阳台上的火山喷发

弟弟五岁，是我这场实验唯一的观众。他蹲在阳台地砖上，两只手撑着膝盖，眼睛瞪得圆圆的，盯着那座我们花了一下午做出来的火山。我举着白醋的瓶子，手心里全是汗——课上的实验是小组五个人分担的，这一次，模型是我一个人做的，喷不喷得起来，没人帮我找原因。

模型是用一个旧水泥花盆做的。花盆倒扣过来当底座，中间立一只喝空的酸奶杯，杯口和花盆之间塞满揉皱的旧报纸，再在外面糊上一层装修剩下的腻子粉。我按着课上抹黏土的样子，把山坡修得一边高一边低，老师说真实的火山都不是对称的。腻子粉干得慢，我在阳台上守了两个小时，中间忍不住伸手按了三次，指印留在山坡上，只好再补一层。弟弟在旁边帮忙递胶带，递错了七次，但态度是认真的。

加小苏打是弟弟抢着做的。他从袋子里舀，一勺，两勺，数到第五勺洒出去小半勺，他紧张地看我，我说没关系，山脚也是山的一部分。红色的食用色素滴进去四滴，粉末变成淡淡的粉，像还没睡醒的岩浆。

倒白醋的时候我学乖了。课上那次失败我记到现在：醋要慢，要贴着杯壁。我把瓶口压在杯沿上，一线醋慢慢渗下去。第一秒没有声音，第二秒杯底传来滋滋的响，像谁在杯子底下煮一小锅水。然后白沫顶上来，托着粉色，涌出杯口，顺着腻子粉的山坡往下漫。弟弟猛地站起来，喊了一声：它活了！接着他问了一句我完全没准备的话：哥，它肚子里的气是从哪儿来的？

我答不上来。那天晚上我翻课本、查资料，才知道小苏打和醋碰在一起会生成二氧化碳，气在杯子里攒着，攒得越来越多，顶得泡沫往外跑。第二天我做了第二个实验：把喷出的气体引到一只点燃的蜡烛前，火苗歪了一下，灭了。弟弟鼓着掌，我以为他是在为火山鼓掌，后来他说他是为火苗鼓掌。

作业只要求拍一段喷发的视频。可我交上去的那份里多了一张照片：蜡烛灭了的那一瞬。科学老师回了我一行批语：你比你弟弟问的问题还深一点。其实不是。是弟弟先问出口，我才敢往下查。动手实践这件事，手先动起来，问题才会跟着冒出来，就像气顶着泡沫，泡沫顶着颜色，一层推着一层，直到涌出山顶。

Volcano Eruption on the Balcony

My brother is five. He was the only audience for this experiment. He squatted on the balcony tiles, knees propped by his hands, eyes round as plates, staring at the volcano we had spent a whole afternoon building. I held the vinegar bottle, my palm slick with sweat. In class the experiment was shared among five of us; this time I had built the model alone, and if it failed to erupt, there would be no one to help me find out why.

The model started from an old cement flower pot. We turned it upside down as the base, stood an empty yogurt cup in the middle, stuffed the space between the cup and the pot with crumpled newspaper, then coated the outside with the putty powder left

over from renovations. I shaped the slope high on one side and low on the other, the way our teacher said real volcanoes never come out symmetrical. The putty dried slowly. I guarded it on the balcony for two hours and pressed it with my finger three times along the way, leaving fingerprints on the slope that had to be patched over. My brother helped by handing me tape. He handed me the wrong thing seven times, but his attitude was serious.

Adding the baking soda was his fight to win. He scooped it from the bag: one spoon, two, and on the fifth he spilled about half a spoon out. He looked at me nervously. I said it is fine, the foot of the mountain is still part of the mountain. Four drops of red food coloring went in, and the powder turned a pale pink, like lava that had not fully woken up.

When it came to the vinegar, I had learned my lesson. I still remember the failure in class: the vinegar must go in slowly, along the cup wall. I pressed the bottle mouth against the rim and let a thin line of vinegar seep down. The first second was silent. In the second second a hissing sound rose from the bottom of the cup, like someone boiling a tiny pot of water under it. Then white foam pushed up, carrying the pink with it, spilling over the rim and running down the putty slope. My brother jumped to his feet and shouted: it is alive! Then he asked the one question I had no answer ready for: big brother, where does the air inside it come from?

I could not answer. That night I went through the textbook and looked things up, and learned that baking soda and vinegar together produce carbon dioxide; the gas gathers inside the cup, more and more, until it pushes the foam outward. The next day I ran a second experiment: I guided the erupted gas toward a lit candle. The flame leaned sideways and went out. My brother clapped. I thought he was clapping for the volcano, but later he said he was clapping for the flame.

The assignment only asked for a video of the eruption. But the file I handed in carried one extra photo: the instant the candle went out. Our science teacher wrote one line back: you are asking a question even deeper than your little brother. That is not true. He asked first, and only then did I dare to dig. With hands-on work, once the hands start moving, the questions follow, like gas pushing foam, foam pushing color, layer upon layer, until everything spills over the summit.