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HOW LEAD PENCILS ARE MADE

By JAMES L. FORT



Machines for Grooving Cedar Slats



Stamping Machine in Gold and Silver Leaf



A Row of Moulding and Shaping Machines



Varnishing Machine



Making Pencil Leads

A lump of graphite from Ceylon, a small amount of clay from Austria, a few sticks of soft red cedar from Florida, properly worked together by special machinery and skilled labor produces the lead pencil of common use. Just why or when these "writing sticks" came to be called "lead" pencils is not on record, at least there is no lead in them. The principal ingredient is a mineral called graphite, said to be a formation similar to anthracite coal, containing a large percentage of carbon in which is mixed a little sand. Graphite found in Ceylon, almost pure carbon (98.5 per cent), is considered to be the very best obtainable for lead pencils. Good graphite also found in Germany and in various parts of the United States, but the cost of refining the home product is so great that pencil makers prefer to use the imported material instead.

The soft red cedar of the South has been found to be the very best wood in the world for making lead pencils. Much of this comes from Florida, where the sawmills cut the cedar logs into uniform slats a little longer than a pencil, as wide as six and just a trifle more than half as thick as one. The slight margin provides for the waste in making. Upon reaching the pencil factory the bundles of slats are broken upon and very carefully sorted for imperfections. Those that are split or contain knots, or that show other faults which would prevent them from making good pencils, are discarded from the pencil stock and are used for penholders, which do not require frequent sharpening.

The good pencil stock is next taken to big drying kilns where it remains till all the moisture and the oil, which abounds in red cedar, is extracted. The process of manufacture now begins with planing and grooving the slats on one side for the reception of the leads. In a big pencil factory there are a number of these planing machines into which the cedar slats are fed automatically, and from which they come in a steady stream all nicely surfaced with six little grooves on one side. From these machines the slats are taken to the long benches or tables, where quick-fingered girls insert the leads and glue the slats together. In the middle of these long benches runs a belt covered with glue, on which one set of slats receive the glue. With a little stack of unglued slats before her and a bunch of pencil "leads" in her right hand, one girl with a quick motion, fills the six grooves in a slat and passes it on to the next girl, who takes a glue slat off the belt and fits it on top of the piece in which the "leads" have been placed. These are piled in presses and clamped tightly together till the glue becomes dry or "set."

The next process is called "moulding" or "shaping" and is performed by a machine that first cuts the slat on one side so that it looks like six pencils, either round or hexagon, in a row. The slat

passes to another machine which cuts or shapes the other side and separates the pencils. The separated pencils are now fed into the hoppers of sand-papering machines and pass rapidly through and into a big box, when they are ready for the varnish. Placed in another hopper they are fed into a machine that puts on a coat of varnish of the desired color and then dries it. This process is repeated from six to seven times before the pencil has been sufficiently covered with varnish and a fine glossy coat is obtained.

For the more expensive pencils there is a hand-finishing process which gives them a higher polish. After going through the regular varnishing process the pencils are placed on a racklike bench, side by side, in a row about three feet long. This rack is as wide as a pencil is long and slightly raised on each side to prevent the pencils from sliding off when being rubbed. A narrow belt runs under each end of the row of pencils and keeps them constantly turning. The workman, with his bottles of varnish and his brushes, in front of him, picks up a cloth pad, which he dips in oil and rubs rapidly over the row of pencils until they shine like satin. When rubbed sufficiently they are put away on racks to dry. Other grades of pencils are finished by machines, which remove the rough spots and prepare them for a final coat of varnish.

No one seems to know just when the "lead" pencil first came into use. The ancient Greeks and Romans used a "stylus" — a hard wood or metal point — with which they wrote on wax tablets. When lead (the metal) was discovered strips of this were used, but it was too hard for practical purposes. The first mine of graphite was discovered in England about the time of Queen Elizabeth. The product was so pure that it could be cut into convenient chunks and used for writing purposes. Then someone hit upon the idea of cutting it into strips and encasing them in wood. But the supply of pure graphite soon became exhausted and then the beginning of the present processes were developed. Credit is given to M. Conté, of France, for discovering the method of hardening the graphite by the admixture of clay.

The name most closely associated with pencil making is that of Faber, of Germany, and it is not unusual to hear lead pencils spoken of as "Faber's." To Elshard Faber, now deceased, one of the family of German Fabers, belongs the distinction of introducing the manufacture of lead pencils in America, about 1859.

In the years that have since elapsed the use of the lead pencil has been greatly developed and the product improved until today the pencil has displaced the pen for many purposes. In the schools, the lead pencil has almost completely displaced the old slate pencil and the invention of the "indestructible" pencil has supplanted the pen; it being considered of legal use in signing receipts. Where the writing is exposed to the action of the sun and rain "waterproof" and "weatherproof" pencils give better results than pen and ink. For manifold and copying purposes the "copying ink" pencil is far superior to pen and ink and is being generally adopted by railroad companies and large mercantile houses in whose business many thousands of bills and orders are required.

Artists require pencils of varying degrees of hardness and the lead pencil maker supplies them in many grades. There are big, clumsy flat pencils for carpenters, and dainty, delicate little pencils with silk cords and tassels for dance programmes; there are pencils with colored leads of every hue for school purposes, and pencils that will mark on glass, porcelain or any highly polished metal surface.

faces. An "election" pencil is made with purple cupping lead, a nickel tip and ring, with long cord and screw eye to fasten it to the voting booth, so that it cannot be carried away. Probably the most curious of all uses to which the lead pencil is put is that of marking on human flesh. Doctors use these pencils to mark the course of disease and to direct them in performing surgical operations, or in dissecting. In styles and variations there is almost no limit, and the coloring and grading of the lead has been reduced to an almost exact science. Instead of the ordinary lead pencil, present improvements promise to produce an ever-ready "writing ink stick," which will ultimately relieve us of the annoyance of "dipping" and "blotting."

Not the Same Place

"I see you've got your soda fountain running for the season?" he queried as he entered the drug store and his eyes caught the well-known fizz.
"Yes."
"Looks to me as if it was going to be a good year for soda water."
"Yes."
"They say that when it's a good year for soda water it's a good year for bush wheat."
"Is that so?"
"And when it's a good year for bush wheat it's a bad year for taters. So the old fountain is fizzing again?"
"Yes."
"Does my face look familiar to you?"
"I can't say it does."
"I was here on my day last August."
"You must have been."
"It was a mighty hot day, I had walked seven miles, and I was spitting cotton I laid down a nickel and you drew me a drink. Say, I have remembered that drink from that day to this. In five minutes I was laughing; in ten I was whooping. I want another like it."
"You must be mistaken about the place," said the druggist. "I don't keep any whooping drinks here."
"Mistaken? I don't think it's possible. Let me go out and look around a bit, however."
"He went out and was absent about ten minutes. When he returned he whistled to the druggist.
"You are right. I was mistaken. The place where I got that laughing, whooping drink was at the saloon down on the corner!"
JOE KERR.

HOW THE TERM AROSE

Paris—What does it mean by coal-water? Father—Steam heating, say it!

Double Effect of X-Rays

Careful investigation of a long series of experiments with the X-rays on animals has now proven that the rays have a double effect, or, to speak more accurately, they can be made to produce either of two influences on the cells of animal tissue by being used in two distinct ways. The first effect is destructive and the second is stimulating.

This is done and the exposures cautiously limited, both as to length and frequency, a strong stimulation of growth in the flesh cells has been observed. Also their strength and activity has been much increased.

There is really nothing remarkable in this fact and one would think that the early experimenters with the X-rays might have supposed that unlimited exposure to X-rays would injure flesh. The present theory sets forth that large doses of X-rays set up a degeneration of the cells in flesh, and this becomes progressive—

that is, the first cells are enabled to continue the process and break down those next to those originally injected. Thus a continuous process of cell decay sets in and this has been called X-ray cancer.

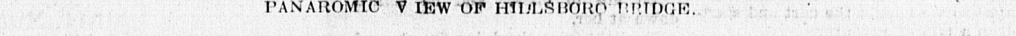
In the Island of Prince Edward, and the tourist does not grumble though his public automobile is denied the use of highways. Where it's apt to frighten horses. Apt. to kill some of our people who as well as any other like the privilege of living.

That the system might be better. "Teach a lot more agriculture. Never mind the Greek and Latin." So the members from the country tell us in the Legislature. But the culture to develop is the mental, manly culture. That till now has kept the Island to the front in education.

The Morning Paper gives not only the housewife but every member of the family an opportunity to read it. The Morning Paper is read at the breakfast table, again at home at noon, on the trains, in the restaurants. It is read in doctor's offices, professional offices, clubs, hotels, cafes, barber shops. It is read by daylight everywhere you go by both employer and employee.

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