

staff performed when arranging and reproducing our article's illustrations.

We take to heart his comments concerning the possibility that Burial 8B was not a smoker, thus further supporting the possible identification of those skeletal remains as being George Armstrong Custer. Dr. Sperber puts us in the enviable position of arguing, at least in part, against our own thesis—that the remains may be those of Custer. For that and the opportunity to expand our discussion on the matter of pipe smoking, we owe him a debt of thanks.

The first point Dr. Sperber makes is that some or all of the occlusal attrition on the left posterior teeth may be due to bruxism. We did assess the teeth for bruxism in an earlier paper, where we reported being unable to arrive at a definitive conclusion on the matter (1). As Sperber notes, nineteenth century soldiers had plenty of reasons to grit their teeth—and perhaps the Seventh Cavalry troopers had even more reasons than others. It is certainly possible that the individual represented by Burial 8B was prone to bruxism, but bruxism alone does not explain the groove in the left mandibular premolars (no. 20 and 21).

Dr. Sperber's second point is that present-day pipestems are made of materials far softer than dental enamel and do not abrade the teeth. Nineteenth century pipestem materials were different than those of today. In the 1870s pipestem bits were of three types. The first type was a reed stem. This pipestem was made from a dried reed and was detachable from the pipe bowl. The stem was hard, contained abrasive plant silicates, and usually lasted until it "burned out" (2-4). The second type was a fired, white Kaolin clay pipe, the most common pipe of the era and usually manufactured in Great Britain or Holland. The stem and the bowl were a single unit, and the bit was either round or slightly flattened in cross section. The integral fired-clay bit was hard and had a gritty feel when held in the mouth. Although the clay itself was softer than dental enamel, the quartz crystals it contained were hard (5) and being angular were extremely abrasive. We suspect this kind of stem bit was the one responsible for most of the pipe abrasions in the archeological record of the period. The third type was the "new fangled" hard rubber bit and stem which were attached to a wooden or briar bowl. It came into vogue during the Civil War (2,4) and is essentially the same shape we use today, although the materials employed have changed. The vulcanized rubber stem was hard in contrast with today's plastic stems, although less abrasive than either of the other two bits of the day. Smoking pipes, although not yet recovered from the Little Bighorn Battlefield site, are common artifacts found in military archeological sites throughout the United States.

Dr. Sperber's third point is that today's chronic pipe smokers typically experience orthodontic-like movement of the teeth employed in clenching a pipe, thus seeming to reject our identification of pipe use based on the abraded grooves. Nevertheless, similar abrasions have been reported in the historic archeological literature with little or no tooth movement. Grooves similar to that of Burial 8B have been presented, illustrated and attributed to pipestems in several recent summaries (6-8). Incidentally, all three of the grooves illustrated in these sources are grooved on the left side, similar to Burial 8B, although all three show the grooves being between canines and first premolars, unlike Burial 8B's groove which is between the first and second premolars.

In conclusion, we thank Dr. Sperber for his insights concerning bruxism, and this opportunity to expand and clarify our interpretations related to Burial 8B's pipe smoking. Although pipe smoking is an apparent contraindication to Burial 8B being a portion

of Custer's skeleton, fairness to the remains and the potential identification demand its note.

Finally and unrelated to the present topic, an unfortunate typographical error crept into the final sentence of the article's text. It was embedded in a quotation, making the error doubly bad. Misquoting Snow and Fitzpatrick (9), it reads, "there exists the possibility, at least, that one or more unknown troopers may be perpetually doomed to the commission of that most cardinal of military sins: impersonating an office' (sic.)" Few enlisted men—or officers, for that matter—would be capable of impersonating a copying machine, let alone a whole office. The word should be "officer." Our apologies to Snow, Fitzpatrick and the troopers of the Seventh Cavalry.

References

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Partisan Expert Witness Testimony

Sir:

Partisan, as a characterization of a forensic expert, has become a term of derision in legal parlance. The word "partisan" has acquired the suggestion that the expert is less than honest when giving opinion testimony in a court of law. In reality, the word "partisan" means taking sides. An expert who takes the witness stand has in fact taken sides; otherwise he or she would not be called as a witness. Unlike the material witness, the professional who testifies did not just happen to have observed a relevant fact and is compelled to give testimony. The professional, a chemist or a psychiatrist, testifies after being retained by one side in a controversy to assist in a specific case. He or she is asked to interpret (give opinion) data available to both sides. The expert's opinion may be helpful in which case the

expert will be called upon to give testimony. If the opinion does not support the view of the retaining lawyer, the expert will not testify, which does not mean that his or her work was not useful.

Charles Simkins, a nationally known personal injury lawyer specializing in brain injury, has repeatedly said in public forums that he found my opinions that he does not have a case very useful. "It saves me wasting time and money," he said.

A forensic expert would be self-destructive if he or she falsified the data in order to arrive at a tailor made opinion. This would not be partisanship but deception. Unethical professionals would be ill advised to go into forensic work. It is much easier to falsify data and offer unfounded opinions outside of the scrutiny of the adversary proceedings. It would be much easier for dishonest physicians to misrepresent clinical data to patients than to opposing lawyers

and their experts; it would also, in the long run, be financially more rewarding.

The notion that being paid for professional services given in connection with litigation makes one's ethics suspect is self-serving. Lawyers, unable to undermine an adverse opinion on the merits, resort to ad hominem attacks. Expert testimony is not simply a matter of facts that can be true or false. The opposite of opinion testimony, unlike that of a material witness, is not a falsehood but another opinion. The divergence of opinions of appellate judges is rarely the result of bias or corruption. The same holds true for professionals who give opinion testimony in the courts of law.

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