

## PENCILS ARE TRACED TO THE EARLY AGES OF WRITING ART, TECHNICAL SKILL REQUIRED

Even in these days of alluringly advertised automatic pencils there are conservatives who use the old fashioned kinds to the number of several billions a year. They are doled out more or less freely at the office, and can be bought at innumerable stores, some for as little as one cent apiece. Pencils are taken for granted, and we rarely stop to think writes C. E. Water, in "Commercial Standards Monthly, how much technical skill goes into their making, or by how many steps the finished article is removed from the raw materials. As for standardizing pencils—well, we usually prefer a No. 2, and like a certain brand best, but will take any other kind if we must, though it may be as hard as No. 3 of the first hand.

Nobody knows who first discovered that a certain black, flaky mineral would make marks almost the same in appearance as those made by a piece of metallic lead, but when the discovery was made, the name that obviously fitted the mineral was "black lead. Latter it was called graphite, a name derived from the Greek Grapho to write and tie, the usual terminal syllable in mineral names.

No doubt the first lead, or graphite pencils were simply chunks of a convenient size, and were good enough in the days when memoranda were jotted down on the nearest flat rock. Not until the sixteenth century, when a deposit of unusually good graphite was found at Barrowdale in England, was there any advance in the quality of lead pencils. This graphite was sawed into thin strips or rods which were sold without any further treatment. This was a very wasteful process because graphite so easily flakes and crumbles. The grittiness of the pencils can be imagined. A step in advance was to inclose the graphite in wood. This permitted the use of thinner strips of graphite and made it possible to make reasonably fine lines when writing.

The idea upon which the pencil industry is based did not occur to anybody until 1795 and then, simultaneously two inventors, one in France and the other in Austria, began to make pencils of the modern kind. Clay was found to be an ideal binder, not only because it holds the particle of graphite together, but because its plasticity makes it possible to shape the leads by extrusion through a die. The first step in the manufacture of a lead pencil is the selection of the raw materials. There are different types of graphite and a number

of grades of each type. These are not equally suitable for making pencils in the manufacture of pencils two or more grades are usually blended. The graphite as it comes from the mines is contaminated with gritty particles which must be carefully removed, by stirring the powdered mixture with water, allowing the heavier particles to settle, and drawing off the suspension of graphite. This treatment can not remove the finest particles of grit, because they will settle no faster than a large part of the graphite.

In general, the hardness of a pencil lead depends upon the percentage of clay it contains, but this does not mean that all pencil manufacturers use the same formula for a given grade of hardness.

Whatever the composition the mixture is thoroughly ground with water, in a ball mill or otherwise, until the particles are exceedingly fine and the mass is perfectly homogeneous. Most of the water is removed by filtration and the remaining stiff doughy mass is extruded through dies in a hydraulic press.

### A Long String

The extruded mass emerges in a long string and is cut into three-pencil lengths, straightened and laid on boards to dry. When dry, leads are cut into pencil lengths and packed in the graphite crucibles or boxes in which they are baked.

By far the best wood is the common red cedar of the Eastern United States, and the world of a closely related Mexican tree. The wood has straight, fine and even grain, and is just brittle enough to break away easily when the pencil is sharpened. A more suitable wood could hardly be imagined, and no wholly satisfactory substitute for it has ever been found.

As cedar is becoming scarce, wood from more or less closely related trees, as well as from some species of broad-leaved or "hardwood trees, is also used in large quantities. Among the best of these other woods is a kind of cedar from East Africa. It strains the credulity to read about the vast amount of wood that is used in this country for making pencils. The statistics include also the quantity of lower-grade wood made into penholders. According to the Forest Service in 1928 the manufacturers used 39,982,000 feet, board measure of wood of different kinds, of which 8.7 per cent was red cedar, including the Mexican species.

## NEW YORK'S AIR IS NONE TOO GOOD BUT IT IS NOT FATAL

(New York Sun)

It is a comforting thing to know as winter and its fogs draw on that New York never has had, and probably never will have, the horrible experience of the Meuse Valley district in Belgium last January, when a lethal fog stole through the countryside and fatally poisoned literally hundreds of persons.

New York's air is bad; any one who has been reading month after month the air pollution report, as printed in the Sun, of the Meteorological Observatory in Central Park knows that. Even in the open spaces of the park smoke with its poisonous content of sulphuric and other acids is comparatively heavy at some periods of the day.

And according to the report of a commission of inquiry which has just finished its work in Belgium, the Meuse "death fog" was nothing more than poisonous smoke combined with an unusual atmospheric condition. That condition is approximately here sometimes, but the smoke is not the same.

There are many factories and industrial works in the Meuse Valley, chemical and steel works, and the clouds of smoke they pour out contain vaporized chemicals that do not occur in any appreciable quantity around New York.

The commission gave its opinion that the deaths last winter were largely due to an extremely high amount of sulphuric acid. Even so, this probably would not have caused deaths had it not been for the fact that the fog hung on for days, at a time when there was no wind stirring at all, and was so thick that the earth could not be warmed by the sun during the day. Inverse radiation thereupon took place at night.

The most important factor, doubtless, was the heavy chemical content of the air—the smoke pollution from which all industrial centers and all large cities suffer so heavily. New York, fortunately, is taking steps to control the air pollution here and the Smoke Abatement Commission has done a good deal to that end. The city's air certainly has been a great deal cleaner so far this year than during the first ten months of last year—56 per cent cleaner, in fact, according

to the report of David R. Morris, the meteorologist in Central Park Observatory.

Mr. Morris attributes that to two things—the smoke prevention campaign and the depression, which has cut down factory output and consequently the amount of smoke factories pour out.

Even with what smoke there is in New York air sulphuric acid in an extremely mild and diluted form is produced every time there is a rain or a fog. Coal contains from 2 to 5 per cent. of sulphur, and this vaporizes when the coal is burned and forms acid in wet weather. Pittsburgh and London, both of them really smoky cities, are much more troubled by sulphuric acid deterioration than New York. Many of the great buildings of London are slowly crumbling away under the biting effect of the acid that attacks the stone year in and year out.

The effects have been noticeable here for some time, and a few years ago it was observed that the fine marbles in the gardens of The Cloisters were being beaten by acids in the air. They were coated with an acid-resistant preparation which has lessened, if not stopped, the effects of the air.

The Botanical Gardens in the Bronx are another institution that has felt the effect of the sloy but constant precipitation of sulphuric acid. For the same reason that vegetation is stunted in the neighborhood of chemical mills and great industrial factories, plants in the gardens here have suffered—although to a lesser extent, of course. The acid enters the soil in rains and eventually make it sterile. Some years ago the smoke condition was so bad in New York that directors of the Botanical Gardens began to fear the gardens were doomed.

Just what chemicals are contained in the polluted air of cities like New York has not been determined by observers here, but the United States Public Health Service is planning to begin a survey in twenty large cities shortly, and New York will be one of them. Air will be analyzed frequently, perhaps daily, during a year's period and at the end of that time an interesting report showing definitely what is happening in the great laboratory of the atmosphere may be expected.

## WHERE OPEN AIR BATHING IS POPULAR AT 40 BELOW

(Detroit News)

Driving along a highway out of Fort William, Ont., one comes on a Turkish bath house in a farm yard.

"Finlanders," said Miss Mary J. L. Black, librarian of Fort William and former president of the American Library Association in Canada. "Every Finnish farmer has his Turkish bath house, and those in town who have a yard have theirs also."

Crude as it is, being but a pile of large stones in an enclosure, with a place underneath the stones for building a fire, it is effective. When the Finn is ready for his Turkish bath he builds a fire under the stones. When the stones are piping hot he pours cold water over them. His Turkish bath is ready. If it is summer time he finishes the bath with dashes of cold water and a good rub. It happens to be winter he rolls in the snow. After that he doesn't care if the temperature runs down to 40 below zero, as it sometimes does in the Lake Superior country.

Miss Black, who is one of the leaders in library work on both sides of the border, has 29 nationalities clamoring at her door for something to read. And for a closer bond between the library and the foreign colonies, which comprise about one-third of the

other small birds flee in terror; the snow hunting, the wee brown creeper, the nuthatch and the kinglet.

Though the summer birds are gone, and their songs lost until another year, these and others are friends of the air to be seen and heard and, some in one dread instances admired, until spring brings the warm weather transients back again.

27,000 population of Fort William, she takes in girls for training and emergency work from among these groups.

"Last summer when I asked the board for four collegiates and specified that they must be girls from the former president of the American Library Association in Canada. "Every Finnish farmer has his Turkish bath house, and those in town who have a yard have theirs also."

"One day the little Finn girl overheard some people remarking about the foreign women who got about barefooted, with a shawl over their heads. It would have been very easy for the girl to have said she knew no such people. Instead, she told them, very sweetly: "If my mother had not gone about barefooted, with a shawl over her head, I would not have been a collegiate."

Fort William has a modern library building, erected in 1912, with a book circulation of 185,000. Students from the 50 night schools in operation cluster about the reading rooms seeking aids to their work.

"The library is indispensable to these people," said Miss Black.

There are many lessons drawn for the children from this historic and picturesque town. Being a great shipping port, a lesson on transportation, touching upon the cargoes carried by the great freighters in and out of the twin ports, Fort William and Port Arthur, the art teacher asked the class to describe the cargo of a ship going east and returning.

"They found it simple enough to fill the cargo hold with grain when the ship was loading at our great elevators," said Miss Black. "But one little fellow was at a loss to tell his

ship on her voyage from the East. Finally he wrote, 'Whiskey and Eaton catalogs.'

He referred, it may be explained, to a Toronto department store.

### LINES TO A LOST ART

I may not be healthy or wealthy or wise,

I may not have dreamy, mysterious eyes;

I may not wear clothes from a French fashion book,

But I'm never lonely—for boy I can cook!

I may not be clever my wise cracks are rare,

But so are my pies—so I really don't care . . .

My repartee's seldom the sort that will gleam,

But what I can do with three eggs and some cream!

My contract is faulty, my dancing is grim,

But I never lack for a favorite him—The waffles I make fairly tickle the tongue.

And in praise of my devils food poets have sung.

—CHICAGO NEWS.

No one need relinquish hopes of fame if he can only keep on living long enough. Every day we read in the papers of someone of whose existence we never heard until he became 100 years old.

Jess Willard claims to have won 726 lawsuits. Looks as though he's getting more favorable decisions in court than he got in the boxing ring.

# Come To — A Printing Office For Your PRINTING Requirements

## LETTER HEADS

ENVELOPES

CIRCULARS

PROGRAMMES

CARDS

WEDDING INVITATIONS

BILL HEADS

LEGAL FORMS

HONEY LABELS

REPORTS

AUCTION SALE HANGARS

BOOKS

CATALOGUES

DODGERS

STATEMENTS

FINANCIAL STATEMENTS

MENUS

RECEIPT BOOKS

BUTTER WRAPPERS

POSTERS

VISITING CARDS

## ALL KINDS OF

CIRCULARS AND PAMPHLETS

Printed to Order

PRINTING IS OUR BUSINESS

NOT A SIDE LINE

The Entire Printing Department of THE  
MAIL is at Your Service in Your Printing  
Needs.

# Mail Printery

Phone 67

627-29 Queen Street

FREDERICTON, N. B.

Printing That Combines Price With  
Satisfaction

## EVEN THE SAVAGE HAWKS HAVE MIGRATED TO THE WINTER RESORTS OF THE SOUTH

(New York Sun)

In the leafy suburbs around Manhattan, where the enmeshed city dweller finds space, and blue, open sky and broad, unpaved fields, the summer birds are now all gone. Even the migrating hawks are gone. Weeks ago they thrust fiercely southward through the October haze. And long before they ever thought of leaving vanished the brisk robin, the softly plaintive mourning dove, the cheerful phoebe and countless other hardy birds.

For any who cares to try the woods and the fields in colder weather there remain throughout the winter, enough robust, snow-loving birds to guarantee that no expedition will be without its fill of feather companions.

That engaging rascal, the blue jay may be seen wherever there is food to be stolen. Seldom far behind will be the flickers, their hard sharp bills boring into the earth past the brown crescents upon their light breasts. And all about will be others of the woodpecker family, the hairy woodpecker, and his little cousin, the downy.

The English sparrow, of course, no one could miss even if he wished. And less obvious, will be the purple finch, whom you will never find if you look for a truly purple colored bird; the goldfinch with his bright, hard colors,

the nuthatch, the chickadee and the cedar waxwing.

And more. While the migration to the south is underway there is a compensating immigration from the north. And within no very great many miles from New York, the hiker, even the observant motorist, may see, and if he is lucky may see all in one winter, a colorful array of birds come down from colder latitudes to winter in this region's comparative warmth just as the robin, the mourning dove and the phoebe winter further south.

"Occasionally, in heavily brushed areas, one may spy the mild and harmless saw-whet owl; while any time at all there will be more pert juncos than you can shake a stick at. The three sparrows will be no less numerous. There may also be one or two white-throated sparrows, and, after November, plenty of red polls. More brilliant of hue and not very frequently seen, will be the American crossbill and the white winged crossbill, those two crimson breasted fellows with the drab little wives. More often seen, and most beautiful of the three, will be the male pine grosbeak whose lovely red breast is a sight to stay with a man through weeks in the city. He, too has a drab wife never far away from him. And besides these there are the cruel northern shrike, the butcher bird, a gray fellow from whom mice and