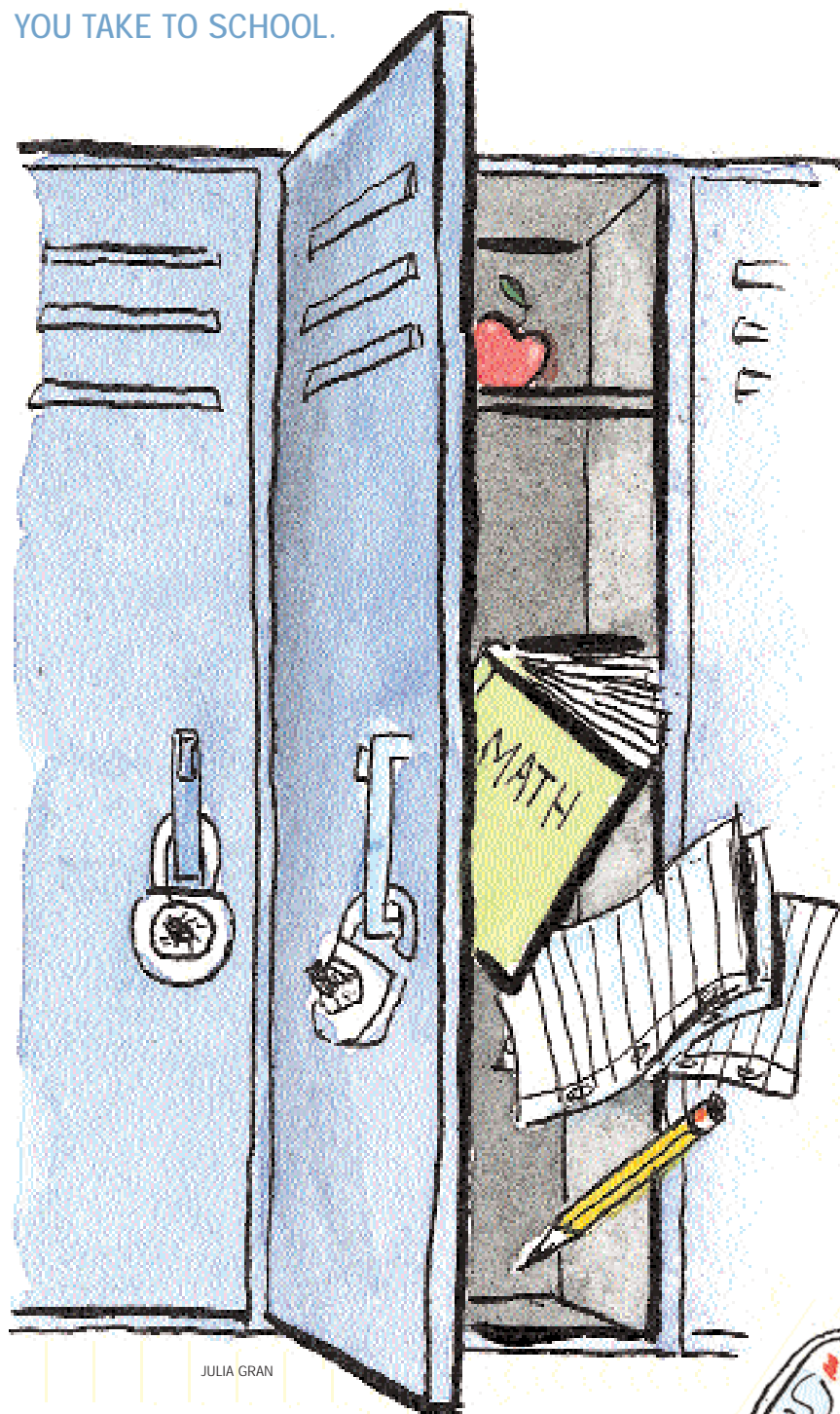


Hey kid – what's in your locker?

A CIVIL WAR HERO, 17TH-CENTURY LABORERS, AND A TV COWBOY HERO ALL HAVE SOMETHING TO DO WITH WHAT YOU TAKE TO SCHOOL.



WHERE WOULD YOU BE WITHOUT your three-ring binder? And what if you didn't have a calculator? Or a pencil? What if you had a pencil but (horrors!) no eraser? (In fact, erasers weren't invented until centuries after the pencil!) Think about all that for a moment, then read on and find out about the humble, accidental, odd, and true origins of the ordinary objects you use at school every day.

A way to keep your notes in order

Today there's a statue on Boston Common commemorating the inventor of the loose-leaf binder. But it wasn't erected to honor Henry T. Sisson's profound contribution to neatly ordered papers. No. Colonel Sisson of Providence, R.I., fought in the Civil War on the Union side. His exploits included fighting at the Battle of Bull Run and narrowly escaping capture in Fort Washington, N.C.

But before the war, in 1854, at the age of 23, Sisson patented the first "loose-leaf binder."

Early binders were heavy-duty, expensive, and black in color. The novelty of the idea was that you could compile papers in any order you wanted, and insert papers at a whim. The binder was made of stiff pressboard (heavy cardboard) with a glued-on paper cover.

Fast-forward to the 1960s, when binders became mainstream. The stiff pressboard began to be covered with light-blue or light-green canvas. Vinyl replaced canvas in the 1970s. Today, binders range from simple and cheap to elaborate, expensive, and zippered. They come in all colors, too – not just black. But if you check, you may find that the material stiffening your binder's plastic or cloth covers is still old-fashioned cardboard.

Sizing up notebook paper

Speaking of notebooks, did you ever wonder why notebook paper is such an odd size – 8-1/2 by 11 inches? Why not a foot? Why 8-1/2? The answer has to do with how far paper-makers could stretch their arms.

Before the days of machine-made paper, "vatmen" made paper by hand. They used a two-sheet paper mold, which the Dutch invented in

the 1600s. The average laborer could comfortably stretch his arms out 44 inches, so that's how wide the molds were made. Most molds were 17 inches tall (that is, measured from front to back). Why 17? History is silent on this.

The resulting large sheets (two sheets per mold) were cut in quarters to make eight pieces, each one 8-1/2 by 11 inches. Centuries later in the United States, when most paper was being made by machine, this paper size was retained to keep makers of handmade paper in business.

There are two twists to this paper tale. In 1921, the federal Bureau of the Budget, with President Hoover's approval, established 8 by 10-1/2 inches as the standard for government letterhead. That same year, a different federal agency set the standard at 8-1/2 by 11 – the same size the rest of the country was using.

The two government standards existed side by side until the early 1980s, when President Reagan declared 8-1/2 by 11 inches the official standard.

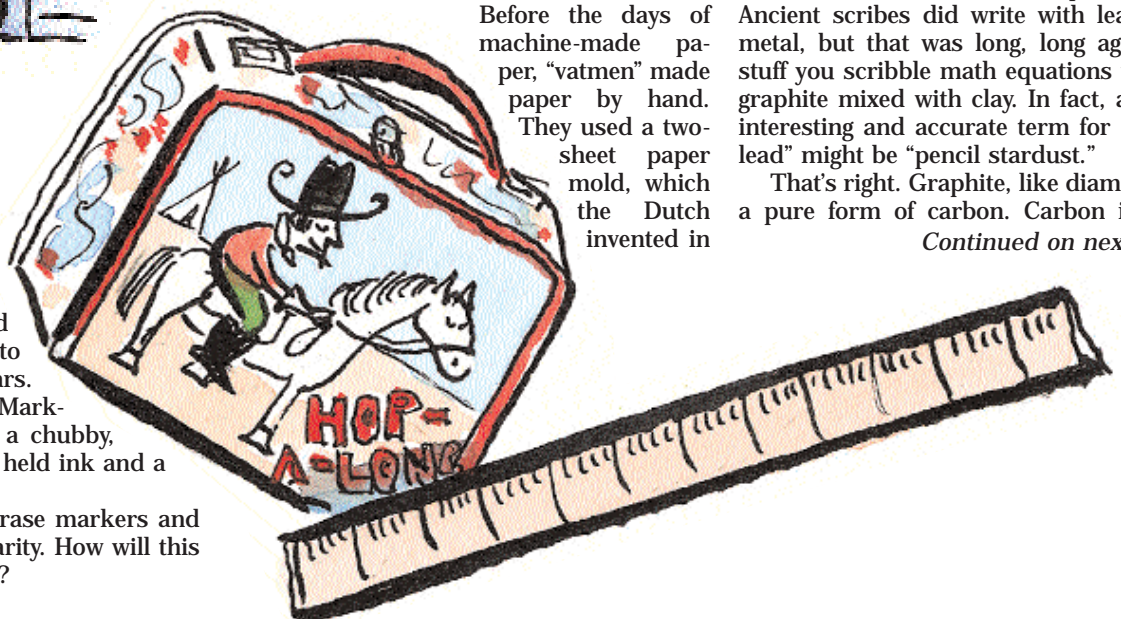
Twist No. 2: The US and Canada are the only industrial nations still using paper that's 8-1/2 by 11 inches. The rest of the world uses International Standard paper sizes based on the metric system. In Europe, a sheet of letterhead is 210 by 297 millimeters (about 8-1/2 by 11-3/4 in.). The differing paper sizes create extra costs for international businesses (think about office copiers, faxes, and loose-leaf binders). Do you think we'll ever switch?

Go sharpen your stardust

Let's get something straight: There is no "lead" (as in the metal) in pencil lead. Ancient scribes did write with lead, the metal, but that was long, long ago. The stuff you scribble math equations with is graphite mixed with clay. In fact, a more interesting and accurate term for "pencil lead" might be "pencil stardust."

That's right. Graphite, like diamond, is a pure form of carbon. Carbon is pro-

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The Hi-Liter's highlights

Like many inventions, the Hi-Liter's discovery was happenstance. In 1962, a French chemist was trying to develop inks to use in writing instruments for kids. He spilled some of the ink on a page of print by mistake and noticed that he could read the words through the ink. Voilà! Highlighting was born! The next year, the Avery Dennison corporation sold its first Hi-Liter to the masses. Now you could spotlight prose with ink that was ... pink. (The bright-yellow Hi-Liter didn't arrive until the 1970s.)

Also in the 1970s came permanent

markers and fine-line felt-tip pens. The modern markers owed their soft-tip design to some frumpy forebears.

In 1952, the Magic Marker made its debut as a chubby, squat glass bottle that held ink and a wool-felt wick.

In the 1990s, dry-erase markers and gel pens gained popularity. How will this decade make its mark?

Sara Steindorf

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duced by nuclear reactions in dying stars. When the stars collapsed and exploded, the carbon and other elements created were scattered. Carbon dust eventually found its way into the cloud that coalesced to form our solar system five billion years ago. (Just think: You're writing with something created in the blazing heart of an ancient star billions of years ago!)

The fad that became an industry

But what would a pencil be without an eraser? Pencils were around for centuries before a practical eraser was found.

People went crazy for a new waterproof gum from Brazil in the 1830s. The sticky stuff did a great job rubbing pencil marks off paper – hence its name, “rubber.” Perfect! Well, except that it became glue-like in summer and turned rock-hard in winter. Did we mention that it rotted easily?

The rubber fad was dying fast when American Charles Goodyear became fascinated with rubber's gooey possibilities. If only there was a way to keep its consistency consistent.

Goodyear tried and failed for years before he stumbled on a process later called vulcanization (after the Roman god of fire, not Mr. Spock's home planet). He was excitedly waving around a chunk of rubber he'd treated with sulfur when some of it flew onto a potbellied stove. The hot stove was the key: Raw rubber mixed with sulfur and subjected to heat resulted in the stable rubber product we know today.

Rubber bands came somewhat later. Stephen Perry invented the vulcanized rubber band to hold papers together. He patented it on March 17, 1845.

digit numbers, but it was very costly. Plus, only Pascal knew how to repair them.

A team at Texas Instruments (TI) invented the first electronic hand-held calculator three centuries later, in 1967. The 6-1/8 by 4-1/4 in. device was breathtakingly small. Just one year before, TI had released its “all-transistor” calculator. It weighed 55 pounds and cost \$2,500.

The secret to the hand-held calculator was the newly developed “integrated chip,” which packed digital components into a very small space. TI's pocket calculator (5-1/2 by 3 in., 12 ounces) appeared in 1972. Cost: \$120. Within a few years, similar machines sold for less than \$10.



From goatskins to tin boxes

How did students lug their lunches before the age of the lunchbox? In ancient times, a simple basket or goatskin might have done the trick. Later came metal lunch pails with lids (empty lard containers, mostly).

But in the 1800s, commercial baked goods hit stores. Now tin was “in.” Colorful cookie or cracker tins replaced lard-bucket lunchboxes. Around 1900, manufacturers wised up and sold metal boxes specifically for packing children's lunches. But they didn't become widely popular until movie and TV heroes started appearing on the boxes in the 1940s.

In 1950, a lunchbox featuring movie and TV cowboy hero Hopalong Cassidy wrangled a lot of sales. Lunch rooms were never the same. Lunchbox sales soared, and by 1985, 450 kinds of decorated metal lunchboxes were sold in stores.

But in the 1980s, the metal meal-holder was replaced with a plastic version, which was cheaper, lighter – and less harmful when used in playground brawls (yes, this had been a serious problem).

Now, squishy, insulated, fabric boxes and bags are the order of the day.

Adding it all up

French mathematician Blaise Pascal produced the first practical mechanical calculator in 1642. The device used gears to add or subtract eight-

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