DAILY BREAD

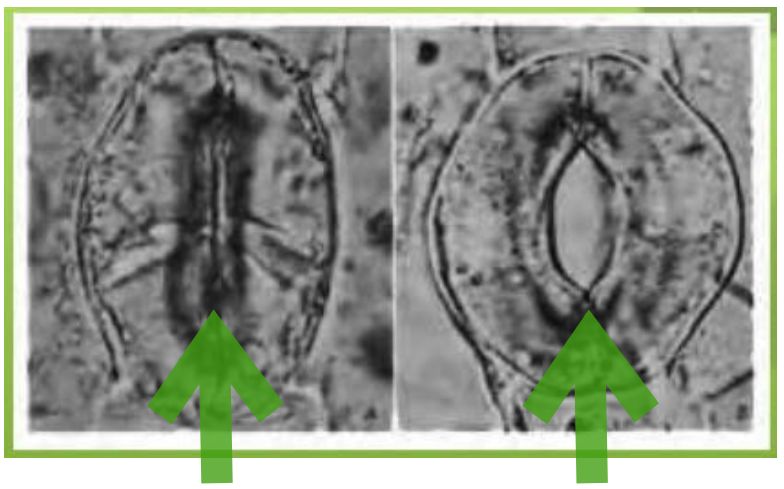
“Grain of Hope : Slice of Heaven”

B R E A T H

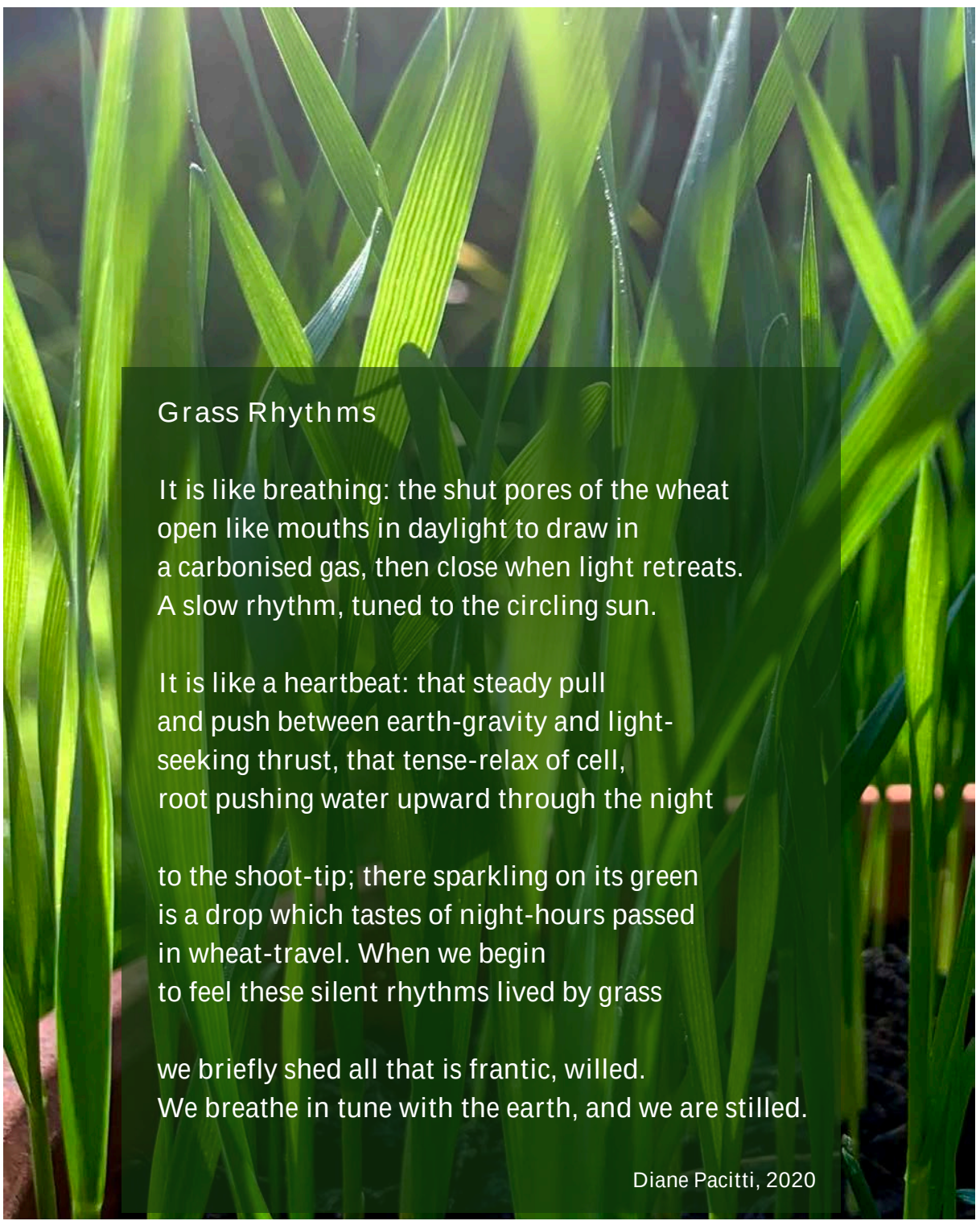
Day and night, plants are exchanging gases with the air around them through tiny pores called **stomata**. The leaves are breathing, following a diurnal rhythm dictated by sun, air currents, and water movement across cell membranes.

The stomata need to be open during the day to allow carbon dioxide in, but this inevitably means that water evaporates out. These breathing pores are usually located on the underside of the leaf to reduce exposure to sunlight and wind, and hence reduce dehydration.

Wheat is very unusual in that it has more stomata on the upper leaf surface than the lower. One explanation for this is that wheat has been domesticated for so long that this adaptive advantage has become irrelevant. Like the very heavy seeds lacking dispersal mechanisms (see ‘Scatter’ in this series), this is another example of how the plant has become dependent on its human partners who can be relied on to provide water.



Stomata (plural) are tiny holes on the leaf surface; their apertures are controlled by two guard cells.



Grass Rhythms

It is like breathing: the shut pores of the wheat
open like mouths in daylight to draw in
a carbonised gas, then close when light retreats.
A slow rhythm, tuned to the circling sun.

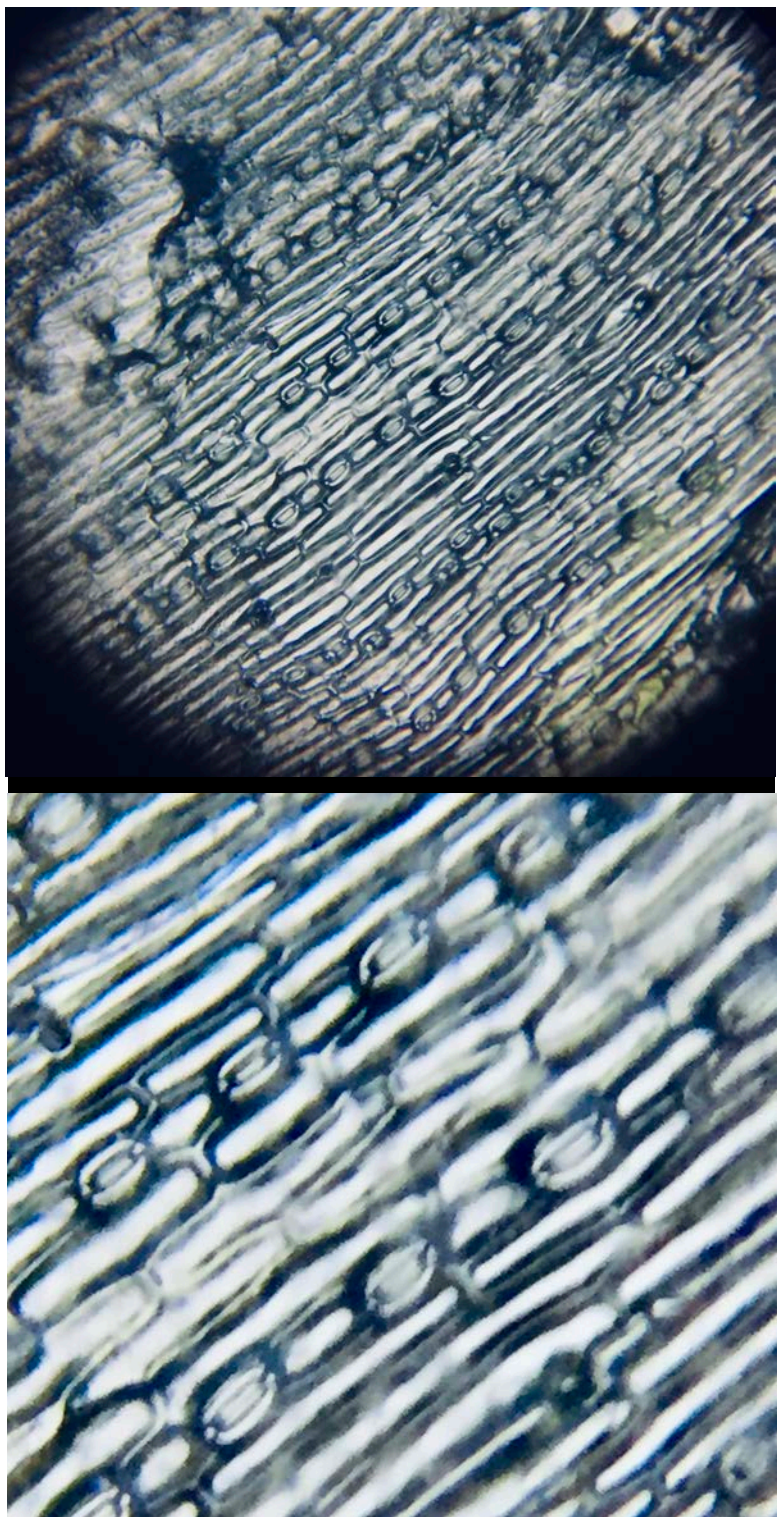
It is like a heartbeat: that steady pull
and push between earth-gravity and light-
seeking thrust, that tense-relax of cell,
root pushing water upward through the night

to the shoot-tip; there sparkling on its green
is a drop which tastes of night-hours passed
in wheat-travel. When we begin
to feel these silent rhythms lived by grass

we briefly shed all that is frantic, willed.
We breathe in tune with the earth, and we are stilled.

Diane Pacitti, 2020

Photo. Sara M.’s wheat planted in a pot after 28 days



Rows of stomata running lengthways along the leaf, each flanked by 2 guard cells which control the degree of opening of the pore. The images are made by painting the leaf with clear nail varnish, then peeling off the ‘cast’ for microscopic observation.

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