Ancient city found in Sinai

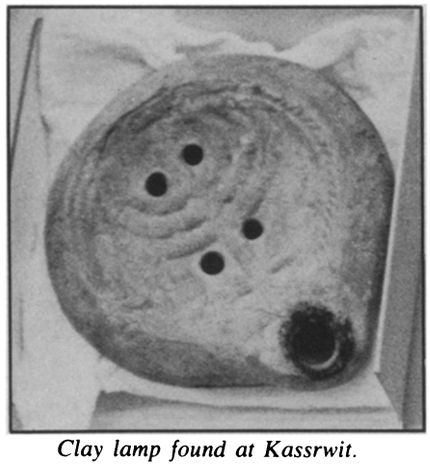
Israeli archaeologists, working only a few miles from the military no man's land at the edge of occupied territories in northwestern Sinai, have excavated remains of an ancient city that served as a major trading link between Egypt and Palestine during the time of Christ. Their discoveries raise several questions about the history of the area and may illuminate a new phase of Jewish wandering that took place after the unsuccessful first- and second-century revolts against Rome.

Trade routes were established along the northern edge of the Sinai peninsula as early as 3000 B.C., when Egypt sought the advanced metal products of southern Palestine. Around the third century B.C., inhabitants of ancient Arabia, called the Nabateans, apparently captured a monopoly on trade along this portion of the Via Maris—the legendary "Road of the Sea" running along the Mediterranean from Egypt to Syria, over which passed a lively trade in spices, metals, textiles, wine and hashish. In an interview with some American journalists in Beersheba, Ben-Gurion University professor Eliezer D. Oren told of finding remains of some 800 settlements in the northern Sinai, including a Nabatean city he calls Kassrwit.

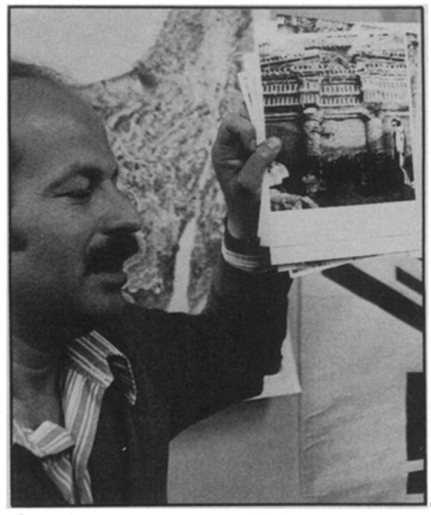
Buried among the drifting sand dunes about five miles southeast of the desert oasis of Katia, Kassrwit was located by scanning aerial photographs for irregularities in vegetation. The 75-acre city was discovered once before, by a French archaeologist in 1911, but little excavation followed and it was quickly lost again. The Israeli scientists have now uncovered large temples, extensive housing complexes, tombs, and suburban settlements extending to nearly two miles away.

As in their other, previously known communities, the Nabateans chose an eclectic combination of architectural elements for their buildings. In the central temple, a small inner room with wooden ceiling and Greek-style columns is surrounded by a larger court whose outer face is decorated with Egyptian motifs. Stone for the temples had to be carried several miles (the city was apparently built some distance from the main road for protection) and timber would have had to be imported from afar. In the living quarters, rich stores of everyday houseware were found, including examples of the thin, delicate pottery for which the Nabateans were famous. Among the tombs, the archaeologists uncovered 20 skeletons.

But what Oren calls "the most emotional find" was the discovery of a small clay lamp bearing the unmistakable imprint of a Menorah—the seven branched candelabrum associated since ancient times with Jewish worship. The discovery of this and other religious objects from around the third century A.D. suggests that Kassrwit and the trade route it controlled may have passed into Jewish hands after the Nabateans were defeated by the emperor Trajan in A.D. 106.



Clay lamp found at Kassrwit.



Photos: John H. Douglas

Oren holding picture of Nabatean temple.

Already for several years, the Middle East had been swept by revolution, and when Jewish communities in Egypt and elsewhere joined a revolt against Rome in A.D. 116, many members were driven out as part of the "Second Diaspora." A Jewish coin found during excavation bears the inscription, "Third Year Liberty to Zion." The implication—not yet proven—is that resettlement in places like Kassrwit eventually brought the Jews into the mainstream of commerce in the area.

Oren offers a tantalizing postscript to this theory in his article in the weekly Israeli paper *Bamachaneh*. Inscriptions from the 15th century A.D., found in nearby Katia, show that a thriving Jewish community existed there at that time. Even today members of a local nomadic tribe follow Jewish traditions and are considered Jews by their neighbors.

Next month, Oren returns to the Sinai in hopes of uncovering further evidence from Kassrwit while there is still time. He told interviewers that he expects not to be able to return to the site "in my lifetime" if it is turned over to the United Nations in the next round of negotiations. In addition, the natural conditions of the site are the "most hostile" he says he has ever encountered. Within less than a year, most of the archaeologists' excavations could again be covered by blowing sand. □

Magnesium: Control over cell processes?

Cell biologists, in general, study life functions on a highly detailed level. It is not uncommon for a researcher to spend years ambling along one metabolic pathway, watching the molecular travelers and searching in the biochemical thickets for routes of ingress and egress. This approach has provided all of the information on the labyrinthine biochemical pathway charts so often in evidence on laboratory walls—not to mention the collective understanding of life processes.

By focusing on individual pathways, however, it is possible to lose sight of the cell as an holistic, integrated unit that responds, as a unit, to control signals. Cell biologist Harry Rubin of the University of California at Berkeley has for several years been looking at the cell as an integrated unit, and has found what he thinks may be the coordinating control process for metabolism and growth in animal cells. It is the intracellular availability of magnesium, he reports in the September PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

Rubin explains that in a typical animal cell such as a fibroblast (a connective cell that makes collagen and matrix materials), a whole array of cell activities accelerate or decelerate in unison in response to certain control factors. These include population density, pH and certain hormones. The cell activities (transport and metabolism of sugars, synthesis of fats, proteins and nucleic acids, etc.) step up or step down coordinately, and do not, Rubin says, shut each other off in sequence. There must, therefore, be some common control mechanism that underlies the more obvious factors.

Rubin knew that the magnesium ion (Mg^{++}) is a necessary co-factor for several biochemical reactions, especially transphosphorylation reactions such as the transfer of phosphate to and from the energy storage molecules ADP and ATP. He tested the role of Mg^{++} in cellular control by reducing it in the fibroblast culture medium and by adding pyrophosphate, a substance that combines with Mg^{++} and prevents it from entering and reacting in the cell. He found that decreased availability of Mg^{++} led to a coordinate deceleration in cell functions, and that increased availability led to an acceleration.