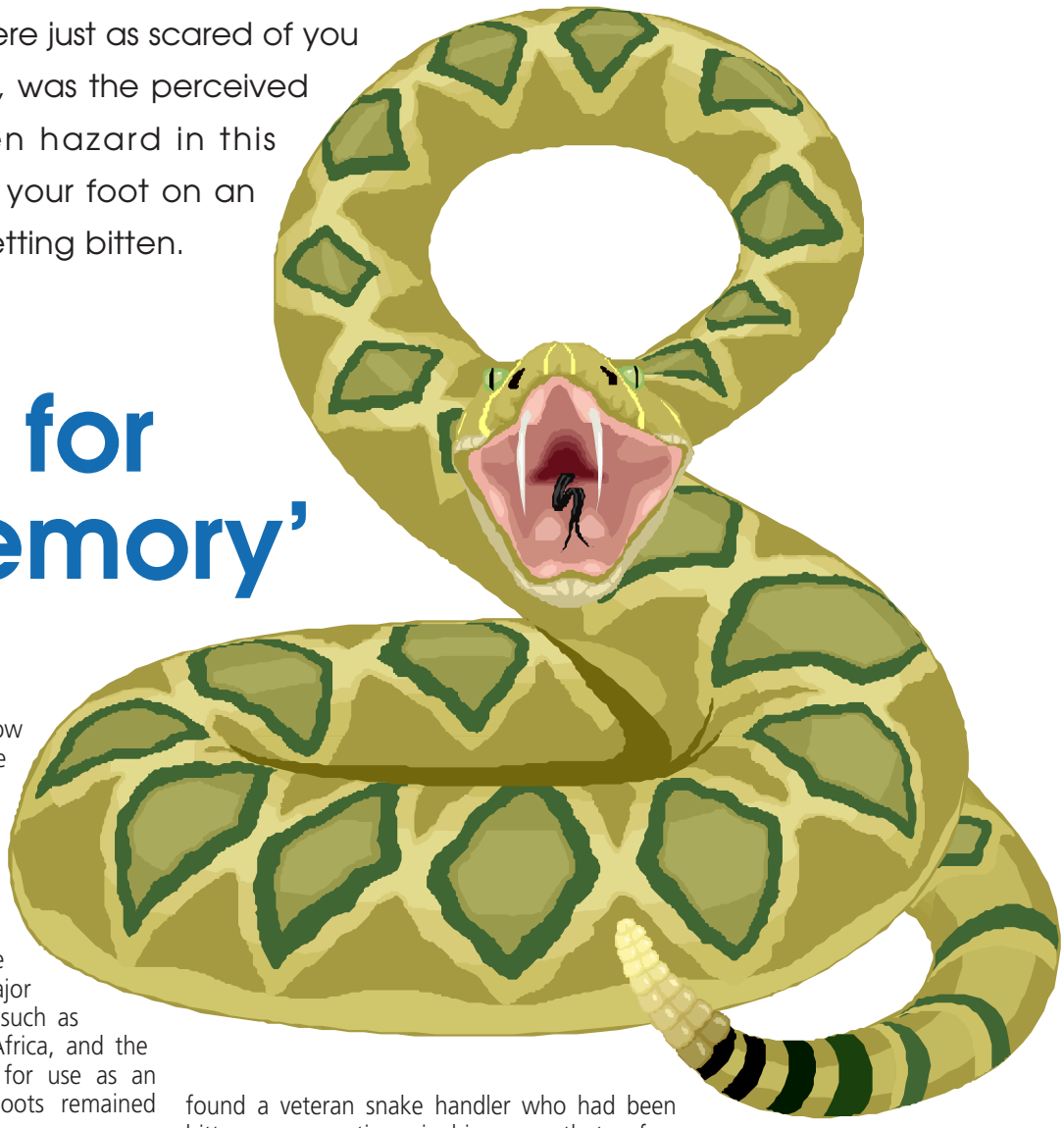
Trekking, even golfing, can lead one into unexpected hazards. Growing up in the Southern Hemisphere I was always taught that in summer, when leaving the beaten path, one should make as much noise as possible when walking - crunch leaves, break twigs, let unseen animals know you were approaching. They were just as scared of you as you were of them, was the perceived wisdom. The unseen hazard in this instance was putting your foot on an unwary snake and getting bitten.



'Fangs for the memory'

Childhood lessons of how to walk through the long grass do not appear to be passed on so frequently nowadays. And, if your sport is animal spotting, noise is the last thing you should be making. Snake bites, however, are still a major concern, especially in countries such as the USA, Australia and South Africa, and the need for a snake-proof fabric for use as an extension gaiter to walking boots remained unsatisfied until recently.

The problem was that, while bullet proof fabrics could be produced, they were not much use against a determined snake. The pressure exerted by a snake's jaw is remarkable and the needle sharp fangs could find their way through any fabric which had any hand to speak of; the fabric required needed to have drape and flexibility as well as comfort and breathability.

Fabric engineers Lenzi Egisto were prepared to take up the challenge of producing a 'stab proof' fabric, one which would be of interest not only to the outdoor brigade in hot climates but also to security forces the world over. It took the company some two years to come up with the answer. Testing of the trial fabrics would make a story in itself: until the company finally built its own test equipment to simulate the pressure of the snake's bite and the variable angling of its fangs, the easiest way that the fabrics could be tested was on a person. Fortunately the company found a veteran snake handler who had been bitten so many times in his career that a few more bites weren't going to make much difference - either he had built up an immunity to snake venom or he had quick and easy access to the appropriate antidote!

Go Carborundum

The company has moved far from its roots as a textile trading company and an early producer of simple fabrics, a history which tracks back to 1898. By 1936 it had moved to its present home in Vaiano, very much in the Prato region of Italy with its wealth of textile knowhow. Today its strength lies in textile engineering and the use of high technical content materials and fibres, but what seems to give the company its edge is its ability to find textile solutions to match its clients' requirements - target oriented research and vertical production is its forte.

The problem encountered by the company in researching its snake proof fabric was that no

Figure 1: Carborundum platelets overlaying the PU and Kevlar fabric structure



matter what weave or knit structure was used, the fibres would not pass the needle test. The usual range of high tech fibres was brought into play, but Kevlar was an obvious choice. The final fabric itself is composed of Kevlar and a coating. The principle may be very basic, but the outcome was very innovative. For a start, the Kevlar base fabric is extremely compact, designed to hinder penetration as much as possible, but nevertheless giving an extremely supple and lightweight material which has a high tensile property, being extremely resistant to tear and cuts.

Once the basic cloth was established, the coating had to provide extra protection. The ingredients for this coating are polyurethane and silicone carbonate or carborundum, the equivalent of the synthetic diamond drill used by dentists when working on teeth.

But even this was insufficient to provide the necessary resistance to the fangs. The company then created a method of overlaying the coating with platelets of carborundum. And that provided the answer. Using the same formation principle of the snake's scales on its skin, Lenzi Egisto had found the answer to the snake's bite.

The rest as they say should be history...or 'fangs for the memory'.

David Buirski