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AN INTENSIVE SURFACE SURVEY
AT JALUL

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Jalul, 5 kilometers east of Madaba, is one of the few true tells in central Transjordan. It covers approximately 17 acres. Jalul is also unusual in having yielded substantial amounts of Iron Age pottery along with Late, Middle, and Early Bronze Age sherds.¹ Because of these features, and because Jalul has received so little attention since W. F. Albright and Nelson Glueck visited it over 40 years ago,² the Heshbon Archaeological Survey Team spent three weeks conducting an intensive surface survey of the mound (see Pl. XVIII:A).

Jalul is a distinct mound atop a slight rise in the surrounding plain which drains gently southeastward into the Wadi el-Wala. The mound itself is oblong, measuring 300 m. east-west and 240 m. north-south. It rises about 19 m. above the plain and has a slight "acropolis" in the southwestern quadrant, which is occupied by a modern cemetery for the Beni Sakhr. For almost the whole circuit of the tell one can trace a sharp escarpment that strongly suggests a defensive wall around the town. In the southeast quadrant is a distinct depression with sloping sides, flat bottom, and remarkably regular appearance. The shallower, adjacent depression to the north has a cistern in it with a very deep masonry-lined shaft.

An intensive surface survey of Jalul was proposed in hopes of obtaining a profile of the mound's history that would be more

¹ Robert Ibach, Jr., "Heshbon 1974: Archaeological Survey of the Heshbon Region," *AUSS* 14 (1976): 123, n. 15.

² W. F. Albright, "Archaeological and Topographical Explorations in Palestine and Syria," *BASOR* 49 (1933): 28; Nelson Glueck, *Explorations in Eastern Palestine*, *AASOR* 14 (Philadelphia, 1934), 1-5.

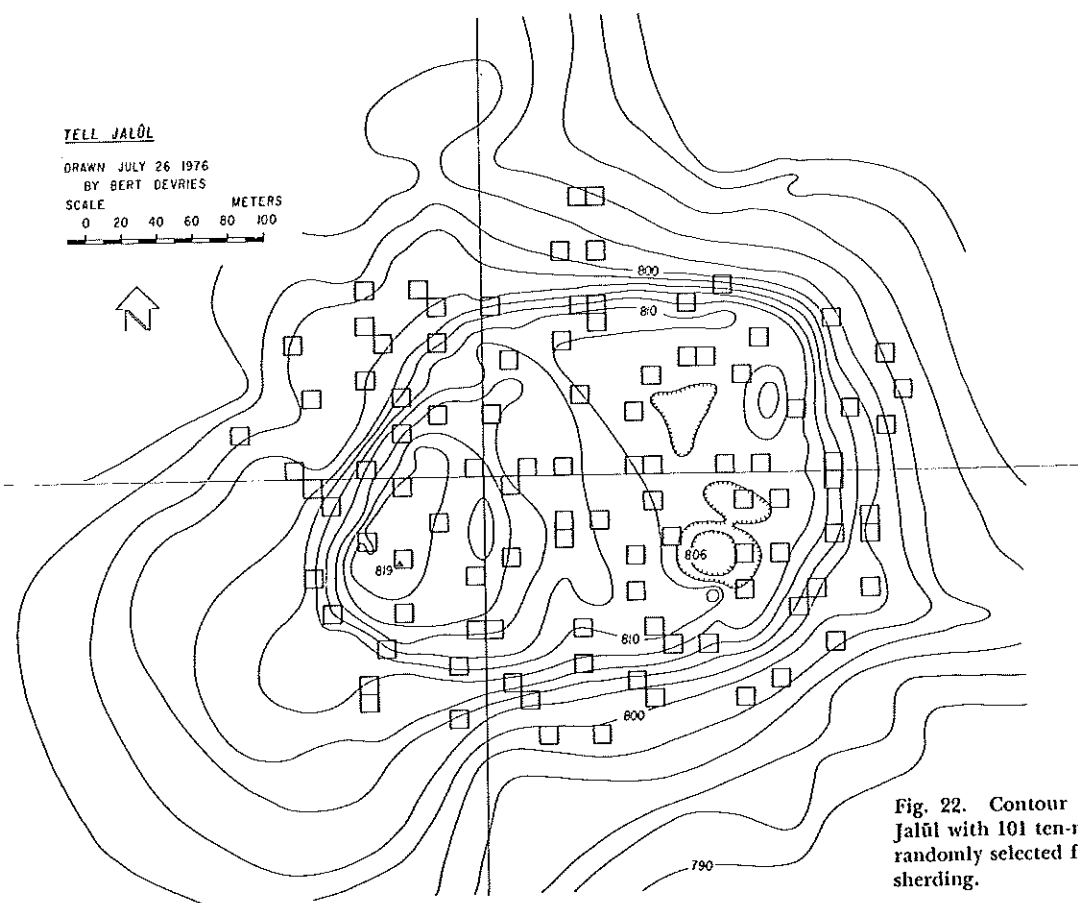


Fig. 22. Contour map of Tell Jalul with 101 ten-meter Squares randomly selected for exhaustive sherding.

accurate than casual, unstructured ground-surface sherding could provide. In the latter method chance would be complicated by subjective biases regarding which parts of the mound were sherded and which sherds were picked up. In the former method, a certain percentage of the mound's surface would be exhaustively sherded, thus eliminating both biases. Several other advantages would be gained. One could state precisely the percentage of surface sherds of a given horizon for any quadrant of the *tell*, whether on the flat top, the slopes, or the plain. The results could also be charted on a contour map of the site to help predict what types of materials might be encountered in excavating a given sector.

Procedure

The procedure for the Jalul survey was patterned partially after that developed by Charles L. Redman and Patty Jo Watson at Girik-i-Haayan in southeastern Turkey.³ First architect-surveyor Bert DeVries and his crew constructed a contour map of Jalul. A 10 m. grid was superimposed on the map; one 10 m. x 10 m. Square in each block of nine was chosen by means of a random-numbers table (see map, Fig. 22). The result was the selection of 101 Squares scattered over the top and slopes of the *tell* and down to the plain as far as sherd density remained substantial. Thus, 10,100 sq. m. of the site (one-ninth of the mound's extent) were exhaustively sherded.

Each Square was marked off by stakes and string. The three team members⁴ then walked abreast in one direction picking up every sherd larger than a thumbnail. The same crew would then walk crosswise over the same area, picking up any remaining sherds. A verbal description of each Square was recorded, and the sherds were separated into indicators and nonindicators and counted.

³ Charles L. Redman and Patty Jo Watson, "Systematic, Intensive Surface Collection," *American Antiquity* 35 (1970): 279-291.

⁴ Robert Ibach, Jr., Carl Wheat, and Arif Abul-Ghannim.

An average of 36.5 minutes was spent on each Square. Fourteen days were devoted to this work, with an average of 7.2 Squares covered each day. A total of 26,225 sherds was gathered in this fashion, with the average Square yielding 260 sherds (lowest count, 40; highest count, 854); and 4,053, or 15.4% of the sherds were indicators.

All pottery was read by James Sauer, ceramic analyst for the Heshbon Expedition. Readings were based primarily on the indicators in each pail, although many indicators were not distinctive enough to be dated with certainty. Body sherds were read only when they could be dated with certainty and when the pottery periods in question were not represented in the indicators. Sherds that were read totaled 2,000, or 7.65% of all collected. Sherds were then either registered or dumped at Jalūl at the southwest foot of the *tell* beside a shelf of bedrock.

The pottery repertoire from Jalūl began with Early Bronze (although one possible Neolithic sherd was found). Two main periods of Early Bronze were represented: Early Bronze I (ca. 3200-2900 B.C.), which may have included some late Chalcolithic sherds; and Early Bronze II-III (ca. 2900-2700 to ca. 2700-2300 B.C.). No Early Bronze IV or Middle Bronze I sherds appeared, only Middle Bronze II (ca. 1950-1550 B.C.). Eight sherds were read as Middle Bronze/Late Bronze, but because of this ambiguity they were not included in the tabulations.

Both Late Bronze I and II were found at Jalūl, but the distinction between them usually was not made in reading the pottery. No Mycenaean ware was encountered; two fragments of imported bilbil jugs were found, but no milk bowls.

All three phases of Iron I were present (I A, ca. 1200-1100; I B, ca. 1100-1000; I C, 1000-900 B.C.). Iron II included Iron II A, B (ca. 900-586 B.C.) and Iron II C (586-539 B.C.). Other periods were dated as follows: Persian, 539-332 B.C.; Hellenistic, 332-63 B.C.; Roman (including two Nabataean fragments), 63 B.C. - A.D. 324; Byzantine, A.D. 324-661; Islamic, A.D. 661-1870; Modern A.D. 1870-Present.

Table 2 presents a summary of the survey results.⁵ The tabulation represents only the 2,000 sherds that were read. The number of sherds and the percentages are divided into two topographical categories, the *tell* slopes and the top. The first category includes any Square that was primarily off the flat top of the *tell* or down on the plain. There were 65 such Squares, yielding 1,363 sherds, or an average of 21 sherds read per Square. The second category includes all Squares on the top of the *tell*, that is, within the escarpment that seemed to indicate the city fortifications. Thirty-six Squares were located here, yielding 617 readable sherds, or an average of 17 per Square.

	SLOPES		TOP		TOTAL SHERDS
	Sherds	%	Sherds	%	
Neolithic	1	.1	0	0	1
Early Bronze	132	9.6	12	1.9	144
Middle Bronze	65	4.7	10	1.6	75
Late Bronze	104	7.5	59	9.6	163
Iron I	515	37.2	151	24.5	666
Iron II	318	23.0	265	43.0	583
Persian	0	0	3	.5	3
Hellenistic	2	.1	0	0	2
Roman	49	3.5	11	1.8	60
Byzantine	121	8.8	72	11.6	193
Islamic	76	5.5	34	5.5	110
TOTAL	1383		617		2000

Table 2. Distribution of Surface Pottery at Jalūl by Period and Location.

The most obvious phenomenon to emerge from this survey was the great amount of Iron Age pottery. Sherds of Iron I and II constituted 63% of all sherds read. The percentages indicated that Iron Age II was most heavily represented on the flat top of the *tell*, while Iron I was heaviest on the slopes. This was just what might have been expected since Iron II debris overlay the Iron I material. It should be noted, however, that Iron I sherds out-

⁵ Thanks are due to Henry Kuhlman of Southern Missionary College for encoding the data and processing them on a computer.

numbered the Iron II sherds. Since the Iron I city lay below the Iron II debris, one might expect to discover a large, heavily occupied city of Iron Age I at Jalūl. This would be different from the situation at Tell Ḥeshān, where the Iron I settlement seemed much more limited than the Iron II/Persian town. Also, the Heshbon Archaeological Survey has located a greater number of Iron II sites (42) than Iron I (22) in the vicinity of Tell Ḥeshān.⁶ In the course of sherding Jalūl three heads of clay, human figurines, were found (see Pl. XVIII:B). These figurines are characteristic of the Iron II period.

In contrast to other sites (Tell Ḥeshān, el-'Al, Umm el-'Anad, el-Hanaḥsh), Tell Jalūl had relatively small amounts of pottery of the later periods (Roman, Byzantine, and Islamic). This was especially pronounced since the debris of these periods presumably overlay the Iron Age material.

The Bronze Age pottery must be viewed differently, however. Although the number of sherds was about the same as for the late periods, the fact that the substantial Iron Age city overlay the Bronze Age city increased the significance of those sherds. Bearing this in mind it may be hypothesized that the Late Bronze city ranked after the Iron Age city in size of population and/or duration of occupation. But here one should note the most significant anomaly in Table 2: the percentage of Late Bronze sherds was actually greater on the flat top of the *tell* than on the slopes. This was contrary to the archaeological axiom that surface sherds of the early periods are to be found chiefly on the lower slopes of a *tell*. One explanation for this phenomenon is the following: The Late Bronze city may have been small and confined within defensive walls; yet the population may have been substantial and enduring (Late Bronze I and II), leaving much pottery in the interior of the mound. The fact that much of this pottery was found on the ground surface, above the Iron Age cities, testifies to the validity of the surface survey technique.

⁶ Tbach, "Archaeological Survey," p. 122.

Late Bronze sherds were distributed evenly over the entire *tell*, appearing in all quadrants—on the plain, slopes, top, and even the "acropolis" of the *tell*.

The Middle Bronze II period was well represented, although it was stronger on the slopes than on the top. The Middle and Late Bronze material at Jalūl, along with that at Tell el-'Umeiri and Sahab, constitutes the only sure evidence of sedentary occupation for those periods in this part of Transjordan.

The Early Bronze Age was attested at Jalūl by 144 sherds, mostly from the lower slopes. Early Bronze sites are quite common in this region (the Ḥeshān Survey has identified 50 Early Bronze sites); neither Clueck⁷ nor Albright⁸ however, had reported Early Bronze pottery at Jalūl.

CONCLUSION

Several advantages of the technique of intensive surface survey have become apparent. The extent of the sampling (over 26,000 sherds were collected at Jalūl) gave greater confidence in profiling the history of the site than casual sherding would provide. The systematic coverage of the site helped eliminate bias in the collection. Exhaustively sherding selected Squares helped eliminate subjective selection of sherds.⁹ Quantifying the results and plotting the data on a contour map not only helped inform the archaeologists whether they should dig the site but also where on the site the excavations might be most fruitful. This should also help the excavator in formulating his objectives and procedures as he approaches the dig.

It has been shown that Jalūl was a large, heavily occupied city throughout the Bronze and Iron Ages. Since details of the Middle and Late Bronze Ages in central Transjordan are in short

⁷ Clueck, *Eastern Palestine*, 1:5.

⁸ Albright, "Topographical Explorations," p. 28.

⁹ It was noted, e.g., that Late Bronze sherds tended to be small in size and may therefore have been overlooked in an unstructured type of sherd collection.

supply it seems that Jalūl would be a propitious site to excavate. The overburden of Roman, Byzantine and Islamic debris was minimal, enabling an excavator to streamline his objectives. Further, it may be hoped that the results of a dig at Jalūl could be formulated so as to allow statistical correlations between the surface and the sub-surface material. Such correlations may finally reinforce or reduce the confidence that archaeologists place in intensive surface survey.