

EXCAVATION METHODS IN PALESTINE

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EXCAVATION methods are a subject about which practically no mention is made in publications, and about which only people who have made prolonged visits to digs have any idea. In ordinary popular accounts of excavations, it is the results which are stressed, and not how they are obtained. In full scientific reports, the methods can often be deduced, but they are seldom described, as it is taken for granted that the reports will mainly be read by fellow excavators who will not require to be told about methods. Often readers of popular accounts, and particularly newspaper reports, may be moved to wonder how such and such a theory has been evolved, and to doubt the possibility of proving a statement. It can, however, confidently be said that facts stated in authentic reports of modern excavations can be proved just as much as facts in any other science. Archaeology is nowadays an exact science, and it is the aim of this paper to indicate its methods of operation.

I shall begin with it is necessary to emphasize the aim of archaeology, even if this is platitudinous. The aim is to establish the history, cultural, religious, architectural and so on, of a given place or people, in those times and areas of which we have not a sufficient historical record. The earliest manifestations of interest in the past, are undoubtedly those of the treasure-seeker, and as such one might class most of the excavators of the early nineteenth century. Nowadays, a work of art loses nine-tenths of its importance if it is disassociated from the culture to which it belongs. The evidence for this comes almost without exception from the layer of soil, whether in city or tomb, in which it is found. It is therefore to the establishment of this, that is to say, to stratification, that modern archaeological methods are directed. Many people may have seen the methods in use on an up-to-date dig in England, and have realized what minutely accurate results are

produced by them. They have also probably been told "Oh yes, of course that is all very well, but it is a very different thing in the East, where you get layer after layer one on top of the other." But the deduction is false. Almost identical methods can be applied in the East, though the difficulties are undoubtedly much greater, both from the succession of strata and the difficulty of getting enough intelligent workmen.

The history of excavation in Palestine shows the gradual development of the realization of the importance of stratification. Nowadays, when everybody has read graphic accounts in the public press of one city rising on the ruins of another, gradually forming artificial hills, it is difficult to realize how recent this knowledge is. Edward Robinson, who visited Palestine in 1838 and 1852, was of the opinion that the numerous tells which dotted the Jordan valley were natural. Warren, who worked in the country from 1867 to 1870, decided by cutting into them that they were artificial, and made up largely of sun-dried brick, but was apparently of the opinion that the mound was constructed as such in order to form an eminence on which to put a building. Even as late as 1894, after Schliemann's discoveries at Troy had popularized the idea of numerous cities one over the other, Bliss felt it necessary to explain, in his report on Tell Hesya, how a tell was formed.

The earlier excavations in Palestine may be described as treasure-seeking almost as much as those in Egypt and Babylonia, even when the treasure the excavators were seeking was only the plan of buildings in Jerusalem. Captain Warren's excavations in Jerusalem are by modern lights almost models of how excavations should not be done, though anyone who has read his account will realize the incredible difficulties with which he has to contend. Even if modern methods had been evolved in his day, it is difficult to see, in view of the official attitude, how else he could have done anything. Practically all his efforts to trace the line of walls had to be carried out by tunnelling, and such was the suspicion with which he was regarded, that to examine the wall of the Haram esh Sheriff, the Temple area, he had to start his shaft forty feet from it, sink eighty feet to the rock and then run along its surface till he reached the base of the wall. The drawing of this is very

familiar from the old cover of the *Quarterly Statement*. Considering the fact that the cutting was made through loose rubble, and that supporters at home were continually grudging him money for timber, it is an amazing feat that practically all his discoveries were made in the same way, and it is remarkable how much he found. But though by tunnelling an excavator may find Treasure Trove in the way of a fine wall, it is almost impossible to put it in its historical place by reference to surrounding buildings and strata. It is extraordinarily difficult to identify a wall merely by the style of masonry, of which fact an excellent example is given by the Harvard excavation at Samaria, where a magnificent round tower was identified as the work of Jeroboam II. A similar tower was discovered by the recent Joint Expedition, and when its outside was first cleared, was likewise assigned to Jeroboam. As soon as the stratification inside and behind it was examined, it became quite clear that it was undoubtedly Hellenistic. Nowadays, it is inexcusable for a wall to be traced without reference to the surrounding soil.

The beginning of scientific archaeology in Palestine came with a rapid five weeks work which was carried out by Flinders Petrie at Tell Hesi in 1890. In his work in Egypt he had come to realize the importance of pottery in the dating of levels. At Tell Hesi, part of the mound had been cut away by a stream, and he was able to work in several levels at once, and by noticing the levels in feet above sea level at which various vessels occurred he was able to work out the succession of pottery forms throughout the history of the Tell. Bliss continued his work in 1891-2, and the result of the work is shown in the section Pl. XII.

In this section, each layer roughly includes the level down to which the foundations of a building go, up to that of the surviving tops of its walls. That is to say, the soil assigned to that layer includes that which was there before the building was put up, and into which its foundations were sunk, the floors of the building and the occupation layers above them, the debris of its destruction and possibly the levelling up prior to the building of its successor. This clearly covers a considerable period of time, and the method is obviously stratification in an elementary form.

Nowadays, excavation by stratigraphical methods is the determination of the meaning of each layer of soil with reference to the adjacent walls, and this can be done only by the careful examination of the lines in the soil. This method is all the more necessary in cities built in hilly country, where the natural shape of the hill affects the levels of the various portions of the town. It is obvious that in such a case the recording the absolute level above the sea of any object has no value at all, since objects of Period IV in one place may be lower than Period II quite near by. This is illustrated by comparison of Tell Fara with that of Samaria. In the former case almost the whole mound represents artificial accumulation, which rose at approximately the same rate all over the city. In the latter case, the original settlement conformed to the natural shape of the hill, and the amount of artificial accumulation is comparatively small, since there mud brick walls, which produce the greatest rise in level, were little used. This last fact is a further reason for the need of more elaborate observation of the stratification, for the use of stone for building, with the resultant deep foundations of the walls, and also the frequent destruction of older walls for building stones makes things much more complicated.

Therefore, though the methods first applied at Tell Hesy worked well enough, within limits, in the brick built cities of South Palestine, they were quite inapplicable to the hill towns of North Palestine. The result was that though the principles of stratification which they involved were fully recognized and their value acknowledged, when, during the next twenty years, the excavation of important hill-sites was carried out, it was deduced that the stratification was too disturbed to be followed in digging. This was noticeably the case in the excavations of Gezer between 1902 and 1909 and of Samaria between 1909 and 1912. The excavators, in each case, were fully aware of the desirability of stratigraphical excavation, but the technique of digging had not then advanced sufficiently far for them to be able to deal with the very intricate layers.

In 1931 to 1935 the Joint Expedition of Harvard University, the British School at Jerusalem and other bodies, carried out further excavations at Samaria. By this time, stratigraphical methods had become very much more elaborate, and it was

found to be perfectly possible to unravel the various layers, complicated though these were. Since the methods employed on stone wall sites such as Samaria thus represent the most complicated type of excavations, this paper is concerned chiefly with them. Methods on other sites are essentially the same, though perhaps sometimes simpler.

In order to make clear the problems with which an excavator is faced, it is necessary to allude shortly to the methods by which the walls were built in the first place. The three main types of construction are illustrated by the rough sketch, Pl. XIII. In figure 1, the builders are starting work on a virgin site. The rock is, as nearly always, sloping slightly, so that in order to obtain a level basis for the wall, a scarp has to be cut, and the wall built up against it. When the wall is built, the area inside the building is levelled over with a layer of earth and floor laid above this. Everything in the make-up of this floor is therefore contemporary with the building, that is to say, that though some of the objects may be older, they only reached their present position in the short interval between the building of the wall and the laying down of the floor. Later on, another floor is laid inside the building, possibly contemporary with structural alterations, possibly not. Meanwhile, debris has been gradually accumulating outside the building, but there has been no laid floor. After a third period floor has been laid, the building is destroyed and with the destruction of the upper part of the outer wall, the top of the latest floor is washed away, and layers of debris bank up against the outside. Then the wall is rebuilt, with a new floor on its inside, and this time a floor on its outside, overlying the collapsed debris of the earlier wall.

In the other two examples, a wall has been built on a site already covered by several occupation layers. Here again, the builders have based their wall on rock. This may be done by two methods. In figure 2, a trench much wider than the actual wall has been cut, and the wall has been built free in the middle of it, with room for the masons to work against its face. When the wall has been finished, the extra width has been filled in, and the floor laid over the top. In figure 3, the lower part of the wall has been trench built, the foundation trench being only the width of the wall, and filled with uncoursed rubble.

Higher up, there is a broader foundation trench, and the stones are dressed and coursed.

These examples will show how necessary it is to observe and interpret all the layers of soil and their relations to the walls. The excavator must be able to say not only what layer any given object has come from, but also what the significance of the layers is. Pl. XIV, a section of one of the areas at Samaria, will show the very great complication which results from the continued occupation of a site over a long time. It will also show how all the various levels can be associated with the contemporary walls, which thus can be dated from the contents of the levels. The association of walls of the different periods similarly can be established by their relationship to the levels, even when structural evidence is lacking. Further, by linking up of a whole series of sections, the plan and history of the whole site can gradually be built up.

A further complication has still to be faced by the excavator, that of the destruction of walls by stone-robbers. Throughout all periods in the history of a site like Samaria, builders have found it easier to pull down and dig up the walls of their predecessors in order to obtain stone, than to quarry new blocks. The result is that many walls are represented only by the holes out of which their foundations have been grubbed. Fortunately, these robber trenches can always be identified, as they are inevitably filled by material differing from the undisturbed floors on either side. Pl. XV illustrates how such a trench shows up, while in Pl. XVI, in an area at Samaria, the robber trenches of the casemate walls have been cleared out, down to the rock-cut trenches and few remaining stones, while the undisturbed floors in between have been left standing.

Such then, is the problem with which an excavator of a site such as Samaria is faced. It is quite clear that to go straight ahead and clear out all the soil would destroy all the evidence. It would be useless to record the absolute depth of the objects, since in different parts of the site this has a different significance, and it may well have arrived in its position by a foundation trench or a robber trench cutting through the earlier levels. It is necessary, therefore, to examine and correlate all the layers of soil, particularly in relation to the walls. Therefore, the worst possible thing to do is to clear along the

face of a wall, as its relation to the layers is thus destroyed. It is necessary to cut a section at right angles to each wall, in order to decide which layers are earlier, contemporary and so on. The next stage is to secure sections across the whole area, linking it all together. The method of digging is therefore to start by cutting trenches across the area in order to identify the floors, foundation trenches and robber trenches. When the meaning of a layer has been established and complete records have been made, by planning, photographing, and drawing sections, it can then be removed, care of course being taken to keep separate material from the foundation trenches and robber trenches. These can either be removed first, or, since the former particularly are often narrow and go to a great depth, they can be left standing with a thin skin of undisturbed soil against them to prevent them contaminating the soil being removed.

For the purposes of identification later, it is of course necessary that full notes should be kept as to where everything comes from. Each area should be given a page or pages in the note book, and each level described and numbered to correspond with measured sections which show its meaning. The pottery from each level is put in separate baskets, and labelled with the page and number of level of the note book. It should be washed and roughly examined at once, in order that the excavator should know to what periods the levels he is working in belong, and non-significant sherds should be discarded. It then can be put in paper bags and examined at leisure.

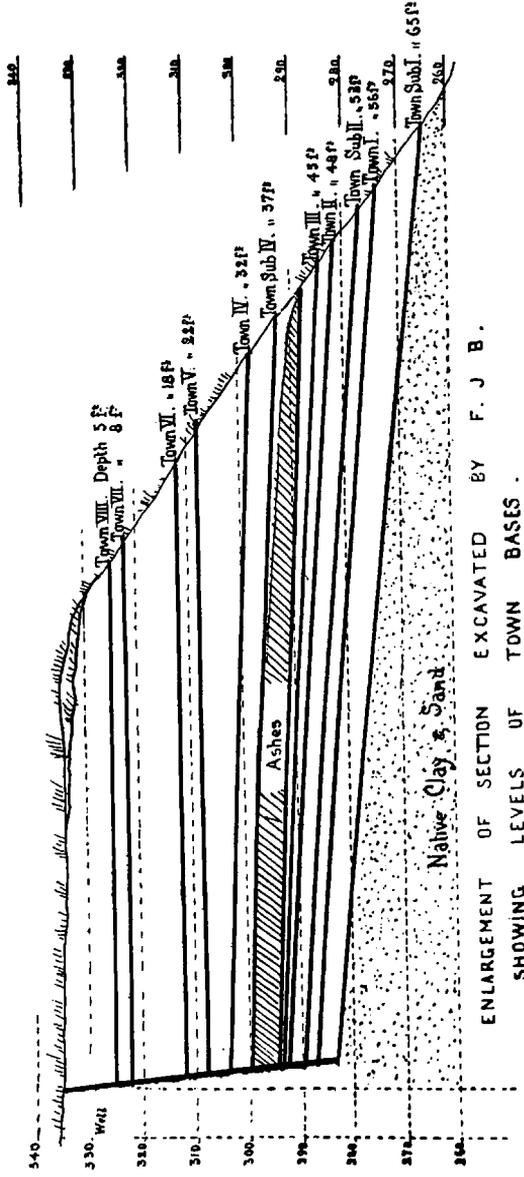
When the season's work is over, the excavator thus has a complete record of the site. He has plans of walls which he can prove are contemporary by their association with the same floors. He has pottery and objects from the various levels, with measured sections to prove to which of the various building periods they belong, and he has photographs. He is therefore able to classify his material, and to date the unknown by association with the known. Most of the dating of Palestinian objects is based on association with objects imported from Egypt and elsewhere, where written evidence helps to give an exact date. By an increasing amount of evidence of association in stratified layers, an increasing number of Palestinian objects can be closely dated, and so the detailed history of the country is gradually being built up.

All the above is only dealing with one side of archaeological methods, that of extracting the evidence from the soil. There are of course an infinite number of other sides to the matter. One side is the mechanics of the removal of the soil. The whole of the site may be gradually cleared and the earth dumped over the side of the hill, or it may be necessary to excavate a strip and re-fill it as the next is dug. The earth may be carried the whole way in baskets by women or children, or a railway may be employed. Excavation often goes down deep, and then the basket carriers may go up or down ramps or ladders, or baskets may be lifted out from hand to hand. Other sides of excavation touch such diverse matters as stylistic evidence of masonry, and the question of removing delicate objects from the soil, or sieving for small ones such as beads. All these are matters which might well come within the scope of the title of this paper, and while some of them are self-explanatory, others would require a whole treatise to deal with them.

This paper has however dealt almost entirely with the subject of stratification for two reasons. In the first place, that it should be realized that it is possible even in the East to be minutely accurate concerning the provenance of individual objects, and that the deductions based upon such details can be justified. The second reason is that it is a good thing that people should understand that the actual technique of excavation is a complicated one. It is not enough for an excavator to be a first-rate scholar and authority on objects from a museum point of view. He must be trained in fieldwork as such, and have sufficient students and assistants under him to be directly in charge of each individual area being excavated. Excavations done in any other way are pure wrecking.

It is supporters of a society such as this who can influence the policy of British archaeology in Palestine. When Warren was sent out in 1867, he says "I was told I must get results : not to go where I thought best for the work, but to go where every basketful unearthed would give information." The effect was that he could not use his own judgment as to where it would in the long run be best for him to dig. Excavators must of course get results, in order to maintain public interest and support. Some of these results may be as apparently unim-

portant as the establishment of the fact that type B of pottery comes after type A, but this fact will help to elucidate the history of the country often to a surprising degree. It is therefore most important for the interested public to understand something of the methods and aims of modern archaeology, and that is what this paper aims at explaining.



ENLARGEMENT OF SECTION EXCAVATED BY F. J. B. SHOWING LEVELS OF TOWN BASES.

1:500

SECTION OF EXCAVATIONS AT TELL EL-HESI

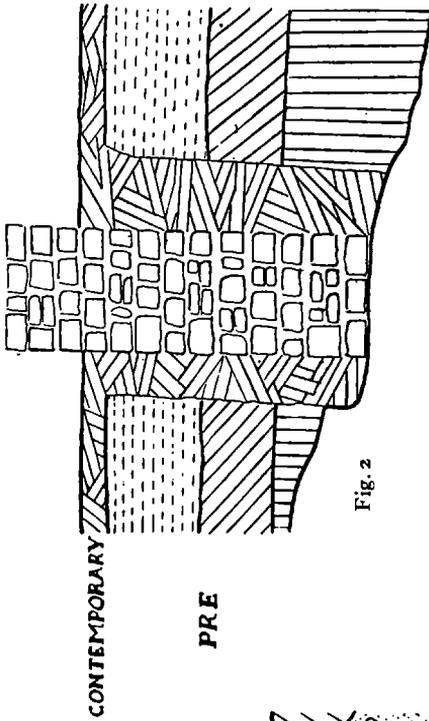


Fig. 2

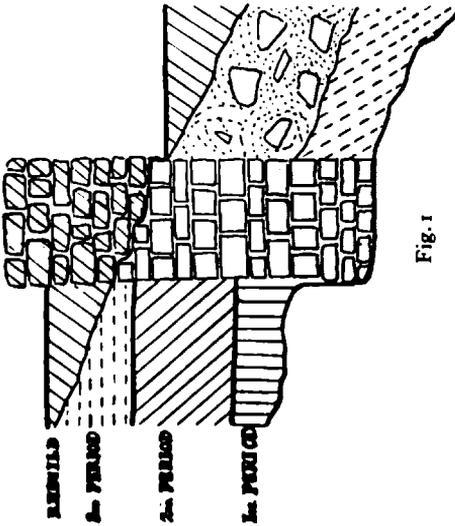


Fig. 1

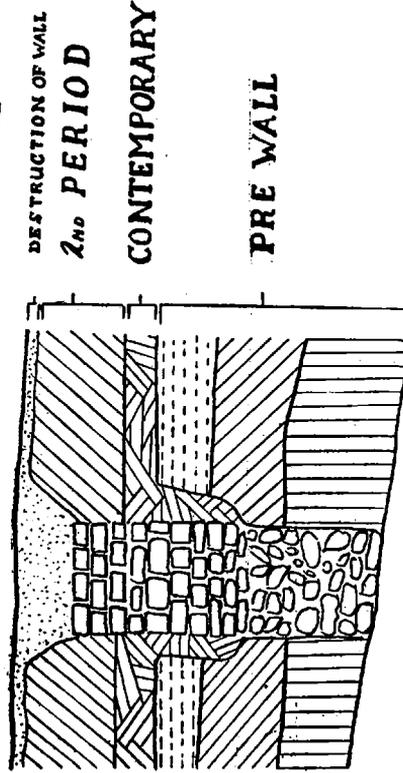
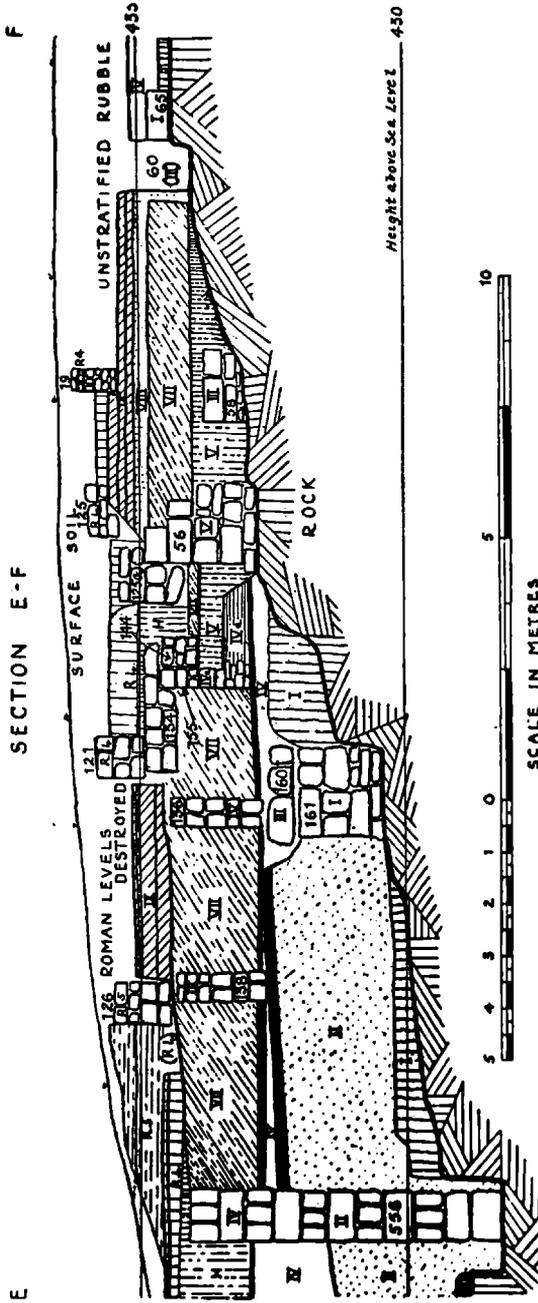


Fig. 3

SKETCH SECTION SHOWING RELATION OF WALLS TO STRATA



SECTION AT SAMARIA SHOWING WALLS AND STRATA



EXCAVATIONS AT SAMARIA SHOWING ROBBER-TRENCH IN SECTION



EXCAVATIONS AT SAMARIA, SHOWING ROBBER-TRENCHES CLEARED, WITH UNDISTURBED SOIL
LEFT STANDING