

What Caused Those Terracettes?

John C. Buckhouse and William C. Krueger

"What caused those little terraces?" a student asked during one of our scheduled field trips. Another answered matter-of-factly, "Livestock."

Conventional range management wisdom suggests that livestock overuse was indeed the cause. Stoddart, Smith, and Box in 1975 and Daubenmire in 1968 showed photos of terracettes in their textbooks. Both texts suggest that the terracettes are caused directly by livestock overuse. Clearly, the terracettes are used by livestock. We have seen livestock utilizing them to graze very steep slopes. Yet something nagged at the backs of our minds.

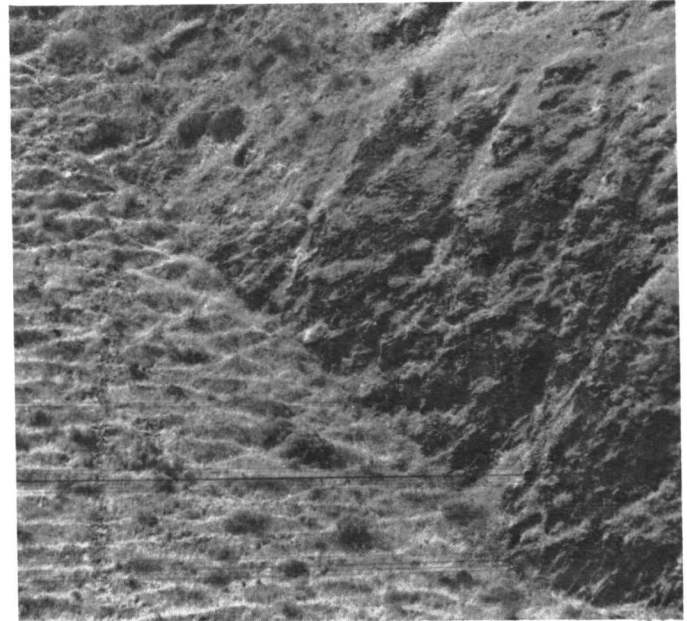
I've got the answer," one of our fellow staff members declared. "It's right here in this 1972 article by Remington." With that he produced a paper dealing with creatures known as "side-hill gougers." It seems these beasts have the right or left set of legs shorter than the other side. Consequently, they are ideally suited to grazing on steep slopes. Their constant trailing around and around the mountain causes terracettes, the author maintained.

By looking in textbooks on hill slopes processes, we found that terracettes, sometimes called cat steps, stock trails, etcetera, have long been a subject of controversy. As long ago as 1922, Odom suggested that these miniature terraces stem from instability of the soil mantle. He felt that they could be attributed to a whole succession of very small rotational slips along the slope. Others, such as Kerney in 1964, obtained evidence that terracette formation in Kent, England, post-dated woodland clearance in c. 1000 B.C. This, of course, suggests a land-use-triggered formation.

Two recent textbooks contained the following statements. Young maintained in 1972: "That terracettes are primarily associated with trampling by cattle or sheep remains the most probable explanation [for their development]." On the other hand, Carson and Kirkby said in 1972 that, "Admittedly, on some slopes, the appearance of terracettes has been accentuated by the movement of sheep and other animals along them; but, since terracettes do occur in areas where animals are rare, it would seem that some other mechanism is needed."

After all that, whenever we visited "gouger" country, we watched the terracettes closely. Even though we never saw a "gouger," a pattern began to emerge. We rarely noticed terracettes on south or west exposures. In the Pacific Northwest, apparently classical development occurs primarily on north slopes.

We began working on the problem. Could we find areas where underlying rock strata, soil conditions, and/or solifluction of freezing and thawing soil particles would give us a



Terracettes which go nowhere. These end flush with an emerging rock face.



Livestock trail cutting across terracettes. (Note cow on trail, center of picture.)

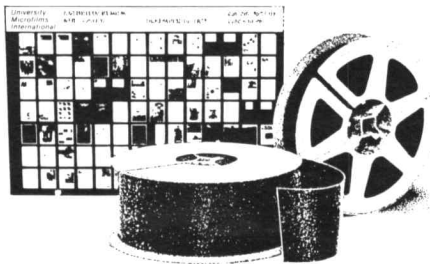
Authors are associate professor, Rangeland Resources Program, Oregon State University, Corvallis, and professor and head, Department of Range Science, Colorado State University, Fort Collins, respectively.

better idea of how the terracettes in our region were formed? We took the following photographs to illustrate some of our observations.

We have seen terracettes which end abruptly at the interface of a clearly different soil type. One would presume that if it were livestock alone that made these "trails" that they would continue on through both soil types. The first photo shows terracettes which go nowhere. The terracettes butt right up against a large rock. It seems unlikely that an animal would create a trail up to a rock, then back away from it. In other instances we have noticed terracette development on steep north slopes of the Columbia River Gorge, located between ledges which are bounded in between by rock, making livestock access virtually impossible. Finally, the second photo shows what are clearly livestock trails crossing a slope from a low saddle and continuing down toward water. The stock trails cross the terracettes at sharp angles as they lead from water to the pass!

Our observations lead us to think that at least in the Pacific Northwest, certain areas have geologic and climatic conditions that favor terracette development. Livestock do use these natural walkways, and in all likelihood accentuate them. However, we believe that they are fundamentally of natural origin.

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