

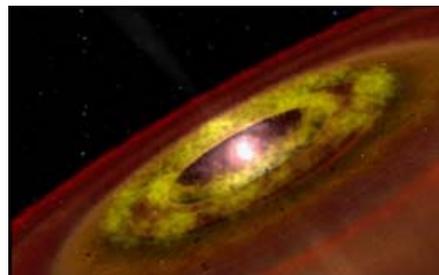


**DIG IT** - Workers at Olorgesailie in Kenya excavate a 990,000-year-old elephant-butchery site. Their efforts also yielded the remains of zebra, baboons, pigs, hippos, and some large mammals that had died out by 400,000 years ago.

## **Paleoanthropologist's Research Featured in *Science News***

The research of Rick Potts, director of the Human Origins Program, was the cover story of the current issue of *Science News*. His article, "The Ultimate Colonists: Human Ancestors Settled into One Ecosystem After Another," presents Potts' analysis of ecosystem change over 500,000 years at Olorgesailie, Kenya. His research has shown that various environmental shifts took place during the middle Pleistocene causing changes in plant and animal communities. Dr. Potts' evidence demonstrates that early humans easily adapted to these changes and successfully exploited new and different environments.

Potts is returning to Olorgesailie for the next two months. His team will excavate the oldest known hand axe site at Olorgesailie, about 1.2 million years old, and will continue digging a series of Middle Stone Age sites that are about 400–100,000 years old. These sites contain the stone technology associated with the oldest evidence of *Homo sapiens*.



**Artist's conception of a young star, surrounded by a disk of gas and dust from which it is slowly accreting material.**

## **Was the Sun Born Alone?**

Astronomers believe they have a very good general idea of how our Sun formed, and in recent years they have been filling in many of the mysterious details. The Sun formed when a cloud of interstellar gas and dust collapsed under the force of its own gravity, ultimately heating up to a point at which nuclear reactions were ignited within it. All stars undergo a similar process, as far as astronomers can tell. But in working out the specifics -- for example whether stars form alone or in groups -- an important puzzle has come to the fore. Stars like the Sun, scientists think, undergo a process of additional growth during perhaps the last few hundreds of thousands of years of their gestation, accreting new material from their surroundings. Astronomers see many stars today going through this phase. The puzzle is raised by those stars that are less massive than our Sun (by about twenty or more times). These stars never get massive enough to ignite the nuclear reactions seen in the Sun, and they glow only faintly; hence they are very hard to study. Stars frequently form with one or two (or perhaps even more) orbiting companion stars. According to one current theory, a small companion star is likely to be ejected from its group when it gets too close to one of its more massive neighbors whose gravity then speeds it up and sends it away.

Only the more massive stars are left behind, in this model, to accrete new material and grow. Two papers by SAO astronomers in this week's *Astrophysical Journal* address this hypothesis, and report the most compelling evidence to date that this is not the way stellar birth proceeds. In one, SAO astronomer Subhanjoy Mohanty and his two colleagues study a set of young stars less massive than our Sun, located in a region with many new stars. They discover that these smaller objects are still accreting material -- they apparently have not been ejected. In a second paper, SAO astronomers Nuria Calvet, Lee Hartmann and three of their colleagues (two of them previously affiliated with SAO) not only report evidence that such stars accrete material (from their study of 45 low mass stars), they obtain quantitative estimates of how much they accrete: roughly about as much mass as an Earth, over one hundred thousand years of accretion (this is about one thousand times less matter than a Sun-sized star will accumulate). The results imply that normal, Sun-like stars and these dwarf stars have similar formation mechanisms, and help scientists understand more clearly exactly what those complex mechanisms really are, and how they operate.

### **Anthropology Department Receives Important Print Collection**

The Anthropology Department has received the finger and palm print collections of H. Wenner Kloepfer. The dermatoglyphic prints were collected during 1952–82 from twins and their families, Alzheimer's patients and their families, Usher Syndrome patients and their families, and people with other genetically based pathological conditions. Kloepfer used these prints and the data from the patients and families for numerous publications on the genetics of these diseases.

Kloepfer had been hired to work at Tulane University by Howard Cummins, one of the giants in the field of anthropological and genetic dermatoglyphic prints research. Kloepfer had retained much of Howard Cummins' collections of dermatoglyphic prints. In total, this accession contains an estimated 7,000 prints. It will be housed in the National Anthropological Archives (NAA) as part of the American

Dermatoglyphics Association holdings archived by the NAA for permanent preservation and research access.



**This still frame of a “dumbo” octopus, was recorded during a dive of the Russian submersible MIR 2 on the Charles Gibbs Fracture Zone of the Mid-Atlantic Ridge.**

### **Deep-Sea Explorers Visit New Realms**

Researchers on a trawling expedition off the New England coast collected fishes, cephalopods, crustaceans, and other invertebrates from depths of 1–2 kilometers around Bear Seamount, an underwater mountain located just inside the U.S. Extended Economic Zone. They also collected tissues for DNA analyses. The specimens will be divided between the permanent collections at the National Museum of Natural History (NMNH) and Harvard's Museum of Comparative Zoology.

In a separate expedition, U.S. and Russian researchers used deep-diving manned submersibles to examine the fauna of the Charlie Gibbs Fracture Zone of the Mid-Atlantic Ridge. Using the subs to dive as deep as 4,500 meters, the researchers became the first humans ever to visit this part of the planet. They took videotapes of the surprisingly high numbers of fishes, sponges, and other animals living on and near the bottom of the deepest part of the MAR-ECO study area.

On both cruises the researchers also recorded observations on the distribution of marine mammals and seabirds. The cruises, which are part of a series, contribute to two pilot projects of the Census of Marine Life (CoML): the offshore biodiversity component of the Gulf of Maine CoML project, and the Mid-

Atlantic Ridge Ecological Patterns and Processes CoML project examining the deep-sea ecosystem around the Mid -Atlantic Ridge.

## **Kentucky Students Go on Science Expedition**

Twenty-two high school students from Kentucky came to Washington for a *Science Expedition to the Smithsonian*, hosted by the National Museum of Natural History (NMNH) and the Smithsonian Environmental Research Center (SERC) during the week of July 7-11. Sponsored by Adventures in Learning Programs in Science (ALPS) in Mt. Sterling, Kentucky, the course had a dual focus of marine and estuarine science and forensic science.

The first three days of the course were devoted to marine and estuarine science. Under the tutelage of SERC Education Director Mark Haddon, the students experienced seining on the Rhode River, learned about the life cycle of blue crabs and about studies underway at SERC to tag and release young crabs, examined samples of organisms taken from brackish waters, and took a trip on the research vessel *Saxatilis* to sample salinity, pH, and other parameters being monitored on Chesapeake Bay. The students also participated in a workshop on echinoderms, such as starfish and sea cucumbers, and examined numerous specimens first-hand.

The students spent the final two days of the *Expedition* in a forensic science workshop with Anthropology Department curator Doug Ubelaker and Amy Michaud, a colleague from the FBI's lab in Quantico, Virginia. They explored techniques used in taxonomy, systematics, and related sciences.

## **Recent Publications**

Jayawardhana, R.; Mohanty, S.; Basri, G. 2003. "Evidence for a T-Tauri Phase in Young Brown Dwarfs," *The Astrophysical Journal*, 592:282

Losos, J.; Leal, M.; Glor, R.; de Queiroz, K.; Hertz, P.; Schettine, L.; Lara, A.; Jackman, T.; Larson, A. 2003. "Niche Lability in the Evolution of Caribbean Lizard Community," *Nature*, 424:542-545.

Muzerolle, J.; Hillenbrand, L.; Calvet, N.; Briceno, C.; Hartmann, L. 2003. "Accretion in Young Stellar/Substellar Objects," *The Astrophysical Journal*, 592:266.

Potts, R. 2003. "The Ultimate Colonists: Human Ancestors Settled into One Ecosystem After Another," *Science News*, 164:1-16.

## **Web Links**

The [Splendid Diamond Exhibit](#) web site shows every diamond that the exhibit offers, plus information on the history of each diamond.

## **Spotlight on Science** at the Smithsonian

*Spotlight on Science at the Smithsonian* is a weekly electronic newsletter about Science at the Smithsonian. It is produced for the Smithsonian community by the Office of the Under Secretary for Science. To contact the editor, e-mail [mellendickt@si.edu](mailto:mellendickt@si.edu).

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