

NATURE IS NOW STAGING HER ANNUAL FALL COLOR SHOW, WORTHY OF ADMIRATION

(Philadelphia Bulletin)

Nature is in her Hallowe'en garb! No rain, no black sky, no pre-occupation due to depression of present strife can prevent us stopping to admire her. Her autumn show is free to all, accessible to everyone who cares to see beauty which surpasses man's most glorious achievements in art. And as if her beauty alone were not already enough to attract, an air of mystery surrounds her and she holds out, to the alert and the observing, endless problems to solve.

Why do the leaves die, discolor, wither and then fall, even if not swept off by the storms? The leaves have worked hard all summer, building up carbon-compounds with the help of the sun. If leaves continued to live, they would be a source of weakness, if not death, to the tree itself. They would be using and losing water which becomes less and less available as winter progresses. Even if they did obtain sufficient water it would be apt to freeze and the leaves, thus destroyed, would be as vulnerable points of attack on the trees where limbs are torn off. Although the evergreens preserve their needles in their natural state, tree experts tell us that the lack of watering, even during the winter, so long as there is no frost, is responsible for the majority of losses in evergreens around so many of our homes.

The Green Leaf

The green leaf has two coloring matters, pigments, namely chlorophylls A and B. They assist in the splitting up of the carbonic acid gas taken in by the leaves, so that the oxygen is largely freed and the carbon is retained to build up formaldehyde, sugar and the like, under the influence of the red-orange-yellow rays of sunlight. These pigments have an interesting chemical kinship with the oxygen-capturing red pigment (haemoglobin) of our blood. But in addition to the chlorophylls there are two chlorophyll-yellows, belonging to the fatty series of pigments, called lipochromes—from the Greek word "lipo" for fat. These also occur in the bright coloring matter of carrots, in shrimps and prawns. When the leaf dies these chlorophylls and lipochromes disintegrate and thus contribute to the coloration. The simple golden yellows, such as in ash-trees and willows originate this way.

Across the base of the leaf stalk is a special separating layer of cells differing from their neighbors in showing a greater swelling, denser protoplasm, more abundant starch, thinner walls and slight woodiness. When the leaf dies, the walls in this layer become musilaginous, moist and sticky; the cells disintegrate along the plane of separation and the wind has an easy task in effecting severance. But when this happens, or even before it, a layer of cork closes up the wound and makes a healing scar.

Science holds that the results of the breaking down of the leaf structure pass by the leaf stem into the branch. The leaves surrender to the tree all they can, even in death. The falling leaves therefore contain little but waste.

The more vivid coloring of the flaming crimson maples and the purple Prunus, of the brambles and sumacs and of the Virginia Creeper on our walls, are due to anthocyanin, called "flowering" The anthocyanins are the flower pigments, usually dissolved in the cell sap and are of the most diverse colors. Only recently it was discovered that all these variously colored pigments are chemically closely related to each other. They are present in the petals, as in the blue of the corn-flower and the orange of nasturtiums, give Mountain Ash or Rowan-tree berries their ruddy cheeks. Sometimes, as in oaks, their color effect is helped by an addition of tannin. Since the anthocyanins are a combination of grape-sugar (glucose) and tannin or something like it, they occur in profusion when there is a local accumulation of sugar and this, in turn, is due to a lowering of the temperature in Autumn.

Science is inquiring further. It feels that, in accordance with all other works of The Master Scientist, who performs many of the most useful works—but unrecognized as such by man—amidst scenes of majesty and splendour, there is more to this foliage gorgeousness of Autumn than beauty

alone. So it is building up theories of the anthocyanins acting as screens for the absorption of rays injurious to fermentation processes and the like, necessary in the shedding of old foliage and the preparation for winter. As it is the falling of the leaves helps to make the tree a well-protected quiescent organism in winter.

A happy combination of three factors, plenty of water, abundant sunshine and yet a low temperature, makes the dying of the leaves progress slowly. This gives time for a gradual disintegration of the greenish and yellowish pigments and the forming of an abundance of anthocyanins, Philadelphia must have had the three factors just right this year!

Spiders Webs

The gossamer threads which we have to brush constantly from our face when we hike through fields and

woods on a breezy autumn day originate, as might well be expected, from spiders. They are not, however, as many are likely to believe parts of cobwebs in the making or accidentally torn loose. A study of this problem reveals that the threads are spun by small spiders of several species which, if the morning is bright and breezy, ascend some high points, like tall weeds or posts, and with head in the wind, pay out their silken threads. The number of threads for each spider seems to differ.

As the threads become longer the wind floats them up horizontally until at a certain stage the spider vaults up, turns upside down and is carried adrift by them. These spiders are credited with adjusting the length of their threads in accordance with the strength of the wind, paying out more when the wind falls and shortening them when it becomes too strong.

By coiling up their threads, hundreds of these tiny "gliders" float down to earth and cover fields, hedges, lawns, etc., with their gossamer webbing. An interesting sidelight on this "parachuting" is Blackwall's observation that spiders, imprisoned on a plant in a flower pot, surrounded by

water, escaped by this method. They did not, however, pay out their threads unless there were appreciable air currents in the room, strong enough to float them. The story is the more interesting if it is remembered that a spider by instinct will normally climb only upward. The puzzling question is, according to Sir J. Arthur Thomson, Emeritus Professor of Natural History in the University of Aberdeen, why hundreds and thousands of these little spiders balloon on the same morning.

October

Roses are dead.

Violets are through;

Summer is gone—

And so are you.

—E. AUSTIN in New York Sun.

Fossil remain of a four-legged fish have been found in Greenland. It was hunted they say, on a horse, with a fleet of spaniels in full bay.

The first snow has fallen at Lake Placid. In time this should bring down any bobsledders still on the chutes and close the 1932 Olympics.

Vice costs money and poverty saves many.

RECALLING THE LETTER WROTE IN ANGER

(New York Sun)

"If you are real angry at some one and want to write him your feelings do so by all means—and then tear up the letter." This was the advice given by Abraham Lincoln when he was practicing law. This same good sense applies to the present, but should you write such a letter and mail it before you realize that it may cause only trouble, you can still get it back before delivery. In fact, any letter you regret mailing can be restored if you act promptly.

It is a post office rule that your letter belongs to you until it is actually delivered to the one to whom it is addressed. Therefore any time you want to get back a letter you have mailed address a second envelope similar to that of the first just mailed and take it to Room 224 at the Central Post Office, where the assistant

postmaster holds sway. Hand over your readdressed envelope and ask for Form 1509 and fill it in. This is a mere formality.

The post office will then promptly call up the substation of the district to which your letter has been sent and get in touch with the carrier who would deliver it. All you have to do is to wait until the post office advises you that the letter has been recalled and you can go to the office and claim it. In letters addressed to distant or remote points the telegraph and even the cable will be used to recall the letter, but the sender is required to pay the tolls for this.

"History," remarked the Man on the car, "is a long story about leaders and incidental references to followers."

Girls on parade who feel they have their pretty selves dressed in the latest fashion don't care if their minds are behind the procession.

Lima Beane says the great task of the Genoa conference is to keep birds of a feather from flocking together.

It's when candidates roam the land that hell piles up more paving material than it can handle.



GOVERNMENT OF THE DOMINION OF CANADA 4% LOAN—1932

The Minister of Finance offers for public subscription

\$80,000,000

Dominion of Canada 4% Bonds

Bearing interest from 15th October, 1932, and offered in two maturities, as follows:

\$25,000,000— 3 YEAR 4% BONDS, DUE 15th OCTOBER, 1935

\$55,000,000—20 YEAR 4% BONDS, DUE 15th OCTOBER, 1952

Subject to redemption at par and interest on or after 15th October, 1947

Principal payable without charge, in lawful money of Canada, at the office of the Minister of Finance and Receiver General of Canada at Ottawa or at the office of the Assistant Receiver General at Halifax, Saint John, Charlottetown, Montreal, Toronto, Winnipeg, Regina, Calgary and Victoria.

Interest payable half-yearly, 15th April and 15th October, in lawful money of Canada, without charge, at any branch in Canada of any Chartered Bank.

Denominations:

3 YEAR BONDS, \$1,000

20 YEAR BONDS, \$500 AND \$1,000

The proceeds of this Loan will be used to retire \$34,449,950 of bonds maturing 1st November, 1932, and to provide for the general purposes of the Government and the Canadian National Railways.

The Loan is authorized under Act of the Parliament of Canada, and both principal and interest are a charge on the Consolidated Revenue Fund of Canada.

The amount of this issue is \$80,000,000. The Minister of Finance, however, reserves the right to allot or reject the whole or any part of subscriptions received, provided such allotments do not increase the principal amount of the issue by more than \$25,000,000.

Applications will not be valid on forms other than those printed by the King's Printer.

ISSUE PRICE: 3 Year Bonds, 99.20 and interest, yielding to maturity 4.28%
20 Year Bonds, 93.45 and interest, yielding to maturity 4.50%

Payment to be made in full at time of application or in the case of the 3-year bonds, on allotment.

Subscription lists will open on 31st October, 1932, and will close on or before 16th November, 1932, with or without notice, at the discretion of the Minister of Finance. Subscriptions will be received by any branch in Canada of any chartered bank and by recognized dealers from whom official application forms may be obtained.

DEPARTMENT OF FINANCE,
Ottawa, 31st October, 1932