

"People don't tend to go and search for these things," Mr. Smith said. "They tend to find them more or less by accident, while exploring."

The underworld remains a kind of last frontier for explorers looking for new discoveries. "It takes a special kind of person who is willing to walk, crawl a mile underground in pitch black," Mr. Smith said.

Cave explorers are among the last amateurs. "For me, it's like a profession," said Andrej Stroj, a member of the team that found the record-setting abyss in Croatia, "but for others, it's mostly a hobby."

Jim Chester, a fellow of the Explorers Club in New York, received the National Speleological Society's highest award for cave exploration last year for his work charting caverns in Montana. But caving does not pay his bills.

"All the stuff I do with caves is on the weekends or vacation," said Mr. Chester, 60. During the week, he is a postman.

The caving society's official list of the world's deepest pits is maintained by Bob Gulden, a Maryland engineer. Mr. Gulden is a member of a local caving club called the Gangsta Mappers, a network of guerrilla cartographers who remap previously explored caves, but with more care and in greater detail.

"Every cave they remap," Mr. Gulden said, "they always find new passage."

Cavers do not have the technology available to scientists like Mr. Smith or Ms. Gaddis.

"You've got to physically do it," Mr. Gulden said. Ground-penetrating radar could detect the presence of an underground cavity, he said, but that equipment is too expensive and impractical for ordinary cavers.

Cavers rely on old tricks to find new caves, like hunting for depressions in the snow or tracing the passage of water through a mountain. Mr. Chester said his group occasionally takes aerial scouting trips in the winter to search for "smoking entrances," or pockets of steam rising from the snow that could indicate warm air rising through a cave system.

"We do not know what the deepest cave on this planet is," Mr. Chester said, "and unless there is some big breakthrough, like a CAT scan for the Earth, we may never know."

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