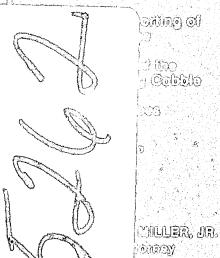


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law enforcement quarery

the case of the boomerang cobble

Editor's Note:

Patrick L. Abbott is a professor in the Department of Geological Sciences at San Diego State University. He received his Ph.D. in geology from the University of Texas at Austin and his research projects are centered upon understanding sedimentary rocks. His article is printed here to remind law enforcement officers and prosecutors that all "hard" facts aren't obvious.

By Patrick L. Abbott

In July of 1975, five Mexicali firemen enroute from Tijuana stopped at a wellfrequented wide place in the road thirteen kilometers east of Tecate to avail themselves of the type of facilities well known to field geologists. The usual smell of decaying feces among the chaparral and spheriodally-weathered granitic boulders was overwhelmed by the stomach-unsettling stench of decaying human flesh. The firemen pinched their noses, walked toward the locus of the odor, and found the rotting remains of a petite woman ensconced in a crudely-dug, shallow grave.

The gruesome find was reported to authorities who returned to disinter the body which was partially covered by a plastic tarpaulin shroud. Unwrapping the shroud exposed not only the woman's body but also a well-rounded, durable cobble. The Tijuana police perceptively noted that the stinking black cobble did not resemble the surrounding granitic terrain. The cobble apparently was of such significance to the murderer that it received the same efforts at concealment as the corpse; obviously, it was hoped that neither of them would ever be seen again. The autopsy showed that death occurred as a result of a severe battering with a blunt instrument that included a blow along the right side of the head that impacted with enough force to knock a silver dollar-sized hole in the skull. Thus it appeared that the rounded silicic cobble was the likely instrument of death.

Identification of the 3\%-week-old corpse was hindered by the absence of any personal

effects such as identification cards and jewelry and especially by the cunning of the killer in removing the victim's full set of dentures. Burial had taken place during the warm and dry summer weather which retarded decomposition of all surfaces of the body. Specifically, the part of the body resting on the floor of the grave was severely rotted due to upward-rising capillary water trapped beneath the impermeable barrier created by the body. However, the side of the body facing upward was mummified due to the dry surface conditions which thus allowed a fingerprint make which identified a California school teacher. Her husband had filed a missing person report near the end of June saying she had wandered away from their vacation residence in Rosarito Beach.

Another interesting aspect of the identification process was explained later by Deputy District Attorney William Holman. The missing California school teacher had surgery about three weeks before her demise. Because the incision was difficult to close it was wired shut by a surgeon who had been trained in Madrid to knot the wire in a unique way. The post-mortem examination yielded the distinctly-knotted surgical wire thus helping corroborate the identity of the victim.

The presence of an apparent murderweapon rock, and the question as to which country had jurisdiction over the case, prompted the prosecutor from the District Attorney's office to call in geologists to see what information they could contribute regarding the cobble. Did the murder occur on impulse within Mexico using a handy rock found at or near the gravesite? Was the murder perpetrated some unknown distance away, possibly within the U.S.? The case presented an interesting chance to apply some knowledge of the provenance of cobbles.

The initial visit found the gravesite (Figure 1) located just over a low ridge near the highway. The shallow grave was dug only 30 to 45 centimeters deep before the digger ran into indurated grus and granitic bedrock. Due to the poor seal created by several centimeters of grus over the body.

contents From the District Attorney 3 Profiles In Law Enforcement4 Marshal Michael Sgobba Police Reporting of Child Abuse and Neglect

Confessions

People v. DeVaughn

Robbery

People v. Miller

Arrest-Juvenile

In re Thierry S.

Discovery

Gonzales v. Municipal Court

Search and Seizure

Arrest

People v. Superior Court (Kenner)

Consent

People v. James

Knock and Notice People v. Solario

Privacy

People v. Freeman

Probable Cause to Arrest

People v. Evans

United States v. Chadwick

Search Warrant

Lohman v. Superior Court

Index 20

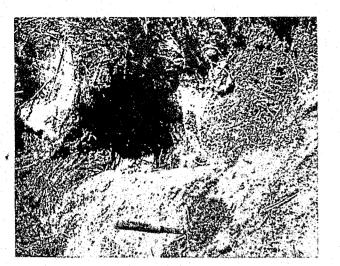


Figure 1. Photo of grave east of Tecate.

the olfactory senses of the Mexicali firemen were alerted to what had happened. Had the furtive murderer carried the petite body another couple hundred meters he would have reached an alluvium-covered slope (Figure 2) where a deep grave could have been easily dug. This unreasonable selection of a gravesite by a murderer thorough enough to remove dentures suggests that the burial occurred at night when the nearby terrain could not be readily evaluated.

A careful search of the surrounding granitic slopes for conglomerate outcrops or lag gravels failed to yield any stones even remotely like the murder-weapon rock. Thus the rock obviously was transported to the burial place, possibly from the murder site. The lethal stone is a dense, silicified, lithic tuff breccia of apparent andesitic composition. It is crudely flow banded subparallel to the intermediate and short axes. Typical lithic fragments within the cobble are comprised of altered flow rock and relict



Figure 2. View from the gravesite toward the alluvial slope that would have been reached had the murderer continued a little farther.

pumiceous-textured fragments about 2 cm long and 0.5 cm thick; the largest fragment is a silicified phenocrystic aphanite about 4.3 cm long and 1.6 cm thick. The rock is a moderate greenish gray, well rounded cobble with one rounded joint face; dimensions are 11.7 cm by 10.8 cm by 7.6 cm. The high degrees of sphericity and roundness suggest it was worked long and hard by vigorous currents.

The next phase of the investigation took us to Clairemont to visit the victim's home constructed upon the Linda Vista terrace. Inspection of the side and back yards revealed planter areas edged by well-rounded, oblate to spheroidal andesitic breccia cobbles, some of which were similar to the death instrument (Figure 3). Therefore it seemed likely that the murder occurred with a rock from the homesite.

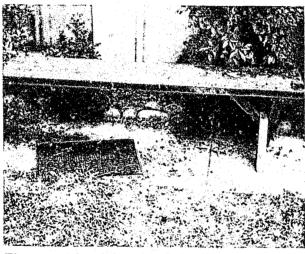


Figure 3. Volcanic breccia cobbles from the Lindavista Formation lining a planter area in the back yard of the murder victim.

However, in the missing person report the husband stated that the wife disappeared from the family trailer home in Rosarito Beach. Was it possible that the lethal cobble came from Rosarito Beach and that the murder was committed there? The conglomerates at Rosarito Beach, and the gravels derived from them, contain and esitic breccia clasts with compositions and textures that overlap those found at the victim's homesite on the Lindavista Formation in Clairemont. Thus, it was not possible to say whether the death instrument came from Rosarito Beach or Clairemont.

Later the cobble in question was shown to a daughter of the deceased who recognized it as a rock she picked up at Rosarito Beach and brought back to the home in Clairemont. The geological inability to determine where the cobble was picked up was resolved by the daughter's memory. Discovery of blood spatters at the Clairement home, together with the recollection of the cobble's recent migratory history, answered the question as to where the murder occurred.

Meanwhile the investigators from the District Attorney's office turned up the information that the husband was having an affair with another woman and wanted a divorce. After being confronted with the geologic and other evidence, the husband finally recanted his stories of innocence and pled guilty to a charge of voluntary manslaughter with this description of the murder — "In a moment of blind passion, I grabbed a rock that was on top of the refrigerator and struck her on the head. She fell and struck her head."

It is difficult to comprehend the confession as quoted above. Can you imagine

a large, well-rounded cobble being kept on top of a refrigerator? It seems that it would roll off every time the refrigerator door was closed. On the other hand, a family that collects drab, ugly andesitic breccia cobbles may just do things differently.

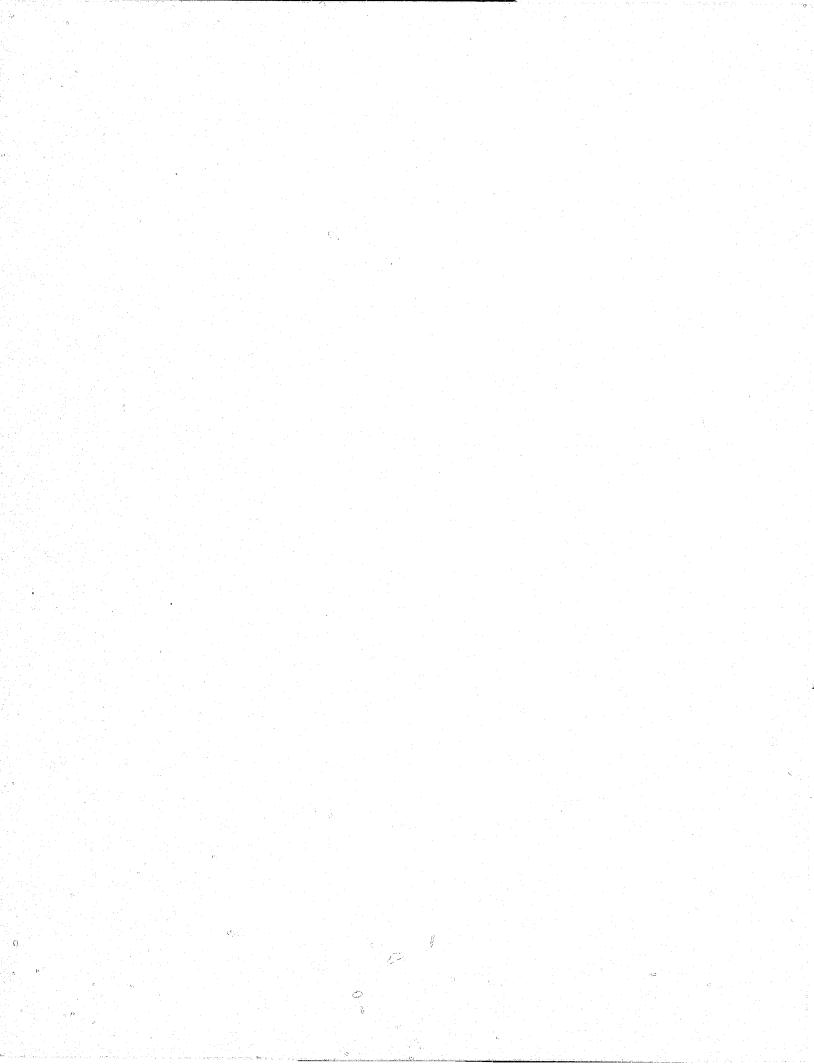
The judge sentenced the husband to a term of from six months to fifteen years which he is presently serving. It would have been simpler to file for divorce, split the community property, and be done with it.

Postscript. The geologic investigation established that the murder rock was not collected in the vicinity of the gravesite and hence the crime probably occurred elsewhere. However, the clast was not distinctive enough to pinpoint a Rosarito Beach or Clairemont source. Thus the geologic contribution was not as great as it could have been if, for example, the murderer had selected a Poway rhyolite clast.

NOTE FROM THE EDITOR:

The Law Enforcement Quarterly is published for the benefit of you — the reader. To serve you better I need to know what you like and dislike about the LEQ — and what subjects we can write about which are of particular interest to you. Let us hear from you.

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