CERAMICS AND HISTORY IN PALESTINE[1]

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THE book of Ecclesiasticus contains a chapter, the 38th, in which the writer considers the relative social importance of several kinds of craftsmen as compared with the scribe. The plowman, the graver of signets, the smith, and the potter are each of them considered in the light of what they set their hearts upon. While in their several crafts they are so important that "no city shall be inhabited without them," they will never, in the judgment of Ben Sira, "be sought for in the council of the people," nor sit in the assembly of the learned, like the scribe. But the lapse of two thousand years has brought about a reversal of Ben Sira's judgment, for the potter now sits above the scribe in the councils of the archaeologists. Needless to say, it is not the modern potter, but the great and varied company of ancient potters, long ago gathered unto their fathers, who have acquired this posthumous distinction through the products of their handiwork. The use of ceramics as an auxiliary means to secure information about early human societies has in our time grown so important that the relevant literature of the subject sometimes refers to "the eloquence of potsherds."

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The following abbreviations have been employed: *AAS* = Annual of the American Schools of Oriental Research; *JPOS* = Journal of the Palestine Oriental Society; *MDOG* = Mitteilungen der deutschen Orient Gesellschaft; *PEF,QS* = Palestine Exploration Fund, Quarterly Statement; *RB* = Revue Biblique; *RS* = Revue Syria; *ZDMG* = Zeitschrift der Deutschen Morgenländischen Gesellschaft.

I. The Society of Biblical Literature and Exegesis celebrates on this occasion the fiftieth anniversary of its founding. It so happens that the gradual development of ceramic study as a tool of Palestinian archaeology almost completely parallels the life of this Society. Forty-three years ago Perrot and Chipiez[2] presented some general facts on the subject. But it was Sir W. M. Flinders Petrie who, during his excavation of Tell el-Hesy in southern Palestine, determined for the first time the general principles on which the dating of Palestinian potteries must rest.[3] In 1894 Dr. Frederick J. Bliss published the first edition of his book *A Mound of Many Cities* and in 1902, jointly with R. A. S. Macalister, *Excavations in Palestine during 1898—1900*. At the same time appeared Macalister's magnificent work on *The Excavation of Gezer*, which marked an advance in the technique of excavating and recording, as well as in completeness of publication. In the meantime Père H. Vincent, the distinguished French archaeologist of the École Biblique in Jerusalem, had begun that careful series of studies[4] and publications which have made him the foremost authority on the ceramics of the Near East. The fact that all but one of these pioneers in the application of ceramics to the problems of Palestinian history are still living, strikingly exemplifies the recency of this type of research.

It scarcely is necessary to remark that Palestine is not the only place where such studies have been undertaken. Indeed there is now no field of historical and pre-historical research in which the study of ceramics is not an accepted tool, a means of holding in check conclusions which are not amenable to the control of any other test. But the primary interest of this Society is in the Bible and the land of the Bible, wherefore it is proper that I should restrict myself mainly to those aspects of my subject which relate primarily to Palestine. It may be remarked in passing that there,

[2] Perrot et Chipiez, *Histoire de l'art dans l'antiquité*, Tome IV, Paris, 1887. See also Tome III, ch. X on "*La Céramique de la Phénicie*".

[3] *Tell el-Hesy*, pp. 40—50, 1891.

[4] H. Vincent, *Canaan*, (1907), pp. 297ff.; *La céramique de la Palestine* in *Classification des céramiques Antiques*, Paris, 1923; *La peinture céramique Palestinienne*, *RS*, 1924.

as elsewhere, a discipline so recent in its development still has much to do in perfecting its own methods. That, however, does not alter the fact that it has already become an indispensable tool of the historian and is often the only way by which the prehistorian can learn anything about the peoples who have passed into oblivion without a record of their history.

A friend has warned me that even among students of the historical sciences one does not always meet with a full comprehension of the reasons why the handiwork of the ancient potter holds the preeminence among human artifacts. If there are present in this assemblage those who have listened to the still, small, but eloquent, voices of potsherds, perhaps they will bear with me while I digress long enough to show how and why ceramics is able to light up dark corners of human history. The explanation lies in three qualities which inhere in the material with which the potter operates. The qualities of clay are plasticity, durability after firing, and fragility, and each of these qualities is necessary to the total result.

"Behold, as clay (חֹמֶר) in the hands of the potter (יוֹצֵר)," said Jeremiah (18 6) in drawing a moral from its plasticity. Other materials such as stone, wood, hide, or plant fibre, have a grain or texture of their own which offers varying degrees of resistance to the will of the craftsman. But clay is fictile and yields with ease to the manipulations of the modeler. This fictility of clay, together with its occurrence in exhaustless abundance, encouraged mankind, during the principal clay-using stages of nascent civilization, to make more lavish use of it than of any other material. For neither fear of labor nor of wastage imposed checks on use and experiment. Hence among human artifacts, clay pottery, figurines, bricks, etc., exhibit the greatest variety of shapes in which the will of primitive and civilized man has expressed itself. They are in part petrified survivals of his responses to needs. They also are real figments of his will, taste, and imagination, and as such afford us the only glimpses now obtainable of vast unrecorded ages of human history.

It follows from these facts that the quality of clay next in importance to plasticity is its durability and unalterableness after firing. A leaky basket caulked with clay and accidentally exposed to fire

retains the pattern of the basketwork long after the basket itself has perished. There is much evidence of this kind to show that such accidental exposures of wet clay to fire, among peoples widely separated in time and space, have led to multiple discoveries of the qualities of fired clay — of terra cotta. Thus the readiness with which wet clay takes impressions of fabrics, mats, basketwork, etc., and later renders them imperishable through firing, has served to record whole industries of primitive man whose actual products have perished millenniums ago. At Tell en-Nasbeh, for instance, we recovered fragments of primitive bowls of the Aeneolithic period (3000—2500 B.C.) which had been modeled with the aid of a coarse textile the pattern of whose weave has been perfectly preserved. It will be seen, therefore, that the union of plastic receptivity with enduring fixation of the impression has produced a combination of qualities that has made pottery so important to the student of antiquity.

But there is still a third quality of pottery which, in its narrowest definition, might be described as a specific property of fired clay, namely fragility. Such things as pots, bowls, plates, and lamps of earthenware break easily, and among the peoples of antiquity they were irreparable when broken, for they had no powerful glues with which to mend them. Occasionally an effort was made to prolong the usefulness of a highly esteemed vessel by drilling holes along the line of a break and lacing the edges together. But these are exceptions. As a rule nothing was to be done with the pieces but to discard them as waste. The utter worthlessness of broken pottery tempted neither its makers nor its breakers to carry it away from the places where it was dropped, and this fact insured the undisturbed mingling of potsherds with the contemporary waste products of the day. So it has come about that the great amount of breakage, coupled with the imperishability of the pieces, has peppered the layers of occupational deposits in cities and other ancient settlements with potsherds. At Tell en-Nasbeh, during one season in 1929, we recovered from successive levels of a comparatively small area over three thousand half-bushel (bushel = about a third of a hectolitre) baskets full of potsherds. The copiousness of this ceramic

waste, of which each piece is an original product of human craftsmanship, provides exceptionally reliable material for the approximate dating of the levels and for a variety of other historical generalizations.

It scarcely is necessary to point out that one trait of ancient societies on which the archaeologist can bank heavily is their tenacious adherence to custom. Both the potter and those who used his pots were creatures of habit to a degree unknown in modern societies. There are two main ceramic aspects or tendencies under which this fact comes to expression. The first is occupational and marks out the range within which the craftsman[5] finds his patterns. If the potter is a member of a pastoral society his earthen vessels will imitate the leather bags, jugs, and bowls of the nomad's camp. If, on the other hand, he belongs to an agricultural society gourds and the various products of strawplaiting will come to expression in his clay vessels. The second tendency of ceramic art operates restrictively and limits the craftsman rather narrowly to the technique, shapes, handles, and decorations which the usage of his group has established. This insures a broad uniformity of products that are characteristic of each group. Changes of style come, but so slowly that, as the breakage is thrown out and accumulates layer upon layer, the excavator is furnished with materials for sequence-dating which are as reliable in their testimony as index fossils in the sedimentary rocks.

When abrupt innovations in the pottery style of a given region are found the excavator knows that they have important historical significance. According to circumstances it may mean the irruption of new racial elements, or the beginning of active trade relations with new neighbors. If there was actual conquest the evidence of it will appear in the form of wholesale destruction of terra cotta objects, often followed by the collateral production of fresh pottery

[5] During the earliest times, before the use of the wheel, pot-making was largely, if not wholly, the work of women. This still is true in the peasant districts of Palestine and the writer has collected much graphic and photographic evidence on the technique employed.

in two styles, one embodying the continuing tradition of the native population, the other expressing the requirements of the new masters who have their own ideas as to what their principal utensils should look like.

It would lead me too far afield to attempt to describe the interesting ways in which pottery provides "date-marks" for correlating contemporary cultures. The occurrence of Philistine, Cypriote, or Mycenaean pottery or potsherds in Palestinian city levels affords an opportunity to determine which phase of the one was contemporaneous with a particular phase of the other. When a series of such date-marks, extending across several contemporary cultures has been secured, it frequently becomes possible to correlate these relative antiquities at some point with the fixed chronology of Egypt or Babylonia; or it may be found that one of the adjacent cultures drawn into the net of contemporaneity has on independent evidence already been fitted into a dated series. Then its date may furnish a reckoning-point for new sequences of cultures.

It was to be expected that the progress of comparative studies of potteries made on the eastern Mediterranean islands, and in lands bordering on Palestine, would produce repercussions in Palestinian ceramics. Such discussions of Cypriote pottery as those of J. L. Myres,[6] E. Gjerstad,[7] and H. Frankfort[8] have to be kept within easy reach by everyone who studies Palestinian and Syrian ceramic antiquities, and their interactions with neighboring cultures. In analyzing the Cesnola Collection of the Metropolitan Museum Professor Myres found that the products of the earliest Cypriote pottery industry began with an advanced phase of the art, because of its introduction into the island from the mainland. A number of its earliest types are so clearly descended from Syrian and Palestinian

[6] *Handbook of the Cesnola Collection of Antiquities from Cyprus*, 1914. Compare also, by the same author, ch. II, Vol. I in *Cambridge Ancient History* and *Who were the Greeks?* pp. 211ff. (1930).

[7] *Studies on Prehistoric Cyprus*, 1926.

[8] *Studies in Early Pottery of the Near East*, I (1924), and II, (1927). The first deals with the earliest interrelations of Mesopotamia, Syria, and Egypt; the second with the earliest interrelations of Asia, Europe and the Aegaean.

prototypes that we must assume the introduction of the art of pot-making into Cyprus from Syria. In the Aeneolithic tombs[9] at Tell en-Nasbeh we found some painted amphoriskoi which strikingly resemble similar ones discovered in Cyprus, at Gezer, Jericho, and Abusir el-Melek in Egypt. At Tell en-Nasbeh they were found associated with copper awls and a dagger[10] whose metallurgical analysis shows over 97% pure copper. The metal in this weapon had never been melted or smelted, but was native copper, shaped by hammering. This technique is characteristic of the Copper Stone Age when copper was still regarded as a kind of malleable stone.

The progress of excavations in Crete, especially at Cnossos, is steadily brushing details into the picture we are now able to make of long vanished stages of Mediterranean culture. Ceramic evidence indicates that Crete was discovered and occupied by a people from elsewhere. The time when this took place cannot as yet be fixed precisely. But the type of culture which they brought with them is basically Anatolian. It may be remarked here that Sir Arthur Evans recently published[11] significant evidence of very early interrelations between Egypt and Crete. For while excavating the latest Neolithic stage of culture beneath the Central Court on the site of Cnossos he brought to light antiquities and ceramic fabrics exhibiting unmistakable points of contact with the pre-dynastic, or proto-Libyan, civilization of the Nile Valley.

It was to be expected that in ancient as in modern times the interrelation of Palestine with Syria and Asia Minor would be found to have been close. This expectation is fully confirmed by the most recent excavations at Byblus, Mishrifeh-Qatnah, and Kara Eyuk. The pottery of the latter site was published in excellent detail by Henri de Genouillac, under the title *Céramique Cappadocienne.*

[9] See my *Preliminary Report of Excavations at Tell en-Nasbeh* (1928), pp. 41—51. Père H. Vincent's identification of most of the pottery of these tombs, in 1926, as Aeneolithic is confirmed by the associated objects of copper.

[10] A full report on these finds, together with the details of the metallurgical analysis, and an expert report on calvaria from the tombs, will soon be ready for publication.

[11] *The Palace of Minos at Cnossos*, Vol. II, Part I, pp. 1—21.

A great variety of Palestinian pottery types, including Sir Flinders Petrie's finds at Tell Jemmeh (Gerar) and Tell Fara (Bethpelet), has just been published by J. Garrow Duncan in a *Corpus of Palestinian Pottery* (1930). This corpus is said to consist of "dated pottery," but in most cases this is true only in a relative sense. Nevertheless it is to be welcomed as a new effort to create some chronological order in a field in which there still is too much confusion and too great a diversity of description and illustration. The time is over-ripe for the appointment of an international ceramic commission charged with the task of drawing up for The Near East a standard system of rules designed to secure a reasonable uniformity of nomenclature and of picturing.

II. An interesting illustration of an appeal to ceramics in solving debated historical problems is afforded by a recent re-determination of the ages of the various fortification walls and culture levels of Jericho. The excavation of this city mound was undertaken by the Deutsche Orient-Gesellschaft during the years from 1907 to 1909. The work was under the general direction of Professor Ernst Sellin, assisted by Professor Carl Watzinger of Berlin. The latter assumed responsibility for the classifying of the pottery, a task which twenty years ago in Palestine was still a pioneer undertaking. When the definitive publication, entitled *Jericho*, appeared in 1913, it was found that the excavators had identified the remarkably well-built outer wall, having a sloping stone revetment, as "Israelite" (Iron Age I), and the double brick wall on the crest of the hill as "Canaanite" (Bronze Age). They maintained that the latter wall had been destroyed not later than 1500 B. C. and that this destruction was followed by a period of six hundred years of ruin and desertion; and that thereafter, during the ninth century B. C., came Hiel (I Kings 16 34), rebuilt the city, and fortified it with the great stone wall which girdles the base of the mound.

This chronological determination of the history and fortifications of the mound almost immediately began to provoke doubts and dissent, especially on the part of Père H. Vincent[12] who had often visited the excavations while in progress. An outstanding difficulty

[12] Cf. *RB*, 1913, pp. 456—8.

of the findings, in the minds of many, was the assertion that the Late Bronze Age (1500—1200 B. C.) was unrepresented on the mound, with the consequent implication that the conquest of Jericho by Joshua must be regarded as an unhistorical tradition, unless the man and the event could be moved back into the period before 1500 B. C. For if there was no walled city of Jericho at the close of the Late Bronze Age (1200 B. C.), how could Joshua have taken it? An explanation of the difficulty offered by the excavators was that the Elohistic narratives of the conquest in the book of Joshua might originally have been specifically "Hebraic," and that these narratives were later transferred to the traditions of the Israelites after the latter had absorbed the Habiri.[13] In other words, they assumed that there had been a conflation of two different phases of the occupation.

In the course of time the progress of excavation in Palestine began to make it evident that most of the pottery classified by Watzinger as "Israelite" belongs really to the second and third phases of the Bronze Age (2000—1200 B. C.), while his so-called "Canaanite" pottery pictured on Plate 20, is chiefly Early Bronze (2500—2000 B. C.). In other words, Dr. Watzinger had post-dated his pottery by about a thousand years. Recognition of this error necessarily involved the re-dating of the great stone wall encircling the base of the mound. For this wall, as already stated, the excavators had also classified as "Israelite" and described as the work of Hiel during the ninth century B. C.

In 1922 Dr. W. F. Albright published an article, entitled „Palestine in the Earliest Historical Period"[14] in which he had to deal with the culture levels of Tell es-Sultân, the mound of ancient Jericho. With much independence of judgment he re-arranged the main periods of occupation in such a way that the double line of brick walls around the summit of the Tell was referred to the Middle Bronze Age, from 2000 to 1700 B. C., and the next succeeding period was made to extend from 1700 to 1230 B. C. In setting the lower limit of this latter period he included part of Bronze II and

[13] *Jericho*, p. 182.
[14] *JPOS*, II, 2.

practically all of Bronze III among the occupation levels represented on the Tell. Thus he assumed the destruction of the city to have taken place during the time of Joshua, followed by desertion of the site until the restoration under Hiel, the Bethelite, about 870 B. C.

But in later discussions[15] of the subject Dr. Albright receded from the position taken in that article. Moved, it seems, by the scarcity of typical Late Bronze Age fragments of pottery on the Tell, he finally reached the conclusion that Canaanite Jericho was destroyed "between 1600 and 1500 B. C."[16] This view is substantially a return to the conclusion of Professors Sellin and Watzinger who had fixed the destruction of Canaanite Jericho about 1500 B. C. Only in Dr. Albright's case this shifting backward of the date of destruction seems to have been motivated chiefly by the scarcity of Late Bronze Age types of pottery which convinced him that the third phase of the Bronze Age (1500—1200 B. C.) "is practically missing in Jericho."[17] As we shall see presently this putative absence of the Late Bronze Age at Jericho is now called into question by two independent ceramic studies of the mound, one by Père H. Vincent based on the Jericho pottery published by Dr. Watzinger, the other by Professor J. Garstang, based upon fresh sections cut through unexcavated parts of the mound.

Before taking up this new angle of the discussion it is pertinent to record the fact that in 1923 Professor Watzinger[18] himself abandoned his identification of the outer wall as "Israelite," re-baptizing it as a Canaanite wall constructed about the beginning of the second millennium B. C. But this change of opinion was not accompanied by a systematic re-classification of the pottery associated with the wall. He also re-affirmed his conviction that during the time of Joshua the site of Jericho was not only in ruins, but had lain desert-

[15] Cf. *AAS*, IV, (1924), pp. 11 and 147.

[16] *AAS*, VI, (1926), VI, p. 53.

[17] *Op. Cit.*, p. 53.

[18] Ieriko i belysning av de nya fynden och forskningarna i Orienten, *svenska Orientalsällskapets Arsbok*, (1923), pp. 100—5.

Cf. also Zur Chronologie der Schichten von Jericho in *ZDMG*, (1926), pp. 131—6.

ed for nearly four centuries. In short, his chronology of the Tell, and to a less degree that of Dr. Albright, still envisaged a practical absence of Bronze Age III among its ceramic deposits.

Now comes the next stage in the study of this complicated question and it is chiefly concerned with a re-study of the ceramic evidence in the light of the progress which Palestinian and related pottery studies have made to date. For seven years after the war Professor John Garstang organized and administered the Department of Antiquities in Palestine, and during this time developed a keen interest in the correlation of biblical traditions of the conquest with the material results of excavation. Three cities, Jericho, Ai, and Hazor, are mentioned particularly by biblical tradition as having been captured and destroyed by Joshua; so Dr. Garstang selected these sites for excavations sufficient to determine archaeologically the approximate period of their overthrow. Since we are now concerned with Jericho only it will be sufficient to state, regarding Ai and Hazor, Dr. Garstang's conclusion that "each place showed traces of destruction near the middle of the Late Bronze Age, or about 1400 B. C."[19] Under the patronage of Sir Charles Marston, Dr. Garstang recently undertook also a thorough reexamination of the Jericho mound, cutting new trenches through deposits that had been disturbed by previous excavations. The relationship of the city walls to each other as disclosed in the trenches, and the date characteristics of the potsherds associated with them, were jointly studied by Père H. Vincent, Dr. Clarence S. Fisher, and Dr. Garstang. On March 2, 1930, they issued a brief report embodying their joint conclusions from which we quote as follows: "The main defences of Jericho during the Late Bronze Age followed the upper brink of the city mound, and comprised two parallel walls, the outer six feet, the inner twelve feet thick . . . The date of destruction was ascertained to fall before the close of the Late Bronze Age, but the precise date and the solution of numerous other questions can only be determined by more complete

[19] Garstang, *Proc. of the Royal Institution of Great Britain* (abstract), May, 1930. For a somewhat different view regarding Ai, based on surface examination of pottery, see Albright, *AAS* IV, 146.

and methodical excavation." "We reach then," writes Dr. Garstang, "the conclusion that upon present evidence the city was destroyed, in round figures, about the year 1400 B. C.. just before the infiltration of Mycenaean wares began. But ... the site may still yield more definite evidence upon this point."[20] The united testimony of three men who have specialized on the pottery of Palestine, therefore, agrees that the Late Bronze Age is not missing at Jericho, though the time of its cessation there still remains to be determined in the new excavation.

Before the resumption of Dr. Garstang's last season of excavations at Jericho in 1930, Père H. Vincent had undertaken a re-determination of the culture levels at Jericho by re-classifying the various types of pottery described and pictured by the German excavators in their official report. He also reviewed critically the history of the excavation and the varying interpretation of the results. His paper was completed in October, 1929, and communicated to *L'Académie des Incriptions et Belles Lettres* at a meeting in March, 1930, under the title "*La Chronologie des Ruines de Jericho.*"[21] It is a very thorough piece of work and indispensable to every student of the subject. For our present purpose interest centers chiefly in the second part entitled "*Le langage des faits*"[22] in which he deals with the pottery[23] recovered from the so-called fourth city and its magnificent sloping stone wall, both of which had been described as "Israelite" by the excavators.

Père Vincent's presentation of the facts is very methodical. He goes through the entire array of pottery vessels classified originally under six categories as follows:

A. Vessels covered with a lime wash[24] (*couverte blanche*).

[20] *PEF, QS,* (July 1930), p. 132.

[21] *RB,* (July, 1930), pp. 403—33.

[22] *Op. Cit.,* p. 415.

[23] See *Jericho,* pp. 122—146.

[24] Dr. Watzinger here uses the term "engobe" which is now commonly used to describe an argillaceous bath intended to give the vessel a smooth even color and surface, and known technically as a slip. Cf. L. Franchet, *Céramique primitive,* p. 90ff.

B. Vessels with mate painted decoration over a white slip (*engobe blanc*).

C. Vessels without decoration.

D. Vessels with a black polished surface (*couverte noire lustrée*).

E. Red or ochre vessels with polish.

F. Painted ware without slip.

The result of the analysis of group A is that the vessels cannot be referred in a body to the Middle Bronze Age (2000—1600 B. C.), but represent a prolonged evolution extending from Middle Bronze to at least the middle of the Late Bronze Age or about 1400 B. C. Group B he finds even less homogeneous than A, for it spreads over all three phases of the Bronze Age, from the beginning of I to the end of III.

In Group C he finds besides Middle Bronze jars, seven types of vessels in use throughout the duration of the Late Bronze Age, and six types especially common during the second half of Bronze III. The last group, F, consists of sherds only, which cannot be classified with assurance. Père Vincent sums up the general result of his study of these groups of potteries as indicating that the so-called fourth city of Jericho lasted from the culminating point of the Middle Bronze Age culture to the close of Bronze III.[25] This conclusion is confirmed, he thinks, by the masonry and structure of the great stone wall which encircled this city, generally designated as the fourth in the German report.

Comparison of the results of these two independent lines of investigation, one by Dr. Garstang, the other by Père Vincent, shows that the main difference, if there is any, relates to the downward extension of the Late Bronze Age. Dr. Garstang makes it end about 1400 B. C. on the evidence which his new excavations have produced up to date, but leaves the door open for further

[25] "Il devient par conséquent de toute évidence qu'on est allé beaucoup trop vite en attribuant en bloc cette poterie au Br. II et traitant comme tout à fait négligeables les attestations du Br. III déclaré pratiquement *inexistant* à Jéricho. C'est, au contraire, entre l'apogée du Br. II et le déclin du Br. III que les données positives de la céramique découverte par la mission allemande suggèrent d'encadrer l'évolution de la ville IV. " *RB*, (1930), 421.

investigations that may pare this date down still further. Père Vincent appears to be convinced that the evidence of the pottery already brought to light indicates the destruction of the Late Bronze Age city about 1250 B. C.

The long debate over the ruins of Jericho, and the widely differing chronological conclusions drawn from its pottery and its structures of defence, might arouse suspicion in some quarters regarding the soundness of historical conclusions based upon ceramics. As one who has had some practical experience in this field of investigation the writer may, perhaps, be permitted to express his conviction that ceramics as a tool of the anthropologist, archaeologist, and historian has come to stay; and that, to quote Professor J. L. Myres, "The validity of the conclusions to which its reasoning leads is in all respects identical with that of the other stratigraphical sciences."[26] Even the case of Jericho may be cited in support of this view. For it must be remembered that our knowledge of Palestinian ceramics was in its infancy twenty years ago, and that for some reason Professor Watzinger in large part disregarded the ceramic classifications of Bliss and Macalister which might have saved him from postdating his principal ceramic finds. In any case, it is a curious and interesting fact that when Professors Sellin and Watzinger published their preliminary conclusions[27] at the close of the excavations in 1909, they declared the Canaanite city of Jericho to have been at the height of its splendor during the middle of the second millennium B. C., and to have been destroyed about the thirteenth century B. C. But during the three years intervening between this announcemennt and the final official publication their conclusions underwent a change. The great sloping stone wall, at first correctly identified as Middle Bronze, now was described as "Israelite" together with the associated pottery. And now it is a new appeal to ceramics by which the mistake is corrected. Even for the recent differences of opinion among archaeologists regarding the duration of the Late Bronze Age at Jericho there are extenuating circumstances. For in a personal letter to the writer Dr. Gar-

[26] *Who were the Greeks?* p. 213.

[27] *MDOG*, No. 41, (1909), p. 28.

stang writes, "the common pottery of Jericho during the Late Bronze Age was of such a general character that in my opinion no particular date could be assigned to it. But it belongs to a class which Rowe was finding at Beisan in his Thutmose III and Amenophis levels." He adds that he has not yet had an opportunity to test its limit of range, but hopes "to open some of the houses on the inside with a view to getting more direct light upon the date of the destruction." In short, to reiterate a sentence from the previously quoted joint statement of Messrs. Vincent, Fisher, and Garstang, the questions at issue "can only be determined by more complete and methodical excavation." This brings me to the third and concluding part of my discussion.

III. If, as I have endeavored to show, pottery is the Palestinian archaeologist's main reliance for the dating of his occupational levels, the precision and thoroughness of the excavation technique employed to obtain and register the evidence acquires supreme importance. During the last five years the writer has studied in actual operation not only the somewhat varying techniques employed by excavators in Palestine, but has also participated in the sequence-dating methods used by prehistorians of central Europe, and by students of the American pueblo cultures of the Southwest. It stands to reason, of course, that every system requires some adaptation to the special problems in hand. Of the systems which I have had the opportunity to study, the one most carefully worked out and best adapted to Palestine, in my opinion, is that of Dr. Clarence S. Fisher of the American School of Oriental Research in Jerusalem. But it requires a fairly large staff of trained assistants for its efficient operation when from fifty to one hundred baskets of pottery are brought to headquarters every day.

In collaboration with Dr. Fisher we began in 1926 the training of a staff designed to meet the needs of our expedition. For four years, now, the writer has given annually, in the curriculum of the Pacific School of Religion, an elective course in archaeological methods and field technique to a group of graduate students from whom our staff has been recruited. This training includes familiarity with the various types of Palestinian pottery, the proper method of making

index-card notes on baskets of miscellaneous potsherds, the recovery and re-assembling of broken vessels, the making of millimetre card drawings with the aid of proportional dividers, and some elementary training in the use of the plane-table with transit and alidade.[28] Thus, during our third campaign in 1929, we had on our general staff of fourteen persons a special group of five student assistants who had received both practical and theoretical training for the expert handling of the daily ceramic output of our excavations.

No detailed statement of the various activities of headquarters procedure is possible here, for it would involve an explanation of our museum book records, our photographic system, and our excavation journal records, made daily and independently, one by the director and the other by the first assistant. But I venture to describe in the briefest possible form that part of our method which concerns the handling and recording of pottery from excavated city levels. The area of the Tell is laid out on a general topographical map, controlled by bench-marks, and divided into fifty-metre quadrangles. This map is then used to lay out a grid of ten-metre squares for the areas to be excavated. These squares are staked with numbered pegs, set at the intersections of the ten-metre squares. The stakes are identified by letters for the East-West lines and numbers for those running North and South. Each ten-metre square is individually identified by the symbols (e. g. AB20) of the peg at its northeast corner. Potsherds found within a given square are placed in baskets bearing on a carefully rubricated printed label the written-in symbols of the identifying northeast peg, and the number of the level, proceeding from the top downward. If the potsherds were found in loose debris the symbol "x" is added on the label. If the room of a house, or a cistern, or a silo, or any other structure appears within the square, it receives a separate identifying number and any pottery found within such a structure receives also this number in addition to the symbols of the square.

[28] The regular work of surveying and mapping was assigned to a technically trained civil engineer, a mapper, and two assistants with several years of practical experience.

The labeler of baskets has to be a responsible and experienced person attached to the mapping squad, for it is his task, also, to paint numbers, according to a prepared plan, on rooms and other structures the moment they appear above ground. The basket labels contrain rubrics for various special objects which are immediately checked on the label when they are found. When a series of baskets of pottery comes from the same room, or cistern, each is additionally numbered in the order of its emergence, thus aiding the salvage of reconstructable vessels and the recording, reversely, of the order of deposition.

As the baskets of pottery are brought from the mound they are received by the head of the "laundry gang" and arranged in proper sequence for washing. Each washer's pan holds the contents of one basket and as the sherds are being washed they are returned to the same basket which still retains its label. When the sherds are dry they are poured out on a table before an assistant for examination and the basket label is now detached and becomes the starting-point for detailed notes on a five-by-eight inch filing card on which the provenience symbols are also the filing symbols. All objects destined for museum registration, and all fragments important because of special characteristics of form, ware, or decoration are passed on with the analysis-and-description card and the basket label to the drafting-room where all such objects are drawn to scale on five-by-eight inch millimetre cards. Finally the description card, millimetre cards and objects, still accompanied by the basket label, pass on to the photographing and recording room where all objects destined for preservation are marked with the symbols of their provenience, and all the millimetre and description cards are filed in one series and the basket labels in another. The latter also have rubrics for "Drawn" or "Photographed" which are checked as the case may be. The mapping of structures and the recording of objects have to keep pace together, which necessity most of the time kept two mappers and assistants busy on the mound. Thus every object recorded can by means of our files readily be referred to its ceramic context on the one hand, and on the other to its precise place of provenience by level and location on the archi-

tectural map of the mound. During the last season alone our files were enriched to the extent of 2820 millimetre card objects, carefully drawn and later indexed in classified groups for easy reference.

To this system we have been able to add another item of excavation technique which to the best of my knowledge is new. Every excavator in Palestine knows how difficult it sometimes is to correlate definitely contemporaneous levels on different parts of the mound, and to integrate them with deposits of pottery in cisterns and tombs, when those who built new cities upon old ones disturbed the underlying stratification. A way to accomplish it suggested itself to me in 1927 and we have since then followed it up with interesting results. It is, in short, the finger-print method. We found that in a fair proportion of cases the potters had left their thumb-and-finger prints on handle fragments at the points where they were joined to the vessels. We collected these and gave them their marks of provenience. In some cases a simple acid treatment revealed them on slip under incrustations of carbonate of lime. It is no reflection on the character of members of the venerable company of ancient potters to say that we are taking their finger-prints with the aid of the criminal identification bureau of a California city. I mention this feature of our method only because of its promise, and its obvious utility in determining the contemporaneity of occupation layers, cistern deposits and tombs in which the same potters have left their ceramically preserved finger-prints. And these prints also become part of the scientific data in our files.

Finally, I wish to direct attention to the fact that such a system as I have outlined has a utility which far outreaches the hurried months of excavation. It permits a comprehensive and unhurried review of the evidence after the records have been brought home, or at any time when the progress of excavation on Palestinian mounds moves a fresh historical problem into the field of inquiry. It goes without saying, however, that the even progress and scientific reliability of such a system depends on a corps of trained assistants and not on a staff picked up at random. Normally one would look among graduate students in theological seminaries for the best staff material. For there the scientific is heightened by the vocatio-

nal appeal. To provide such students with the preliminary technical training and then take them to Palestine has, also, the advantage of insuring a succession of archaeologically trained biblical scholars and possible future directors of excavations in the Near East. I venture to express the hope that when the centennial anniversary of this Society is celebrated in 1980, there may be found on its roll of members a distinguished company of those who have known how to evoke new facts and meanings of history from the storied mounds of Palestine.