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Beneath the Dead Sea, Scientists Are Drilling for Natural History

By ISABEL KERSHNER



EIN GEDI, Israel — Five miles out, nearly to the center of the [Dead Sea](#), an international team of scientists has been drilling beneath the seabed to extract a record of [climate change](#) and earthquake history stretching back half a million years.

The preliminary evidence and clues found halfway through the 40-day project are more than the team could have hoped for. The scientists did not expect to pull up a wood fragment that was roughly 400,000 years old. Nor did they expect to come across a layer of gravel from a mere 50,000 to 100,000 years ago. That finding would seem to indicate that what is now the middle of the Dead Sea — which is really a big salt lake — was once a shore, and that the water level had managed to recover naturally.

“We knew the lake went through high levels and lower levels,” said Prof. [Zvi Ben-Avraham](#), a leading Dead Sea expert and the driving force behind the project, “but we did not know it got so



Rina Castelnuovo for The New York Times

Micheal Lazar, the project manager, with one of many tubes of Dead Sea sediment. Tubes will be sent to Germany for analysis.



Ein Gedi lies about five miles from the drilling platform

low.” Professor Ben-Avraham, a member of the [Israel](#) Academy of Sciences and Humanities and chief of the [Minerva Dead Sea Research Center](#) at Tel Aviv University, had been pushing for such a drilling operation for 10 years.

The idea was to bore under the sea and extract a continuous geological core that, once analyzed, could supply information of global importance on natural processes and environmental changes.

The Dead Sea sits in the largest and deepest basin in the world. The scientists chose to drill at its center because they assumed that the sediment that had accumulated there had always been under water, the better preserved for having never been exposed to the atmosphere.

The special composition of the Dead Sea waters also affords unique opportunities for research. A special mineral found in the lake can be used for dating much further back in time than the more common radiocarbon method allows, giving the scientists an unprecedented insight into the history of natural forces in the region.

Finally, the [International Continental Scientific Drilling Program](#), which is based in Germany and is the only organization in the world capable of conducting such an operation, agreed to take on the \$2.5 million project.

The Israeli-led enterprise involves 40 scientists from Israel, Germany, Switzerland, Norway, Japan and the United States. Professor Ben-Avraham and his project manager, Michael Lazar of the University of Haifa, emphasized that they were working with scientists from Jordan and the [Palestinian Authority](#) because Israel, Jordan and the West Bank all border the Dead Sea.

With its surface now almost 1,400 feet below sea level and its waters reaching a depth of 1,240 feet, the Dead Sea offers a unique environment for research that may also contribute to the world’s knowledge of human cultural evolution.

The first borehole, completed earlier this month, reached almost 1,500 feet below the seabed until the drill head gave out. The experts will log data from it before starting on a second hole.

The first hole has produced scores of plastic tubes filled with continuous segments of sediment. They will be sent for analysis at the University of Bremen in Germany.

Uli Harms, the executive secretary of the international drilling program, said he thought the hole had penetrated through the sediment from four ice ages. “That would be my personal guess,” he said, adding that the findings had to be checked in laboratories.

The project has presented a logistical challenge. The scientists have been working on the platform around the clock in 12-hour shifts, taken there and back at sunrise and sunset in a small boat, the only one on the lake. Because of the high concentration of salt in the unusually buoyant water, the vessel needs constant maintenance.

“We are making history here,” said Gideon Amit, of the National Institute of Oceanography, who is responsible for the marine operations.

Mr. Lazar said the wildly varying layers of salt and mud represented dry periods and wet ones, respectively. A tiny fragment of wood, which Mr. Lazar said he was guarding like gold, was found stuck in some mud, indicating that it was probably from a tree carried here by a flood.

The gravel, similar to that found today on the shores of the Sinai Peninsula, may mean that the waters in this basin had sunk much lower in the past than had been previously thought. In light of contemporary concern over the [drop in the Dead Sea’s waters](#), mainly due to human intervention, the scientists found some room for hope, because the lake had reached even lower levels in history and managed to bounce back.

There was a momentary hint of another mystery at dawn on a recent Friday, when the scientists on the drilling platform announced that they had just registered a temperature of 104 degrees inside pipes about 1,300 feet down, a finding much higher than expected.

The reading gave rise to thoughts of volcanic activity, right in the area where Sodom and Gomorrah — the biblical cities described in Genesis as having been destroyed by God with fire and brimstone because of their residents’ sins — were believed to have stood.

A later reading, however, showed a lower temperature, within the range that had been anticipated.