolia*, Cass. Lower valleys of Moab.
 434. *Conyza Dioscoridis*, Rauw. El-Ghor.
 435. *Phagnalon rupestrê*, L. Mountains of Moab.
 436. *Helichrysum sanguineum*, L. Jebel Husha'.
 437. *Filago spathulata*, Presl. Haurân.
 438. *Germanica*, L. Gilead.
 439. *Achillæa micrantha*, M. B. Moab, Gilead.
 440. *Santolina*, L. Moab.
 441. *falcata*. Gilead, Haurân.

442. *Anthemis montana*, L. Haurân.
 443. *cornucopiæ*, Boiss. Nebo.
 444. *hyalina*, D. C. Haurân.
 445. *tinctoria*, L. Haurân.
 446. var. *discoidea*, Boiss. Gilead.
 447. *Cotula*, L. Moab, Gilead, Haurân.
 448. *altissima*, L. Moab.
 449. *Chrysanthemum Coronarium*, L. Throughout.
 450. *segetum*, L. Throughout.
 451. *Artemisia monosperma*, Del. Moab.
 452. *Herba-alba*, Asso. El-Ghor.
 453. *Senecio vernalis*, W. K. Common throughout.
 454. *coronopifolius*, Desf. El-Ghor.
 455. *Calendula Ægyptiaca*, Desf. Common throughout.
 456. *Palæstina*, Boiss. Flanks of El-Ghor.
 457. *Dipterocome pusilla*, F. and M. Haurân.
 458. *Gundelia Tournefortii*, L. Moab.
 459. *Echinops viscosus*, D. C. Gilead.
 460. *Chardinia xeranthemoides*, Desf. Deep valleys of Moab.
 461. *Atractylis cancellata*, L. Shittim plain.
 462. *Notobasis Syriaca*, L. Moab, El-Ghor.
 463. *Onopordon Illyricum*, L. Gilead, Haurân.
 464. *ambiguum*, Fresen. Haurân.
 465. *Silybum Marianum*, L. Tel-el-Hammâm.
 466. *Amberboa crupinoides*, Desf. Moab.
 467. *Centaurea Trachonitica*, Post. Near Shuhba.
 468. *eryngioides*, Lam. Wady Kelt.
 469. *cyanoides*, Beggr. Gilead.
 470. *myriocephala*, Sch. Gilead, Haurân.
 471. *Behen*, L. Haurân.
 472. *calcitrapa*, L. Haurân.
 473. sp. Moab, betwecn Ma'in and Callirrhoë.
 474. *pallescens*, Del. Tell-el-Hammâm.
 475. *Carthamus* sp. Moab.
 476. *nitidus*, Boiss. Moab.
 477. *Carduus argentatus*, L. Moab.
 478. *Scolymus Hispanica*, L. Moab.
 479. *Rhaponticum pusillum*, Labill. Moab.
 480. *Rhagadiolus stellatus*, D. C. Gilead.
 481. *Hedypnois Cretica*, L. Moab.
 482. *Hagoseris Galileâ*, Boiss. Haurân.
 483. *Crepis Hierosolymitana*, Boiss. Gilead.
 484. *Thrinicia tuberosa*, L. Gilead.
 485. *Leontodon hispidulum*, L. Moab.
 486. *Hypochoëris*, sp. Ammân.
 487. *Lactuca tuberosa*, L. Gilead.
 488. *Sonchus asper*, Vill. Moab.

489. *Sonchus oleraceus*, L. Ascent to Moab.
 490. *Zollikofferia mucronata*, Forsk. New bridge of Jordan.
 491. *Scorzonera phæopappus*, Boiss. Haurân.
 492. *papposa*, D. C. Moab.
 493. *Jacquiniana*, Koch. Haurân.
 494. *Tragopogon bupthalmoides*, Boiss. Moab, Haurân.

XXXIX.—CAMPANULACEÆ.

495. *Campanula dichotoma*, L. Moab, Gilead.
 496. *Rapunculus*, L. Gilead.
 497. *Specularia Speculum*, L. Moab, Gilead, Haurân.
 498. *falcata*, Ten. Gilead.

XL.—ERICACEÆ.

499. *Arbutus Andrachne* L., var. *serratula*, Post. Mountains of Moab and Gilead. This tree is known in Southern Palestine and east of the Jordan as *Qaikob*, which name in Lebanon is applied to the Maple, while the *Arbutus* is there known as *Qotlib*.

XLI.—PRIMULACEÆ.

500. *Cyclamen latifolium*, Sibth. and Sm. Rocks, Moab, Gilead.

XLII.—PLUMBAGINEÆ.

501. *Statice Thouini*, Viv. Jordan valley and flanking hills to the sea level.
 502. *pruinosa*, L. Dead Sea and valleys above it. This species has large, 1 to 3 inches long, obovate leaves, tapering to a petiole, but they are not usually seen in herbaria. Boissier says that the leaves are *small*. There are no specimens with leaves among the many in his herbarium.
 503. *spicata*, Willd. Jordan valleys, Damascus plain.

XLIII.—STYRACACEÆ.

504. *Styrax officinale*, L. Moab, Gilead.

XLIV.—OLEACEÆ.

505. *Olea Europæa*, L. Moab.

XLV.—APOCYNACEÆ.

506. *Vinca herbacea*, W. K. Gilead.
 507. *Nerium Oleander*, L. Moab, Gilead, Haurân.

XLVI.—ASCLEPIADACEÆ.

508. *Periploca aphylla*, Dec. By a canal near Tell-el-Hammâm, in the Shittim plain.
 509. *Calotropis procera*, Willd. Shittim plain.
 510. *Pentatropis spiralis*, Forsk. Callirrhoë.
 511. *Dæmia cordata*, R. Br. Callirrhoë.

XLVII.—BORRAGINEÆ.

512. *Trichodesma Africanum*, L. Callirrhoë.
 513. *Boissieri*, Post. Ruins of Kasr-el-'Abd, at 'Arak-el-Emîr.
 514. *Heliotropium Bovei*, Boiss. Moab.
 515. *villosum*, Willd. Moab.
 516. *Europæum*, L. Moab.
 517. *Cynoglossum Nebrodense*, Guss. Jebel Husha'.
 518. *pictum*, Ait. Everywhere.
 519. *Trachelanthus Kurdica*, Ky. Wâdy-es-Sîr, with linear calyx-lobes and pedicels twice as long as calyx. This species is probably the same as *T. pereana*, Paine.
 520. *Solenanthus amplifolius*, Boiss. Jebel Kuleib, among the pumice on the northern declivity below the summit.
 521. *Asperugo procumbens*, L. Moab, Gilead.
 522. *Anchusa Italica*, Retz. Moab, Gilead, Haurân.
 523. *strigosa*, Labill. Moab.
 524. *neglecta*, Alphe D. C. Birket-Dân, Jebel-ed-Durûz.
 525. *Nonnea obtusifolia*, Willd. Moab, Gilead.
 526. *melanocarpa*, Sibth. et Sm. Haurân.
 527. *Alkanna strigosa*, Boiss. 'Ayûn Mûsa.
 528. *Orientalis*, L., var. *integrifolia*, Post. El-Kûfr at foot of Jebel Kuleib.
 529. *Myosotis refracta*, Boiss. Jebel Kuleib.
 530. *hispida*, Schlecht. Jebel-ed-Durûz.
 531. *Lithospermum arvense*, L. Moab, Gilead, Haurân.
 532. *incrassatum*, Guss. El-Kûfr.
 533. *Onosma sericeum*, Willd. Haurân. Not to be distinguished from *O. flavum*, Lehm.
 534. *giganteum*, Lam. Jebel Husha', north flank.
 535. *Podonosma Syriacum*, Labill. Fissures of rocks, common.
 536. *Cerithe major*, Lam. Moab, Gilead.
 537. *Echium plantagineum*, L., var. *puberulentum*, Post. Indument of velvety wool and spreading hairs.

XLVIII.—CONVOLULACEÆ.

538. *Calystegia sepium*, L. Gilead.
 539. *Convolvulus Dorycnium*, L., var. *oxysepalus*, Boiss. El-Ghor, Moab.
 540. *hirsutus*, L. Haurân.
 541. *althæoides*, L. Ascent from El-Ghor to 'Ayûn Mûsa.
 542. *pilosellæfolius*, Desr. At Tell-er-Ramé.
 543. *stachydifolius*, Choisy. Moab, Haurân.
 544. *arvensis*, L. Moab, Gilead, Haurân.
 545. *Scammonia*, L. Gilead.
 546. *Cuscuta planiflora*, Ten. Moab.

XLIX.—SALVADORACEÆ.

547. *Salvadora Persica*, Gare. In clumps about the hot springs at Tell-el-Hammâm. The leaves of this specimen are oblong-linear.

L.—SOLANACEÆ.

548. *Solanum nigrum*, L. Moab, Gilead, Haurân.
 549. *Dulcamara*, L., var. *lyratum*, Post. Lower leaves lyrate-pinnatifid, with one pair of leaflets and one pair of lobes. Gilead.
 550. *coagulans*, Forsk. El-Ghor.
 551. *Withania somnifera*, L. Rocks above Callirrhôë; a variety with long peduncles.
 552. *Lycium Arabicum*, Schw. El-Ghor, Moab.
 553. *Mandragora officinarum*, L. Gilead, Haurân.
 554. *Hyoscyamus reticulatus*, L. Moab, Gilead, Haurân.
 555. *aureus*, L. Ascent from El-Ghor to 'Ayûn Mûsa.

LI.—SCROPHULARIACEÆ.

556. *Verbascum ptychophyllum*, Boiss. Moab, Gilead.
 557. *Gileadense*, Post. Wâdi-es-Sîr.
 558. *pinnatum*, L. Ascent from El-Ghor to 'Ayûn Mûsa.
 559. *Qulebicum*, Post. Jebel Kuleib, south-western declivity of cone.
 560. sp. near Es-Salt. A species only in leaf. Lower leaves oblong, a foot long, densely pinnous.
 561. *Celsia heterophylla*, Desf. Gerash, on the aqueduct bridge.
 562. *Linaria Ægyptiaca*, L. Callirrhôë.
 563. *Damascena*, Boiss et. Gaill. Haurân.
 564. *Chalepensis*, L. Ascent from El-Ghor to 'Ayûn Mûsa.
 565. *Linaria Hælava*, Forsk. Top of wall of Jerusalem, valleys about Dead Sea, El-Ghor.

566. *Anarrhinum Orientale*, Bth. Gilead, Jebel-ed-Durûz.
 567. *Scrophularia macrophylla*, Boiss. In caves at 'Ayûn Mûsa.
 568. *Michoniana*, Coss. et Kral. Below caves at 'Ayun Musa.
 var. *tenuisecta*, Boiss. Es-Salt.
 569. *xanthoglossa*, Boiss. Moab, Gilead.
 570. *Gileadensis*, Post. On the road from Sûf to 'Ajlûn
 Gilead.
 571. *variegata*, M. B., var. *Libanotica*, Boiss. Near El-Kûfr,
 under Jebel Kuleib.
 572. *Veronica Anagallis*, L. Common in wet places.
 573. *anagallioides*, Guss. Less common than the last.
 574. *Orientalis*, Mill., var. *tenuifolia*, Boiss. Mountains of
 Gilead.
 575. *Syriaca*, Raem. et Sch. Common throughout.
 576. *Cymbalaria*, Bod. Common throughout.
 577. *Eufragia latifolia*, L. Jebel-ed-Durûz.
 578. *viscosa*, L. Gilead.

LI.—VITICEÆ.

579. *Vitex Agnus-Castus*, L. Jebel-ed-Durûz.

LII.—OROBANCHACEÆ.

580. *Phelipæa lavandulacea*, Rehb. El-Ghor, Jebel-ed-Durûz.
 581. *ramosa*, L. Moab, Haurân.
 582. *lutea*, Desf. El-Ghor.
 583. *Orobanche speciosa*, D. C. Common throughout.
 584. *cernua*, Löff. Sowarat-es-Saghiri.

LIII.—ACANTHACEÆ.

585. *Acanthus hirsutus*, Boiss. Ascent from El-Ghor to 'Ayun Musa.
 586. *Blepharis edulis*, Forsk. On the road a few hundred yards above
 Callirrhœ.

LIII.—LABIATÆ.

587. *Thymus Syriacus*, Boiss, var. *Trachoniticus*, Post. On the hot rocks
 of lava near Brak, El-Leja.
 588. *Mentha sylvestris*, L. Moab.
 589. *Origanum Maru*, L. Moab.
 590. *Micromeria nervosa*, Desf. Mountains of Moab and Gilead.
 591. *Juliana*, L. Gilead.
 592. *Calamintha graveolens*, M. B. Gilead, Jebel-ed-Durûz.
 593. *Melissa officinalis*, L. Konawât.

594. *Salvia pinnata*, L. Jebel Husha'. Gilead.
 595. *acetabulosa*, Vahl. Gilead, Haurân.
 596. *Pinardi*, Boiss. Moab, Haurân.
 597. *spinosa*, L. Haurân.
 598. *Syriaca*, Bth. Gilead, Haurân.
 599. *ceratophylla*, L. Haurân.
 600. *brachycalyx*, Boiss. Moab, Gilead.
 601. *Hierosolymitana*, Boiss. Moab, Gilead.
 602. *Verbenaca*, L. Moab, Gilead, Haurân.
 603. *controversa*, Ten. Moab, Gilead, Haurân.
 604. *Horninum*, L. Moab, Gilead, Haurân.
 605. *Russelii*, Bth. Shuhbah, at the edge of El-Leja.
 606. *Zizyphora capitata*, L. Gilead, Haurân.
 607. *Nepeta marruboides*, Boiss. et Held. Jebel Kulêb.
 608. *Trachonitica*, Post. Among the ruins at Shuhbah.
 609. *Cilicica*, Boiss. Moab.
 610. *curviflora*, Boiss. Jebel Husha'.
 611. *cryptantha*, Boiss. et Haussk. Maïn.
 612. *Scutellaria fruticosa*, Desf. Gilead, Haurân,
 613. *Brunella vulgaris*, L. Moab, Gilead, Haurân.
 614. *Stachys Arabica*, Boiss. Ain Hesbân, 'Ammân.
 615. *pullulans*, Vent. 'Ain Hesbân. 'Ammân.
 616. *Libanotica*, Bth., var. *ericalyx*, Post. Suweidah to 'Atîl,
 Haurân
 617. *Cretica*, Sibth. et Sm. Jebel Husha'.
 618. *Marrubium cuneatum*, Russ. Jebel Husha', Haurân.
 619. *Lamium amplexicaule*, L. Moab, Gilead.
 620. *moschatum*, L. Moab, Gilead Haurân.
 621. *Mollucella lævis*, L. Haurân.
 622. *Ballota undulata*, Fresen. Moab, Gilead Haurân.
 623. *saxatilis*, Sieb. Ascent from El-Ghor to 'Ayûn Mûsa.
 624. *nigra*, L. Gilead.
 625. *Phlomis Nissolii*, L. El-Ghor, Moab, Gilead.
 626. *viscosa*, Poir. Moab, Gilead, Haurân.
 627. *fruticosa*, L., var. *leiostegia*, Post. On the road from Maïn
 to Callirrhoë.
 628. *Herba-Venti*, L. Moab, Gilead.
 629. *Eremostachys laciniata*, L. Moab.
 630. *Prasium majus*, L. Moab, Gilead.
 631. *Teucrium pruinatum*, Boiss. Haurân.
 632. *Polium*, L. Ascent from El-Ghor to 'Ayûn Mûsa.
 633. *Teucrium Auraniticum*, Post. In clumps by the roadside from
 Bosrah to Kureiyah, Haurân.
 634. *Ajuga Orientalis*, L. Moab, Gilead.
 635. *Chia*, Poir, var. *tridactylites*, Boiss. Moab.

LIV.—PLANTAGINEÆ.

636. *Plantago lanceolata*, L., var. *altissima*, Boiss. Gilead.
 637. *albicans*, L. 'Ayun Musa, Irbid, Haurân.
 638. *amplexicaulis*, Cav., var. *linearifolia*, Post. Khan Hath-
 rûrah to Jericho.
 639. *Cretica*, Lam. Moab.
 640. *ovata*, Forsk. Khan Hathrûrah to Jericho.
 641. *Plantago ovata*, Forsk., var. *lanata*, Post. Between Irbid and Bosrah
 in Haurân.

LV.—CHENOPODIACEÆ.

642. *Chenopodium album*, L. Common throughout.
 643. *murale*, L. Common throughout.
 644. *Beta vulgaris*, L., a *typica*, Boiss. Flanks of El-Ghor.
 645. *b maritima*, Boiss. Suleim, Haurân.
 646. *Atriplex Palæstinum*, Boiss. Khan Hathrûrah.
 647. *Alexandrinum*, Boiss. Between El-Leja and Damascus.
 648. *leucocladum*, Boiss. Callirrhoë.
 649. *Kochia latifolia*. Fres. Callirrhoë.
 650. *Camphorosma Monspeliacum*, L. Moab.
 651. *Salicornia fruticosa*, L. Sowarat-el-Kebîrah.
 652. *Suæda fruticosa*, L. Callirrhoë.
 653. *asphaltica*, Boiss. Khan Hathrûrah to Dead Sea.
 654. *Atraphaxis spinosa*, L. Ascent from El-Ghor to 'Ayûn Mûsa.

LVI.—POLYGONACEÆ.

655. *Polygonum Bellardi*, All. El-Kufr, Haurân.
 656. *polycnemoides*, Jaub. et Sp. Kaldûn.
 657. *aviculare*, L. Ascent from El-Ghor to 'Ayûn Mûsa.
 658. *Rumex conglomeratus*, Murr. Wady-es-Sîr.
 659. *obtusifolius*, L. Haurân.
 660. *tuberosus*, L. Haurân.
 661. *roseus*, L. Khan Hathrûrah to Jericho.
 662. *lacerus*, Balb. Ascent from El-Ghor to 'Ayûn Mûsa.
 663. *Emex spinosus*, L. Flanks of El-Ghor.

LVII.—ARISTOLOCHIACEÆ.

664. *Aristolochia Maurorum*, L. Jebel Kuleib, Es-Salt.

LVIII.—THYMELEÆ.

665. *Lygia pubescens*, Guss. El-Ghor.

LIX.—SANTALACEÆ.

666. *Osyris alba*, L. Moab, Gilead.

LX.—LORANTHACEÆ.

667. *Viscum cruciatum*, Sieb. Moab, Gilead.
 668. *Loranthus Acaciæ*, Zucc. El-Ghor.

LXI.—CYNOCRAMBEÆ.

669. *Cynocrambe prostrata*, Gaertn. Jebel Husha'.

LXII.—EUPHORBIACEÆ.

670. *Euphorbia falcata*, L. Gilead.
 671. var. *Galilæa*, Boiss. Moab.
 672. *aulacosperma*, Boiss. 'Ajlûn.
 673. *arguta*, Schrad. Haurân.
 674. *thamnoides*, Boiss. 'Ayûn Mûsa, Jebel Husha'.
 675. *Helioscopia*, L. Gilead, Haurân.
 676. *tinctoria*, L. Plain of Damascus.
 677. var. *schizoceras*, Boiss. Gilead.
 678. *Ricinus communis*, L. El-Ghor.
 679. *Andrachne telephioides*, L. El-Ghor, Gilead.
 680. *Mercurialis annua*, L. Everywhere.

LXIII.—URTICACEÆ.

681. *Celtis Australis*, L. Gilead.
 682. *Ficus Carica*, L. Moab, Gilead.
 683. *Urtica pilulifera*, L. Common.
 684. *membranacea*, Poir. Common.
 685. *Parietaria officinalis*, L. Moab, Gilead.

LXIV.—JUGLANDACEÆ.

686. *Juglans regia*, L. Gilead.

LXV.—PLATANACEÆ.

687. *Platanus Orientalis*, L. Moab, Gilead.

LXVI.—CUPULIFERÆ.

688. *Quercus coccifera*, L. Moab, Gilead, Haurân
 689. *Cerris*, L. Jebel Kuleib.
 690. *Ægilops*, L. Moab, Gilead.

LXVII.—SALICACEÆ.

691. *Salix fragilis*, L. El-Kúfr.
 692. sp. near *alba*, L. Tell-el-Hammâm.
 693. *Populus Euphratica*, Oliv. El-Ghor.
 694. *nigra*, L. Cultivated everywhere along watercourses.

LXVIII.—EPHEDRACEÆ.

695. *Ephedra Alte*, L. Jebel Síghah.
 696. *campylopoda*, C. A. M. Ascent from El-Ghor to 'Ayûn Mûsa.

LXIX.—CONIFERÆ.

697. *Pinus Halepensis*, Mill. Moab, Gilead.

LXX.—ORCHIDACEÆ.

698. *Cephalanthera ensifolia*, Murr. Woods, Moab and Gilead.
 699. *Limodorum abortivum*, L. Woods south of Es-Salt, Jebel Husha'.
 700. *Orchis sancta*, L. Gilead.
 701. *punctulata*, Stev., var. *sepulchralis*, Boiss. In a clearing on the road between 'Ammân and Es-Salt. The specimens found had pallid green-nerved sepals.
 702. *tridentata*, Scop. Gilead.
 703. *saccata*, Ten. Moab, Gilead.
 704. *Anatolica*, Boiss. Woods south of Es-Salt.
 705. *Anacamptis pyramidalis*, L. Between Burmah and Gerash, Gilead.
 706. *Ophrys apifera*, Huds. Between Burmah and Gerash, Gilead.

LXXI.—IRIDACEÆ.

707. *Iris Sisyrrhinchium*, L. Everywhere.
 708. *Sari*, Baker. Plains of Moab.
 709. *Gladiolus Illyricus*, var. *Anatolicus*, Boiss., Koch. Moab, Gilead, Haurân.
 710. *atroviolaceus*, Boiss. Haurân.
 711. *Ixiolirion montanum*, Labill. Moab.

LXII.—LILACEÆ.

712. *Asparagus acutifolius*, L. Common throughout.
 713. *stipularis*, Forsk. El-Ghor.
 714. var. *brachyclados*, Boiss. El-Ghor.
 715. *Lownei*, Baker. New bridge of Jordan. A variety with leaves spurred at base; the specimen in the Herbarium of Kew is destitute of spurs.

716. *Asphodelus microcarpus*, Viv. El-Ghor, Moab, Gilead.
 717. *fistulosus*, L. El-Ghor, Moab.
 718. *Asphodeline lutea*, L. Haurân.
 719. *brevicaulis*, Bert. Jebel Husha', Haurân.
 720. *brevicaulis*, Bert., var. *foliosus*, Post. Stem leafy to base of panicle. Haurân.
 721. *Taurica*, Pall. Jebel Neba.
 722. *Tulipa Oculus-Solis*, L. Gilead.
 723. *montana*, Lindl. Jebel Kuleib, Haurân plain.
 724. *Allium Hierochuntinum*, Boiss. Flanks and valley of El-Ghor, Haurân.
 725. *stamineum*, Boiss. El-Ghor.
 726. *Sindjarensis*, Boiss. et Haussk. Sowarat-el-Kebirah.
 727. *trifoliatum*, Cyr. Haurân.
 728. *Neapolitanum*, Cyr. Moab, Gilead, Haurân.
 729. *Schuberti*, Zucc. Haurân.
 730. *nigrum*, L. New bridge of Jordan.
 731. *Erdelii*, Zucc. Jebel Sîâghah, Gilead, Jebel-el-Durûz.
 732. *Scilla hyacinthoides*, L. Wady-es-Syr.
 733. *Urginea maritima*, L. Ascent from El-Ghor to 'Ayûn Mûsa.
 734. *Muscari comosum*, Mill. Moab, Gilead, Haurân.
 735. *Pinardi*, Boiss. Jebel Sîâghah.
 736. *longipes*, Boiss. Jebel Kuleib.
 737. *racemosum*, L. Haurân.
 738. *Bellevalia macrobotrys*, Boiss. Es-Salt, Haurân.
 739. *densiflora*, Boiss. Merj, Damascus.
 740. *Ornithogalum Narbonense*, L. Moab, Gilead, Haurân.
 741. var. *densum*, Boiss. Haurân.
 742. *umbellatum*, L. Moab, Gilead, Haurân.
 743. *montanum*, Cyr. Gilead.
 744. *Fritillaria Libanotica*, Boiss. Haurân.

LXXIII.—SMILACEÆ.

745. *Smilax aspera*, L., var. *Mauretunica*, Boiss. Moab.

LXXIV.—COLCHIACEÆ.

746. *Colchicum Ritchii*, R. Br. Shuhbah, El-Leja.

LXXV.—AROIDEÆ.

747. *Arum Dioscoridis*, Sibth. et Sm. Moab.
 748. *hygrophilum*, Boiss. Gilead.
 749. *Helicophyllum crassipes*, Boiss. Gilead.

LXXVI.—ALISMACEÆ.

750. *Alisma Plantago*, L. Moab, Haurân.
 751. *natans*, L. In a pool, between 'Ajlûn and Irbid, Gilead. A plant not heretofore observed in the East.

LXXVII.—BUTOMACEÆ.

752. *Butomus umbellatus*, L. El-Ghor, Haurân.

LXXVIII.—TYPHACEÆ.

753. *Typha latifolia*, L. Ford of Jabbok, Gilead.

LXXIX.—JUNCEACEÆ.

754. *Juncus maritimus*, L. Ascent from El-Ghor to 'Ayûn Mûsa.

LXXX.—PALMEÆ.

755. *Phoenix dactylifera*. Indigenous in valleys about the Dead Sea and in the Ghor.

LXXXI.—CYPERACEÆ.

756. *Cyperus longus*, Sieb. Moab, Gilead.
 757. *Scirpus Holoschænus*, L. Gilead.
 758. *maritimus*, L. Gilead.
 759. *Carex divisa*, Huds. Haurân.
 760. *stenophylla*, Vahl. Moab, Gilead.
 761. *Mediterranea*, C. B. Clarke. Haurân. A new species found also in Sicily.

LXXXII.—GRAMINEÆ.

762. *Pennisetum ciliare*, L. Shittim plain.
 763. *asperifolium*, Desf. Ascent from El-Ghor to Nebo.
 764. *Imperata cylindrica*, L. Gilead.
 765. *Saccharum Ægyptiacum*, L. Ascent from El-Ghor to Moab.
 766. *Arundo Donax*. Ascent to Moab.
 767. *Pollinia distachya*, L. Gilead.
 768. *Andropogon foveolatus*, Del. Callirrhœ.
 769. *annulatus*, Forsk. New bridge of Jordan.
 770. *hirtus*, L. Nebo, Moab, Gilead.
 771. *Phalaris minor*, Retz. El-Ghor.
 772. *Canariensis*, L. Moab.
 773. *nodosa*, L. Haurân.

774. *Alopecurus involucreatus*, Post. Kureiyah to el-Kûfr, Haurân.
 775. *anthoxanthoides*, Boiss. Nebo.
 776. *agrestis*, L. Jebel-ed-Durúz.
 777. *pratensis*, L. Moab, Haurân.
 778. *Aristida cærulescens*, Desf. Gilead, Haurân.
 779. *Forskahlei*, Tausch. Callirrhœ.
 780. *Stipa Lagascae*, Raem. et Sch. Plain of Moab.
 781. *passiflora*, Desf. Brak, El-Leja.
 782. *capillata*, Desf. Haurân.
 783. *tortilis*, Desf. A mischievous and annoying weed; common everywhere.
 784. *Piptatherum miliaceum*, L. Ascent from El-Ghor to Nebo.
 785. *holciforme*, R. and Sch. Ammân, Es-Salt.
 786. *Milium vernale*, M. B. Moab, Gilead.
 787. *Polypogon Monspeliense*, L. El-Ghor.
 788. *maritimum*, Willd. New bridge of Jordan.
 789. *Lagurus ovatus*, L. Moab.
 790. *Aira capillaris*, Host. Base of Jebel-el-Durúz, between Kureiyah and El-Kufr.
 791. *Ventenata Blanchei*, Boiss. Haurân, between Kureiyah and El-Kufr.
 792. *Avena sterilis*, L. Moab, Gilead, Haurân.
 793. *barbata*, Brot. Moab, Gilead, Haurân.
 794. *var. glabra*. El-Ghor.
 795. *Arrhenatherum elatius*, L., *var. Palæstinum*, Boiss. Moab, Gilead, Haurân.
 796. *Cynodon Dactylon*, L. Common throughout.
 797. *Danthonia*, ? sp. . Jebel Husha'.
 798. *Tetrapogon villosus*, Desf. Callirrhœ.
 799. *Echinaria capitata*, L. Nebo.
 800. *Lamarckia aurea*, L. El-Ghor, Moab, Gilead.
 801. *Cynosurus callitrichus*, W. Barb. Solomon's Pools, Es-Salt, Nebo.
 802. *elegans*, Desf. Es-Salt, 'Ajlûn.
 803. *Kœleria phlæoides*, Vill. Moab, Gilead.
 804. *Catabrosa aquatica*, L. Haurân.
 805. *Melica Cupani*, Guss. Haurân.
 806. *Dactylis glomerata*, L. Everywhere.
 807. *Schismus Arabicus*, Nees. Ghor.
 808. *Poa compressa*, L. Es-Salt.
 809. *annua*, L. Everywhere.
 810. *bulbosa*, L. Everywhere.
 811. *Festuca elatior*, L., *var. pratensis*, Hack. Ammân, Plains of Moab.
 812. *Vulpia ciliata*, Pep. Haurân.
 813. *Catapodium loliaceum*, Huds. Ascent from El-Ghor to Nebo.
 814. *Scleropoa Philistæa*, Boiss. Plain of Sharon.
 815. *Bromus erectus*, Huds. Jebel-ed-Durúz.
 816. *tectorum*, L. Throughout.
 817. *sterilis*, L. Throughout.

MONTHLY METEOROLOGICAL TABLE DEDUCED FROM OBSERVATIONS TAKEN AT SARONA BY HERR J. DREHER IMMEDIATELY NORTH OF THE GREAT ORANGE GROVES OF JAFFA, SYRIA, 1½ MILE FROM THE SEA SHORE, ON SANDY SOIL, AND ABOUT 50 FEET ABOVE SEA-LEVEL. LATITUDE 32° 4' N., LONGITUDE 34° 47' E.

By JAMES GLAISHER, F.R.S.

Months, 1881.	Pressure of Atmosphere in Month. Corrected to 32° Fahrenheit.				Temperature of the Air in Month.								Mean Reading at 9 a.m.			Vapour, 9 a.m.			Degree of Humidity.	Weight of a Cubic Foot of Air.	Wind.								Calm, or nearly Calm.	Mean Amount of Cloud.	Rain.	
	Highest.	Lowest.	Range.	Mean.	Highest.	Lowest.	Range.	Mean of all Highest.	Mean of all Lowest.	Mean daily Range.	Mean.	Dry Bulb.	Wet Bulb.	Dew Point.	Elastic Force of Vapour.	Weight in a Cubic Foot of Air.	Additional Weight required for Saturation.	Relative Proportion of								Number of Days on which it fell.	Amount Collected.					
																		N.			N.E.	E.	S.E.	S.	S.W.			W.			N.W.	
January	in. 30·235	in. 29·751	in. 0·384	in. 29·997	80°·0	40°·0	40°·0	71°·0	48°·0	23°·0	59°·5	59°·3	53°·4	48°·2	grs. 338	grs. 3·8	grs. 1·9	67	grs. 535	0	1	3	11	11	1	1	0	3	4	4	ins. 0·47	
February	30·007	29·524	0·583	29·838	75°·0	41°·0	34°·0	64·8	47·6	17·2	56·2	58·2	53·6	49·4	355	4·0	1·5	73	533	1	3	0	5	9	5	3	0	2	6·7	12	4·12	
March	30·175	29·579	0·596	29·917	87°·0	40°·0	47°·0	68·4	48·1	20·3	58·3	62·6	57·2	52·6	398	4·4	1·9	70	530	1	2	1	5	5	7	4	2	4	4·2	10	2·55	
April	30·035	29·545	0·490	29·828	96°·0	47°·0	49°·0	77·6	56·9	20·7	62·2	71·9	62·2	54·9	433	4·7	3·8	55	518	2	0	0	4	7	4	6	3	4	6·0	4	0·23	
May.. ..	29·957	29·637	0·320	29·821	99°·0	48°·0	51°·0	80·1	56·8	23·3	68·5	74·5	65·3	58·6	495	5·3	3·9	58	515	1	2	2	0	0	6	7	9	4	3·1	0	0·00	
June	29·957	29·697	0·260	29·816	96°·0	53°·0	43°·0	83·2	58·9	24·3	66·0	78·7	69·8	63·7	589	6·3	4·1	60	511	1	1	0	0	0	9	7	9	3	1·6	0	0·00	
July.. ..	29·860	29·563	0·297	29·705	89°·0	60°·0	29°·0	86·2	67·1	19·1	76·6	82·3	73·8	68·1	688	7·3	4·3	66	505	0	0	0	0	0	21	8	1	1	1·9	0	0·00	
August	29·871	29·570	0·301	29·675	106°·0	67°·0	39°·0	89·9	70·3	19·6	80·1	85·4	76·7	71·1	761	8·1	4·8	62	501	0	0	0	1	4	24	1	0	1	2·3	0	0·00	
September	29·940	29·663	0·277	29·792	92°·0	63°·0	29°·0	88·1	68·1	20·0	78·1	83·3	75·3	70·0	733	7·8	4·3	64	505	0	1	0	1	0	11	2	6	9	2·6	0	0·00	
October	29·994	29·823	0·171	29·902	89°·0	54°·0	35°·0	83·3	61·5	21·8	72·4	78·2	68·5	61·8	552	6·0	4·4	57	513	3	3	0	4	2	3	1	8	7	3·2	0	0·00	
November	30·076	29·747	0·329	29·919	89°·0	49°·0	40°·0	75·0	55·9	19·1	65·5	67·1	60·8	55·7	446	4·9	2·5	67	525	0	3	3	8	7	4	0	1	4	5·0	7	5·09	
December	30·232	29·784	0·448	29·975	72°·0	39°·0	33°·0	66·2	47·4	18·8	56·8	57·0	52·9	49·1	349	3·9	1·3	75	537	0	5	2	11	10	0	1	0	2	4·5	11	5·03	
Means	30·028	29·657	0·371	29·857	89·2	50·1	39·1	77·8	57·2	20·6	66·7	71·5	64·1	58·6	511	5·6	3·2	64	519	Sums. 9	Sums. 21	Sums. 11	Sums. 50	Sums. 55	Sums. 95	Sums. 41	Sums. 39	Sums. 44	3·8	Sums. 48	Sums. 17·49	
Number of Column ..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

818. *Bromus Matritensis*, L. Everywhere.
 819. *Hausknechtii*, Boiss. Jebel Kuleib.
 820. *macrostachys*, Desf. Moab, Haurân.
 821. *brachystachys*, Horn. New bridge of Jordan.
 822. *rubens*, L. Everywhere.
 823. *scoparius*, L. Everywhere.
 824. *Brachypodium distachyum*, L. Moab, Gilead. Haurân.
 825. *Agropyrum junceum*, Beauv. Mountains of Moab.
 826. *squarrosum*, Roth. Haurân.
 827. *Secale fragile*, M. B. Jebel Husha'.
 828. *Ægilops Aucheri*, Boiss. Ascent from 'El-Ghor to Nebo.
 829. *crassa*, Boiss. Ascent from El-Ghor to Nebo.
 830. *var. macrathera*, Boiss. El-Ghor.
 831. *triuncialis*, L. Gilead.
 832. *var. brachyathera*, Boiss. Gilead.
 833. *Lolium rigidum*, Gaud. Es-Salt, Haurân, El-Ghor, Jebel Husha'.
 834. *sp.* Ascent from El-Ghor to 'Ayûn Mûsa.
 835. *sp.* Burmah to Gerash, Gilead.
 836. *Hordeum bulbosum*, L. Common throughout.
 837. *murinum*, L. Common everywhere.
 838. *Elymus Caput-Medusæ*, L. Haurân.
 839. *Delileanus*, Schult. Gilead, Haurân.

LXXXIII.—FILICES.

840. *Cheilanthes fragrans*, L. Burmah, Gilead.
 841. *Adiantum Capillus-Veneris*, L. Wet places everywhere. Very fine fronds of it are found in the cave at 'Ayûn Mûsa.
 842. *Ceterach officinarum*, L. Gilead.

LXXXIV.—CHARACEÆ.

843. *Chara*, *sp.* Burmah.

METEOROLOGICAL OBSERVATIONS.

1881.

The numbers in column 1 of this table show the highest reading of the barometer in each month ; of these, the highest appear in the winter, and the lowest in the summer months. The maximum for the year was in January, as in the preceding year, and was 30·235 ins. In column 2, the lowest in each month are shown ; the minimum, 29·524 ins., was in February, in the preceding year it was in April ; the range of readings in the year was 0·711 inch, in the year 1880 it was 0·780 inch. The numbers