# 蜡烛把水吸进了杯子

老师把半截蜡烛立在浅水盆中央，按了一下，蜡烛歪了，她又按第二下。水盆里的水刚没过蜡烛的底座，亮黄色的火苗在清水上面晃。教室里有人小声说，这是要做蜡烛火锅吗？老师没笑，只是从讲台下拿出一只透明的玻璃杯。

杯子倒扣下去的那一瞬间，火苗还在。它被罩在一个小小的空气圆顶里，先是直着烧，然后开始斜，往一边倒，又挣扎着直回来。我盯着看，火苗越来越矮，最后在水面上留下一缕白烟，灭了。就在这时，坐在老师斜对面的小声喊了出来：水在往上爬！

真的在爬。盆里的水正顺着杯口那道缝往杯子里进，杯底的水位一寸一寸涨，涨到比盆里的水面高出两指才停。我们七嘴八舌地猜。有人说水被火吸进去了，有人说杯子把水挤进去了，还有人说蜡烛把水喝掉了。老师把粉笔递给我，让我把大家说的写在黑板上，然后只问了一句：你们再看看，杯子里的东西，少没少？

我凑近看。杯壁上蒙着一层细雾，火灭之前杯顶的空气里飘着白烟。我忽然想到，火苗在杯子里烧的时候，是没有风的，它烧的是杯子里那一团空气。烧完了，空气没了，外面压着水，水就进来了。我把这个想法说出来，老师点点头，又补了半句：蜡烛燃烧吃掉了空气里的氧气，生成的东西溶进了水，杯里的压力变小，是外面的大气压把水压进去的。原来不是杯子吸的水，是外面整个世界压的水。

下课铃响了，我们组四个人没走，围着水盆又做了一遍。第二次我们换了只细长的杯子，水位爬得更高，几乎到杯子的三分之一。小宇说他回家要试大号的汤碗，我拦他：汤碗扣不灭蜡烛，只会把汤弄洒。他想了想说也对，那就用鱼缸。

那天放学回家的路上，我一直在看路边的火。烧落叶的、点香烛的、饭店后厨的炉子。以前我觉得火就是火，烧起来就烧起来了。现在我知道，每一团火底下都在悄悄吃空气，只是平时有风、有烟囱、有整个屋子替它补着，看不见。只有被一只杯子罩住的那几秒，它才把真相露出来：火要呼吸，空气要平衡，而水，一直在等着那个空出来的位置。

# The Candle That Sucked Water into the Cup

Our teacher stood half a candle in the middle of a shallow water basin and pressed it down once. The candle leaned. She pressed it again. The water in the basin barely covered its base, and a bright yellow flame flickered above the surface. Someone in class whispered: are we making candle hot pot? The teacher did not smile. She just reached under the desk and brought out a clear glass cup.

The instant the cup went down over the flame, the fire was still alive. It burned inside a small dome of air, first straight, then tilting to one side, then struggling back upright. I watched it shrink lower and lower until it left a thread of white smoke on the water and went out. Right then, Xiao Sheng, sitting diagonally across

from the teacher, shouted: the water is climbing!

It really was climbing. Water from the basin was creeping into the cup through the seam at its rim, rising inch by inch off the bottom, stopping only when it stood two fingers higher than the water outside. We all guessed at once. Someone said the fire sucked the water in. Someone said the cup pushed it in. Someone else said the candle drank it. The teacher handed me the chalk and asked me to write every guess on the blackboard, then asked one question: look again. Did anything inside the cup get less?

I leaned close. The cup walls were fogged with fine mist, and before the flame died, white smoke had drifted in the air at the top. It hit me then: while the flame burned inside the cup, there was no wind. It was burning the one pocket of air trapped in there. When that ran out, the air was gone, and the world outside pressed on the water, so the water moved in. I said it out loud. The teacher nodded and added half a sentence: the candle consumed the oxygen in the cup, what it produced dissolved into the water, the pressure inside dropped, and it was the air pressure outside that pushed the water in. So the cup did not suck the water up. The whole world outside pushed it.

The bell rang and the four of us stayed, running the basin experiment again. The second time we used a tall narrow cup, and the water climbed almost a third of the way up. Xiao Yu said he would try it at home with a big soup bowl. I stopped him: a soup bowl will not put out a candle, it will only ruin the soup. He thought about it and agreed. Then he said he would use the fish tank.

On the walk home I kept watching every fire on the street. Leaves burning in a gutter, incense candles at a doorway, the stove behind a restaurant. Before that day, fire was just fire, and it burned, and that was that. Now I know that under every flame, air is being eaten quietly away. Usually there is wind, a chimney, a whole house making it up for the fire, so you cannot see it. Only for the few seconds when a cup traps it does the truth show: fire needs to breathe, air needs its balance, and the water has been waiting all along for the space that opens up.

# 淀粉遇到了碘酒

碘酒碰到马铃薯的那一秒，那块黄色的肉上直接开出一朵蓝黑色的花。我举着滴管愣住，第一反应不是高兴，是心疼——那是晚饭要用的一个马铃薯。我妈在厨房门口喊：你拿土豆玩什么？我说我在做实验，她说明天你爸切土豆的时候你就知道了。

实验是从馒头开始的。晚饭前我掰了一小块白馒头，把药店买的碘酒滴上去，一滴，浅黄；

两滴，馒头表面慢慢洇出一块蓝紫色，像有人隔着布在馒头后面打了一拳。我立刻在本子上记：馒头，遇碘酒，变蓝。然后我滴向第二样东西，白菜叶。蓝颜色没有来。碘酒干了以后只留了一点淡黄，白菜还是白菜。我又滴了自来水，什么变化也没有。

变蓝的会是谁呢？我列了张单子：馒头、马铃薯、面条、藕粉、白糖、盐。前四样都变，后两样都不变。我把单子拿给我妈看，她正在削土豆，瞟了一眼说：变蓝的这四样，你想想它们是什么做的。馒头是面粉，面条是面粉，藕粉是藕里的粉，马铃薯也是粉。我盯着单子，忽然明白了：碘酒在找同一样东西，粉。

晚上我翻科学书，才看到那个词叫淀粉。书上说，碘钻进淀粉分子的圈里，抱在一起，颜色就变了。我不太确定自己懂没懂，第二天一早又做了一次。这次我用奶奶冲藕粉的藕粉，调一小碗，滴一滴碘酒，蓝黑色来得比马铃薯还快，整碗藕粉水像泼了墨。我拿筷子搅，颜色不消失；我往碗里兑清水，颜色变浅，但还在。我把碗举到窗户前，蓝黑色透着光，像一小片傍晚的天。

奶奶在旁边看着，说她小时候肚子疼，大人拿碘酒抹肚子，抹完皮肤上也发青，是不是同一个道理。我答不上来，因为皮肤里有没有淀粉我不知道。这个问题我记在本子上，留着一个问号。它跟前面那些已经找到答案的问题不一样，它是我自己撞上的新问题。

那顿晚饭，马铃薯被切成了块，被碘酒染过的那一面削掉了，剩下的还是照炒不误。我爸说这块土豆颜色有点怪，我妈说，做实验的孩子家的土豆，能一样吗。我嚼着马铃薯，忽然想到一件事：我刚才吃下去的，正是碘酒满世界要找的那种东西。原来我的早餐、午饭和晚饭，全是它的猎物。那天起我学会了一个习惯：看见一样东西，先问它是由什么做的。这个问题比实验本身有用，因为它没有做完的那一天。

# When Starch Met Iodine

The second the iodine touched the potato, a blue-black flower bloomed right on the yellow flesh. I stood there holding the dropper, and my first feeling was not joy but regret. That potato was for dinner. My mother called from the kitchen door: what are you doing with the potato? I said I was running an experiment. She said your father will have something to say about it when he cuts tomorrow's potato.

The experiment started with a steamed bun. Before dinner I broke off a small piece of white bun and dropped on the iodine I had bought at the pharmacy. One drop: pale yellow. Two drops: a blue-purple bruise slowly spread across the surface, as if someone had punched the bun from behind a cloth. I wrote at once in my notebook: bun, iodine, turns blue. Then I moved to the second item, a cabbage leaf. No blue came. When the iodine dried it left only a faint yellow. The cabbage stayed cabbage. I dropped some on tap water. Nothing.

So what was the blue chasing? I made a list: bun, potato, noodles, lotus-root starch, sugar, salt. The first four turned blue. The last two did not. I carried the

list to my mother, who was peeling potatoes and barely glanced at it. She said: look at those four that changed. What are they made of? The bun is flour. The noodles are flour. Lotus-root starch comes from the lotus root. The potato is starch too. I stared at the list and understood: the iodine was hunting one single thing. Powder. Starch.

That night I opened the science book and finally saw the word: starch. The book said iodine slips inside the rings of starch molecules, they hold each other, and the color changes. I was not sure I truly understood, so the next morning I ran it again. This time I used the lotus-root starch my grandmother mixes for breakfast. I stirred a small bowl, added one drop of iodine, and the blue-black came faster than on the potato. The whole bowl looked like spilled ink. I stirred with chopsticks; the color stayed. I added clear water; it faded, but it stayed. I held the bowl up to the window, and the blue-black glowed in the light like a small piece of evening sky.

My grandmother watched and said that when she had a stomachache as a girl, the grown-ups rubbed iodine on her belly, and the skin turned bluish too. Was that the same thing? I could not answer. I did not know whether skin holds starch. I wrote the question in my notebook with a question mark on it. It was different from the questions I had already answered. It was a new one I had bumped into on my own.

At dinner that night the potato was cut into chunks, the iodine-stained face peeled off, and the rest went into the wok as usual. My father said this potato looked a little strange. My mother said: what do you expect from the potato of a kid who does experiments? I chewed, and it struck me: what I was swallowing was exactly the thing the iodine had been hunting all over the kitchen. My breakfast, my lunch, my dinner, all of it was the prey. Since that day I have kept one habit. When I see a thing, I first ask what it is made of. That question is more useful than the experiment, because it never has a last day.

# 隔着课本，针还是动了

活动课刚开始，科学老师只在讲台上放了两样东西：一本厚课本，一块黑色条形磁铁。他说今天不讲课，让我们自己把回形针牵着走。我们组以为他在开玩笑。回形针躺在合上的课本封面正中央，磁铁在课本底下贴着桌面挪，回形针真的动了，压着纸面，一格一格跟着磁铁走，像有一只看不见的手在书底下牵着它。

小宇抢过去试第二遍。他把磁铁挪得太快，回形针跟不上，原地抖了一下就不动了。他放慢速度再试，回形针又稳稳地走起来。我们组围着那本课本，从这头走到那头，回形针在封面上画出一条歪歪扭扭的线。我忽然意识到一件事：课本一直压在上面，它没有让磁力停下来，可磁铁

也没有碰到回形针。它们中间隔着三十页纸，照样互相找得到。

问题是从这里开始的。我猜磁铁能穿过所有东西。小宇不信，说他奶奶家冰箱上的磁铁隔着冰箱门都吸不住纸。我们决定一样一样试。第一样是硬纸板，回形针放上面，磁铁在下面走，回形针跟着，穿过去了。第二样是我的手掌。我把回形针放在掌心，磁铁贴着掌心底下移动，回形针在我手心里动，那种感觉非常怪，像有个东西在我的皮肤里面推我，可它明明在外面。第三样是小宇的铝尺。回形针搁在尺面上，磁铁在尺子底下贴着走，回形针纹丝不动。换塑料直尺，也不动。换课本，又动了。

我们把这个发现报给老师：纸能穿，手能穿，铝和塑料不能穿。老师没有直接说对错，只让我们再试一样东西——他把一块铁片放在磁铁和回形针中间。回形针不走了。老师把铁片拿开，回形针又跟着走。他说，磁力不是想穿谁就穿谁，它喜欢铁。铁片一挡，磁力就钻进铁片里出不来了，像水被一块海绵截住。纸、塑料、铝，磁力从它们中间穿过去，不理会它们；铁不一样，铁把磁力留下。

我后来一直记得手掌心里那一动。回形针在我皮肤里走动的时候，我盯着自己的手，第一次觉得看不见的东西也是真的。磁力没有颜色，没有声音，摸上去也摸不到，可它穿过我的手掌去够一枚回形针，而我的手掌拦不住它。那天放学我把条形磁铁和回形针装进书包。回家路上我在想，世界上大概有很多这样的东西，不发光，不出声，隔着东西也在起作用，只是大多数时候，没有一枚回形针替我们把它显出来。

# The Needle Moved Through the Book

When the activity class began, our science teacher put only two things on the desk: a thick textbook and a black bar magnet. He said there would be no lecture today. We were to walk a paper clip on our own. Our group thought he was joking. The paper clip lay in the middle of the closed textbook's cover. The magnet slid along the desk beneath the book, and the clip really moved, pressing on the paper, step by step following the magnet, as if an invisible hand were leading it from under the book.

Xiao Yu grabbed it for a second try. He moved the magnet too fast, and the clip could not keep up. It shivered in place and stopped. He slowed down, and the clip walked steadily again. Our group circled that textbook, walking the clip from one end of the cover to the other, leaving a crooked trail on the paper. It struck me then: the book had been on top the whole time, and it had not stopped the magnetism. The magnet never touched the clip either. Thirty pages lay between them, and they still found each other.

The question started there. I guessed the magnet could pass through everything. Xiao Yu disagreed, saying the magnet on his grandmother's refrigerator cannot hold paper through the door. We decided to test one thing at a time. First, a piece of

stiff cardboard: clip on top, magnet below, and the clip followed. It passed. Second, my palm. I set the clip in my open hand and moved the magnet against the underside of my palm. The clip moved inside my hand. The feeling was strange, like something pushing me from within my own skin, though it was clearly outside. Third, Xiao Yu's aluminum ruler. The clip sat on the ruler, the magnet slid beneath it, and the clip did not move at all. We swapped in a plastic ruler. Nothing. Back to the textbook, and it moved again.

We reported our finding to the teacher: paper passes, hands pass, aluminum and plastic do not. He did not say right or wrong. He only asked us to test one more thing. He placed a piece of iron between the magnet and the clip. The clip stopped. He removed the iron, and the clip walked again. He said magnetism does not simply choose to pass through things. It loves iron. When an iron plate stands in the way, the magnetism sinks into the iron and cannot get out, like water caught by a sponge. Paper, plastic, aluminum: magnetism passes through them without noticing. Iron is different. Iron keeps it.

I have always remembered that movement in my palm. As the clip walked inside my skin, I stared at my hand and understood for the first time that invisible things are real too. Magnetism has no color, makes no sound, cannot be touched, yet it crossed my palm to reach a paper clip, and my palm could not stop it. After school that day I put the bar magnet and the clip in my schoolbag. On the way home I thought: there must be many things like that in the world. They give off no light, no sound, and they work through everything between them. It is just that most of the time, no paper clip is there to show them to us.