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Recommended Citation

Geraty, Lawrence T., "Excavating Biblical Heshbon, 1974 Part 2: The Anatomy of the Heshbon "Dig"" (1975). *Faculty Publications*. 4154.

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The Anatomy of the Heshbon "Dig"

A modern archeological dig is a complex organization involving a trained staff of specialists.

By LAWRENCE T. GERATY

PEOPLE OFTEN WONDER what an archeological excavation costs and where all the money comes from. An American expedition now excavating at Idalion in Cyprus, for instance, spends more than \$60,000 per season. Comparable expeditions often spend much more; rarely do they spend less. Yet the 1974 Andrews University expedition to *Tell Hesbân* in Jordan, with 75 staff members and 150 workmen (more than twice as many as Idalion), cost less than \$30,000. This was possible only through an extremely efficient and economical use of funds, and because individual staff members were responsible for their own travel costs to Jordan.

The funds for our fourth season of excavation were obtained from many sources. One would not expect the Seventh-day Adventist Church to contribute funds to an enterprise only tangentially related to its mission. In 1974 Andrews University's "dig" was again cosponsored by the American Center of Oriental Research (ACOR) in Amman, Jordan. The latter institution, of which Andrews has long been a constituent member, provided us with key personnel, excavation and kitchen equipment, and official backing in the country. Other institutions that assisted with funding and core staff members were Calvin Theological Seminary (Grand Rapids, Michigan), Covenant Theological Seminary (St. Louis, Missouri), Grace Theological Seminary (Winona Lake, Indiana), Hope College (Holland, Michigan) through the Kyle-Kelso Archaeological Fund, and the Graduate School of Loma Linda University. Nor could the expedition's budget have been met without the generous help of a number of private donors, including many members of our voluntary staff. It is also a pleasure to acknowledge the donation from Worthington Foods, Inc., of our entire supply of textured protein foods for our vegetarian staff members, and the donation's complimentary shipment to Jordan by Alitalia Airlines.

Organization. The accompanying organizational chart shows how complex the structure of a modern excavation has become. Gone are the days when an archeolo-

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gist worked alone with 150 hired laborers! Nowadays the director of a reputable dig surrounds himself with a trained staff of complementary specialists who together can mount a professional field operation. In addition to choosing the staff, the director formulates their common aims, deals with the national government, and decides where to excavate. He prepares for his expedition's activity by purchasing equipment and supplies, procuring headquarters and staff accommodations, and hiring a foreman and workmen. In a general way he is responsible for the welfare of the team and the quality of their work. After the field work is over he obtains a division of finds (with government officials) and coordinates preliminary and final publication of the expedition's results.

Serving as director of the Heshbon dig in 1974, the author divided the ecumenical and international staff into three groups. Heading the advisory staff was Dr. Siegfried Horn, dean of the Seventh-day Adventist Theological Seminary at Andrews University, who had directed all the previous seasons of work at Heshbon. Though his heavy responsibilities precluded his being with us the entire duration of our fourth season, June 26-August 14, he acted as invaluable senior adviser and object registrar during the dig's last three weeks. Dr. Bastiaan Van Elderen, of Calvin, then director of American Center of Oriental Research in Amman, gave unstintingly of his time to help ensure a smooth operation. And to round out the advisory staff, the Jordanian Department of Antiquities assigned two of its officials, Mr. Sabri Abadi and Mr. Mahmoud Rusan, to serve as liaison officers.

A Carefully Chosen Staff

The Excavation Staff. The excavation staff was again headed by Dr. Roger Boraas, of Upsala College (East Orange, New Jersey), whose primary responsibility was to see that the aims of the expedition were reached through proper archeological procedures. To this end, he supervised the work of our professionally trained archeologists (area supervisors), coordinated the activities of our scientists and other specialists, and instructed our students (many of whom served as square supervisors) in the method and techniques of excavation. Our archeologists, each of whom was given responsibility for excavation in a certain area or sector of the mound, were Larry Herr, of Harvard; Robert Ibach, of Grace; Dr. Harold Mare, of Covenant; Dr. James Sauer, of ACOR; Dr. James Stirling, of the Graduate School of Loma Linda University; and Dr. Bastiaan Van Elderen, of Calvin.

Assigned to these men were enough square supervisors to guarantee adequate oversight of the hired workmen and recording of what was found. Most of these square supervisors were ministers, teachers, or students, among whom the Seventh-day Adventists were Michael Blaine (Southern California Conference), Glenn Bowen (Andrews University), Kerry Brandstater (Loma Linda University), Suzanne Brandstater (Pacific Union College), Ted Chamberlain (Loma Linda University), James Cox (Andrews University), Trevor Delafield (Wisconsin Conference), Gerald Finneman (Nebraska Conference), Kevin Howse (Andrews University), Richard Mannell (Andrews University), David Merling (Andrews University), Kathleen Mitchell (Michigan State University), Orlyn Nelson (Atlantic Union College),

John Reeves (Loma Linda University), and George Terzibashian (Middle East College).

Since ancient pottery is so useful to the archeologist (the reasons will be discussed below), we were fortunate in having the world's leading Palestinian ceramic typologist, Dr. James Sauer, on our staff. But after the potsherds were dug up and before Dr. Sauer was able to prepare them for publication they had to be washed, dried, sorted, cut, mended, and registered. Mrs. Hester Thomsen, of Greater New York Academy, assisted by Mrs. Melissa Lloyd, had charge of these important intermediate steps.

It was the responsibility of the architect-surveyor-draftsmen team, headed by Dr. Bert DeVries, of Calvin, to prepare an accurate contour map of the mound, to stake out the squares to be excavated, to establish levels at bench marks on the *tell* in terms of altitude above sea level, and to draw top plans and elevations of all the architectural features discovered.

Because of the importance of photographs for recording the progress and results of excavation, a key component of any dig staff is the photographic team. Chief photographer Paul Denton, of Andrews' Audio-Visual Center, assisted by Paul Bonney, of Grand Rapids

Junior Academy, Henry Lambertson, of the Upper Columbia Conference, and Robert Lloyd, of the Oregon Conference, was responsible for a complete color and black-and-white photographic record of all archeological operations, objects found, ethnographic data, and activities of general interest. And by the time the expedition had completed its work this efficient team had a complete set of prints available in triplicate.

In addition to his responsibility as area supervisor for the tomb crew, Dr. James Stirling, assisted by his son, Ralph, analyzed the dig's human skeletal remains and coordinated the work of the other anthropologists. These included Øystein LaBianca, of Brandeis University, who was in charge of zooarcheology and ethnography, assisted in the latter by Douglas Fuller, of Atlantic Union College. When the dig was over, this group had registered more than 10,000 bones on data-input sheets for computer analysis. From these we will eventually learn much about such matters as diet, disease, population, and animal husbandry in ancient times.

Geological Survey

Geologist Harold James, of the Geoscience Research Institute at Andrews, analyzed the soil strata and lithic features on the mound, surveyed the geology of the surrounding region, and helped to supervise the collection of scientific samples such as seed, pollen, carbon, shell, et cetera. Most of these will be subjected to laboratory analysis in the United States by such specialists as Palynologist Arthur Chadwick at Loma Linda University. (Palynology is a branch of science that deals with the study of pollen and spores, whether living or fossil.)

Our supporting staff worked mostly at headquarters. Camp Manager Vivolyn Van Elderen supervised the purchasing, preparation, and serving of wholesome food to keep the staff going. Her assistant, Mrs. Inge-Lise Howse, attended to the housekeeping details of camp life in addition to her job as the expedition's secretary-receptionist. When we lost the services of our physician we were especially thankful for the dedicated service of our nurse, Mrs. Shirley Finneman, who became quite adept at handling the common gastro-intestinal complaints! We are grateful to the Lord for protecting all staff members from serious accident or illness.

Field Methods. Having so many specialists on a dig, one can see how more information is accumulated than any one mind can control, but it is a desirable state of affairs because it means tighter control over the data retrieved from the past. Of course it also means slower work in terms of how much earth is moved. In the old days an archeological expedition was primarily a treasure hunt. Now we realize that objects discovered are far more precious if their total historical and environmental context can be reconstructed. This can be done by digging according to a geological model—a method based on the differentiation and careful removal of soil positions and their subsequent disturbances.

This stratigraphic method now commonly employed in Palestinian excavations is often called the Wheeler-Kenyon method after two British archeologists: Sir Mortimer Wheeler, who first used it in England and India, and his student, Miss Kathleen Kenyon, who refined it during her excavation of Jericho in the 1950's. All its basic techniques, however, were already used



Top: Thousands of bones were dug up and sorted during the 1974 Heshbon expedition, later to be studied by physical anthropologists and zooarcheologists. Bottom: A group of 75 persons from nine different countries and 13 faiths made up the 1974 Heshbon staff.

and described by the American archeologist George Andrew Reisner in the 1908-1910 Harvard excavations at Samaria.

This method, developed by pioneers in the field of archeology, was the one we employed (with our own refinements) at Heshbon. It views the ancient mound as something like a layer cake with each layer (or stratum) being the remnant of a town in a given historical period. When the town was destroyed by war or earthquake, or perhaps abandoned because of captivity or the plague, the succeeding town's inhabitants leveled the ruins and rebuilt over them. This phenomenon, along with the accumulation of blowing dirt or shifting sand, caused the mound to "grow" in height. The Arabic term for such a ruin mound is *tell*, while in Iran it is called *tepe*, and in Turkey, *hüyük*. On modern maps these words in association with another proper name (as in *Tell Hesbân*=Heshbon) identify ancient archeological sites.

Layers Must Be Differentiated

The archeologist's task is to identify these layers and carefully "peel them off" in reverse sequence from the order in which they were deposited or laid down. Of course the ancients were not so accommodating as to leave behind even, easily-separable horizontal layers! Most layers follow the contours of the mound or the architecture that they hide and are often disturbed by pits, garbage heaps, foundation or robber trenches, wall stubs, et cetera. In this situation the square supervisor becomes the chief detective, skillfully separating his evidence with the help of a pickman, hoeman, several "basket boys" who carry the dirt to a dump, and various specialists when they are needed. He also keeps extensive records of his procedures and discoveries through notes, drawings, and photographs, so that theoretically, at least, all the evidence could be put back the way it was when he found it.

Pottery. If a square supervisor has done his stratigraphic work accurately he will have separated all the objects used in a given period from all the objects used either before or after that period. Through the method of typology (a comparative science), he may then be able to assign these objects absolute dates. Another British archeologist working in Palestine in the 1890's, Sir Flinders Petrie, pioneered this method at *Tell el-Hesi*, especially as it relates to pottery. Between the two world wars, especially through his work at *Tell Beit-Mirsim*, the great American archeologist William Foxwell Albright put ceramic typology on a sure scientific footing, though his conclusions have been refined in our day by his famous student, George Ernest Wright.

Of all the objects discovered on a dig, pottery has become the most useful (especially for dating) for several reasons: throughout the historical periods of mankind, pottery has been commonly and widely used; this means the archeologist finds it often in great quantities wherever man has lived. Since pottery is so breakable, it often had to be replaced. This was of no great consequence to the ancients, because it was cheap, but it does mean that it became a medium for rapid development and change—in matters of how it was made (technology) and in form and decoration. Once a pot was broken it was useless, so it was immediately discarded; yet, once broken, potsherds are indestructible—maintaining their shape and form indefinitely.

All these characteristics of the lowly potsherd ensure its great value to the trained archeologist who, through their dating, can date the layers with which they were associated. This explains why during the 1974 season at Heshbon, out of the several hundred thousand shards that were carefully excavated, washed, dried, and dated, 23,000 representative shards were saved and individually registered for future publication.

Heshbon's Contribution in Science of Typology

Already Heshbon has made a major contribution to the science of typology. When George Ernest Wright saw the initial publication by Dr. Sauer of our pottery from Heshbon he said, "For pottery sequences from Roman to the Crusader periods, with this publication Heshbon becomes the type-site for all archaeologists."

Daily Schedule. The daily schedule during the 1974 dig was a rigorous one. The rising bell sounded at 4:45 A.M., and a breakfast of hot porridge, milk, oranges, bread, butter, and jam was served for half an hour beginning at 5:00 A.M. Promptly at 5:30 A.M. a bus for those who worked on the mound left our headquarters at the Amman Training Center (an institution sponsored by the United Nations Relief and Works Agency for Palestinian refugees) for Heshbon a few miles away. Excavation began at 6:00 A.M., when the foreman blew his whistle. Work was interrupted for half an hour at 9:30 A.M. for a second breakfast of Arabic bread, jam, tomatoes, cucumbers, and cheese or eggs. At 12:15 P.M. there was a 15-minute "tea break" when staff members visited various digging areas in turn while the supervisor explained the progress of excavation there; in this fashion, staff members working on the *tell* were able to keep up to date with what was being discovered outside their own assigned square. Work on the mound was concluded at 2:30 P.M. Heat at the site was intense.

After another bus ride back to headquarters, and a quick cold shower, dinner (with entree, vegetables, bread, and dessert) was served at 3:15 P.M. This was followed by a quiet period during which most staff members wrote letters and took naps till 5:30 P.M. when pottery and bone "readings" took place.

After a light supper (often soup and fruit) at 7:30 P.M., most staff members worked on their field notebooks, though frequently at this time there were staff meetings or lectures by senior staff members or distinguished guests. By the time 10:00 P.M. came, most people seemed ready to go to bed.

This schedule was closely adhered to Monday through Friday for the six weeks of actual digging. The initial three days of orientation that preceded this period and the final three days of debriefing after excavation was completed had their own more relaxed schedules. And on the weekends, from Friday afternoon to Sunday evening, staff members were free to rest, catch up on their work, or travel. Michael Blaine planned a series of inexpensive weekend trips for staff members that covered the country's most important sites in the Jordan Valley, in the Decapolis, and along the King's Highway. Trevor Delafield organized an English Sabbath school class and scheduled the expedition's Adventist ministers for sermons at the local Adventist church in Amman. In this way, members of the Heshbon staff were able not only to witness among our own group but also to help strengthen the program of the local church, which had been without a pastor more than a year. □