"If they found extraterrestrials, they couldn't do much about it." **Fred Kaplan, page 346**

Were crocodiles responsible for the stones we call tools?

SIR — Could *Nature* have been unknowingly publishing papers for the past 80 years about crocodilian gastroliths (stomach stones) instead of stones concluded to be 2.5-million-year-old hominid tools? This possibility could cast doubt, for example, on the nature of the Oldowan specimens described by Michael Haslam and colleagues in their Review of primate archaeology (*Nature* **460,** 339–344; 2009).

Palaeontologists use a simple eyeball test to distinguish stone tools from gastroliths. If a specimen has wear marks on its outer surface but none on its inner surfaces, this indicates that the stone has been grinding away in some prehistoric stomach or other and is a gastrolith. But wear on both inner and outer surfaces indicates that it has been used for some sort of pounding or battering and can confidently be considered a tool. A quick look at the three Oldowan specimens reveals wear on only the extended surfaces, so they should be considered as gastroliths, not tools.

Identification of the Oldowan specimens as tools is based on the fact that the soft relict sands of Olduvai Gorge contain no natural stones of their own, so any stone found there must have been moved from distant river beds by some unknown animal transporter — concluded by high science to be *Homo habilis*. But crocodiles have the curious habit of swallowing rocks: these account for 1% of their body weight, so for a 1-tonne crocodile that's 10 kg of stones in its stomach at all times. Surprisingly, science has never even considered the crocodile as transporter.

Crocodiles and hippos have always lived happily together. Hippo herds would naturally trample riverside gravel stones into the shape of Oldowan cutting tools, quantities of which the crocodile would then swallow and transport to other places.

The crocodile lives and dies at the water's edge. So far, all East African Oldowan specimens have come from the same waterside environments where crocodiles are known to have dwelt. Millions, perhaps trillions, of transported crocodile stomach stones must remain where the old crocodiles left them, deep in relict East African sediments, though none has ever been reported.

Patrick Dempsey 5091 Citation, Cypress, California 90630, USA
e-mail: greatbasinpat@msn.com

Ethical concerns over use of new cloning technique in humans

SIR — The announcement that induced pluripotent stem (iPS) cells have been used successfully to produce viable mice (X. Y. Zhao *et al. Nature* **461,** 86–90; 2009 and M. J. Boland *et al. Nature* **461,** 91–94; 2009) represents a great technical achievement. But enthusiasm should be tempered by ethical concerns over any extension of this technology to research in humans.

The mouse embryos were created by 'tetraploid complementation', in which mouse iPS cells (produced from fibroblasts) are injected into a tetraploid blastocyst to allow them to express their developmental potential fully. As the authors point out, this technology provides a demonstration of true pluripotency/totipotency and usefully offers a stringent test of iPS-cell quality. Both groups also indirectly consider the wider application to human cells in suggesting that fully pluripotent iPS cells could eventually be important in cell-replacement therapy and therapeutic interventions.

It is important to remember that there would be severe ethical problems associated with using tetraploid complementation technology in humans, even without the intention of implanting the resulting artificially created embryos into a uterus (see, for example, H.-W. Denker *Reprod. Biomed. Online* **19,** suppl. 1, 34–37; 2009). The issues are similar to those that have arisen over embryonic stem cells and include aspects of patentability.

At present, human reproductive cloning is banned in all countries, and therapeutic cloning is prohibited in several. But ethical standards may differ and/or change in the near future. The implications should be borne in mind by researchers everywhere in their impulse to follow up any application of tetraploid complementation technology with human iPS cells.

Hans-Werner Denker Institut für Anatomie, Universität Duisburg-Essen, Hufelandstrasse 55, 45122 Essen, Germany
e-mail: hans-werner.denker@uni-due.de

The need for a fresh symbol to designate copernicium

SIR — There could be a question mark hanging over the symbol proposed for the newly recognized element 112, copernicium (*Nature* **460,** 449; 2009).

According to the current recommendations of the International Union of Pure and Applied Chemistry on naming new elements, a candidate name cannot be reused on another element (W. H. Koppenol *Pure Appl. Chem.* **74,** 787–791; 2002). For example, the names hahnium or joliotium can no longer be considered for any as-yet unnamed element, because both were once used to name element 105, which is now called dubnium.

If this rule is formally extended to symbols of elements, it will affect the proposed symbol (Cp) for copernicium. This symbol was used for element 71, cassiopeium, before that was formally named lutetium (F. A. Paneth *Nature* **159,** 8–10; 1947).

With C, Ce, Cm, Co, Cr and Cu already taken, Ci short for curie as a unit of radioactivity and Cp open to debate, a 'clean' option for copernicium could be the unprecedented Cc.

Juris Meija Institute for National Measurement Standards, National Research Council Canada, Government of Canada, 1200 Montreal Road M-12, B-16 Ottawa, Ontario K1A 0R6, Canada
e-mail: juris.meija@nrc-cnrc.gc.ca