general public. Only by protecting fossil vertebrates from loss to our public domain can we ensure that the vital information locked within them will be investigated by the academicians who are trained to do so.

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Ice Man's Fungi: Discussion Rekindled

I write in response to the letters of Horst Seidler (18 Dec. 1992, p. 1868) and Michael Grant and Norris Denman (9 Apr. 1993, pp. 146 and 147) concerning the fungi found with the ice man. Only one of the two pieces of polypore has been identified so far as *Piptoporus betulinus* (*1*). This species contains the antibacterial "polyporenic acid C" (*2*), *not*, as Seidler suggests, agaric acid. The latter is a typical product of *Laricifomes officinalis*, another nonagaric fungus "endowed with the most astonishing medicinal virtues" (*3*) that was used in folk medicine, even by the ancient Greeks and Romans (*4*).

Grant's creative statement that the Tyrolean man was "well equipped for collecting insects or sharpening knives" deserves to be completed. The fruiting bodies of *P. betulinus* were also used for the manufacture of drawing charcoal (*5*), whereas an Australian podiatrician reports having packed it behind ingrowing toenails with "excellent results" (*8*).

As to the question of whether or not the ice man used the birch polypore "as fire-starting tinder," an additional third fungal material reveals more information: among the equipment found in his leather bag (including several flint objects) was a large amount of mysterious black stuff. At first it was thought to be part of a prehistoric repair kit (*8*), but this black stuff has now been clearly identified as "classical tinder." It consists of loosely interwoven context hyphae of the "true tinder bracket" (*Fomes fomentarius*) still containing traces of pyrite (*9*). The tissue does not show the compactness of the native fungal trama. It gives the impression of having been treated mechanically in some way. Consequently, we have to assume that the two other pieces of polypore, each mounted separately on a leather strap, served some purpose other than making fire.

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Manson Crater Extinctions

Richard Kerr (Research News, 29 Oct., p. 659) exonerates the cometary impact that produced the Manson Crater in Iowa (and was formerly suspected of having caused the extinction of the dinosaurs) of "global mayhem." However, it may well have produced mayhem on a subcontinental scale. The Manson impact-generated tsunami deposit [Crow Creek Member, Pierre Shale (*1*)] separates strata containing assemblages characteristic of different North American marine vertebrate "ages" (Niobraran and Navesinkan) with their distinctive mosasaurs (*2*). Vertebrate remains in continental strata, deposited along the western border of the Cretaceous interior seaway shortly before and after the Manson tsunami, also belong to separate North American land mammal "ages" (Aquilan and Judithian) and reflect genus-level changes in crocodiles, dinosaurs, and mammals (*3*). It seems likely that local vertebrate faunas were badly disturbed by the Manson impact and that taxa which were exterminated were replaced by immigrants from beyond North America. More problematic is the finding that post-Manson survivors from the subcontinent bordering the eastern edge of the seaway show abundance patterns differing from those of their western contemporaries (*4*), perhaps because Asian/western immigrants were blocked by the seaway.

A study of the paleontological record associated with the Manson crater will help to reveal the lethal effects of bolide impacts of differing energies.

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