THE WARBLER

AN EDUCATIONAL WEEKLY

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Dear Student, Artist, Thinker,

Wind often does not get the attention it deserves. If **wind** did not exist, life on Earth would not function the way that it does. The motion of air coincides with the motion of everything else that comprises life. Pollination, something that our entire food supply relies on, is carried out through the wind. Wind can also affect our lives in different degrees. It can bring about a gentle cool breeze, a chilling gust, or a catastrophic natural disaster. Much of our recreation relies on the wind as well. Flying a kite relies on the wind for example and if skydivers didn't have a breeze, they wouldn't have anything to break their fall. Recently, we have been finding ways to harness the energy that the wind provides for our infrastructure. It's hard to imagine the amount of energy that is constantly in something that we can't even see. All we can see is the effects of it on our surroundings. The wind guides sailboats to their destinations, and things such as ash disappear with it. Wind doesn't only exist on Earth either. The gas giants, Jupiter, Saturn, Neptune, and Uranus are all formed of moving gases. If we broaden our perspective on what "The Wind" really is, it turns out to be much more than a breeze in the context of the matter that comprises our universe. Wind can also represent the repeating cycle of life. Things come and go. Bad times come, but good times can follow. We sincerely hope you enjoy this week's edition of *The Warbler* as you ponder the concept of the wind.-

Taylor and the APAEP Team

WORDS INSIDE

FOUND INSIDE "FIFTY DAYS AND FIFTY NIGHTS"

eerie | strange and frightening

bedevil | torment or harass

unnerve | make someone lose courage or confidence

FOUND INSIDE "WHAT IS SOLAR WIND?"

coronal | in astronomy, relating to the corona of the sun or another star; in anatomy, relating to the crown of the head

brunt | the worst part or chief impact of a specified thing

eject | force or throw something out, typically in a violent or sudden way

• • •

"Adversity is like a strong wind. It tears away from us all but the things that cannot be torn, so that we see ourselves as we really are."

ARTHUR GOLDEN // American writer

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ASTRONOMY

What is Solar Wind?

BY NOLA TAYLOR REDD | *Space.com* | May 18, 2018

The solar wind streams plasma and particles from the sun out into space. Though the wind is constant, its properties aren't. What causes this stream, and how does it affect the Earth?

Windy star

The corona, the sun's outer layer, reaches temperatures of up to 2 million degrees Fahrenheit (1.1 million degrees Celsius). At this level, the sun's gravity can't hold on to the rapidly moving particles, and they stream away from the star.

The sun's activity shifts over the course of its 11-year cycle, with sun spot numbers, radiation levels, and ejected material changing over time. These alterations affect the properties of the solar wind, including its magnetic field, velocity, temperature and density. The wind also differs based on where on the sun it comes from and how quickly that portion is rotating.

The velocity of the solar wind is higher over coronal holes, reaching speeds of up to 500 miles (800 kilometers) per second. The temperature and density over coronal holes are low, and the magnetic field is weak, so the field lines are open to space. These holes occur at the poles and low latitudes, reaching their largest when activity on the sun is at its minimum. Temperatures in the fast wind can reach up to 1 million F (800,000 C).

At the coronal streamer belt around the equator, the solar wind travels more slowly, at around 200 miles (300 km) per second. Temperatures in the slow wind reach up to 2.9 million F (1.6 million C).

The sun and its atmosphere are made up of plasma, a mix of positively and negatively charged particles at extremely high temperatures. But as the material leaves the sun, carried by solar wind, it becomes more gas-like.

Affecting Earth

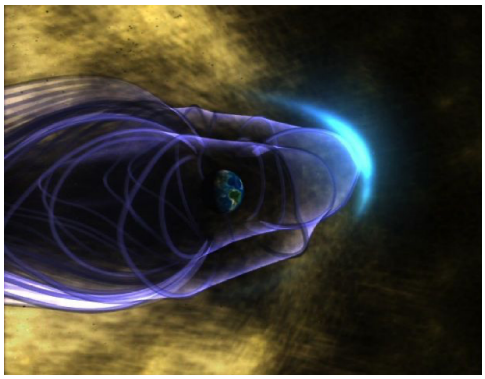
As the wind travels off the sun, it carries charged particles and magnetic clouds. Emitted in all directions, some of the solar wind is constantly buffeting our planet, with interesting effects.

If the material carried by the solar wind reached a planet's surface, its radiation would do severe damage to any life that might exist. Earth's magnetic field serves as a shield, redirecting the material around the planet so that it streams beyond it. The force of the wind stretches out the magnetic field so that it is smooshed inward on the sun-side and stretched out on the night side.

Sometimes the sun spits out large bursts of plasma known as coronal mass ejections (CMEs), or solar storms. More common during the active period of the cycle known as the solar maximum, CMEs have a stronger effect than the standard solar wind.

"Solar ejections are the most powerful drivers of the sun-Earth connection," NASA says on its website for the Solar Terrestrial Relations Observatory (STEREO). "Despite their importance, scientists don't fully understand the origin and evolution of CMEs, nor their structure or extent in interplanetary space." The STEREO mission hopes to change that.

When the solar wind carries CMEs and other powerful bursts of radiation into a planet's magnetic field, it can cause the magnetic field on the back side to press together, a process known as magnetic reconnection. Charged particles then stream back toward the planet's magnetic poles, causing beautiful displays known as the aurora borealisin the upper atmosphere. [Photos: Amazing Auroras of 2012]



This is an artist's concept of the Earth's global magnetic field, with the bow shock. Earth is in the middle of the image, surrounded by its magnetic field, represented by purple lines. The bow shock is the blue crescent on the right. Many energetic particles in the solar wind, represented in gold, are deflected by Earth's magnetic "shield."

Image by Walt Feimer (HTSI)/NASA/ Goddard Space Flight Center Conceptual Image Lab

Though some bodies are shielded by a magnetic field, others lack their protection. Earth's moon has nothing to protect it, so takes the full brunt. Mercury, the closest planet, has a magnetic field that shields it from the regular standard wind, but it takes the full force of more powerful outbursts such as CMEs.

When the high- and low-speed streams interact with one another, they create dense regions known as co-rotating interaction regions (CIRs) that trigger geomagnetic storms when they interact with Earth's atmosphere.

The solar wind and the charged particles it carries can affect Earth's satellites and Global Positioning Systems (GPS). Powerful bursts can damage satellites, or can push GPS signals to be off by tens of meters.

The solar wind ruffles all of the planets in the solar system. NASA's New Horizons mission continued to detect it as it traveled between Uranus and Pluto.

"Speed and density average together as the solar wind moves out," Heather Elliott, a space scientist at SwRI in San Antonio, Texas, said in a statement. "But the wind is still being heated by compression as it travels, so you can see evidence of the sun's rotation pattern in the temperature even in the outer solar system. ●

CLIMATE

Fifty Days and Fifty Nights

BY PHILOLOGOS | *Forward.com* | April 4, 2003

"Fierce desert weather, even more than the stubborn pockets of [Iraqi] resistance, conspired to slow the allied advance," wrote John Kifner, reporting from southern Iraq, in last week's *International Herald Tribune*. "The sandstorm, reaching the level of a *khamsin,* the brown dust that blots out all vision in the desert, began during the night ... . By midday the air was an eerie orange, with only silhouettes of tanks and other vehicles of war barely visible."

Khamsin is an Arabic word for the hot, dry weather — coming from the east — that can make tourists to Israel wish they had never left their air-conditioned hotels.

Dust-laden winds blowing out of the desert have many different names in different parts of the world. Novelist Michael Ondaatje lists some of these in a passage in his novel "The English Patient," which also occurs in the film adaptation:

There is a whirlwind in southern Morocco, the aajej*, against which the fellahin defend themselves with knives. There is the* africo*, which has at times reached into the city of Rome ... . The* bist roz *leaps into Afghanistan for 170 days — burying villages. There is the hot, dry* ghibli *from Tunis, which rolls and rolls and produces a nervous condition. The* haboob *— a Sudan dust storm that dresses in bright yellow walls a thousand meters high and is followed by rain. The* harmattan*, which blows and eventually drowns itself into the Atlantic ... . The* khamsin*, a dust in Egypt from March to May, named after the Arabic word for "fifty," blooming for fifty days — the ninth plague of Egypt.*

Ondaatje goes on to name still other desert winds, and who knows if he isn't right in his conjecture that the "ninth plague" visited upon the Egyptians in the Bible, that of darkness, wasn't caused by sandstorms that cut visibility to near zero? But he is wrong that a *khamsin,* although the word does mean 50 in Arabic, is called that because it blows for 50 days at a time. God help us if it did! Fifty straight days of dust-laden winds, blowing at gale force as the *khamsin* often does, might defeat any army. The average *khamsin,* fortunately, lasts for only two or three days. The longest I have ever lived through went on for seven, although it really did feel like 50 by the time it was over.

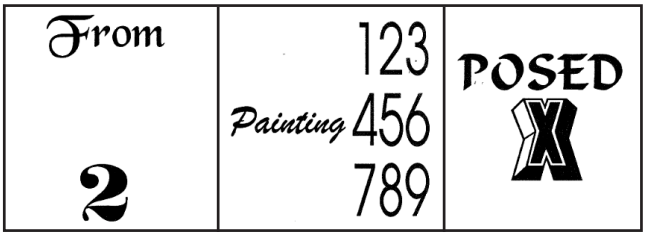
The *hamsin* is probably called "50" because this is, on a rough average, the number of days per year that it blows. These days can be divided into two equal periods, one in springtime, as Ondaatje writes, from March to May, and one in autumn, from September to November. (A cold, dry wind like the *khamsin,* known in Arabic as a *sharkiyya* or "easterly" — our English word "sirocco" derives from it — blows in much of the Middle East in winter.) In Israel the *khamsin,* while it strikes from the east or northeast, has two possible points of ultimate origin far to the west. One is North Africa, Egypt, or even the Sahara, from which the wind whirls around cyclonically in a great circle through Saudi Arabia, Iraq and Syria; the other takes the form of an anti-cyclonic high-pressure front moving across the northern Mediterranean through Turkey and again wheeling, first southward and then westward, across Mesopotamia. In either case, the wind reaches the end of its land journey over Israel — particularly, over the northern part of it — before petering out at sea, so that many of the desert storms that will continue to bedevil the allied forces in Iraq for the next month and a half will rage across the Galilee a few days later.

The word *khamsin* comes from Egypt and has spread throughout the Arabic of the Middle East. Israelis use it colloquially too, although in more formal language, such as that of weather forecasts in the newspapers or on TV, it is replaced by the Hebrew term *sharav*. And in the book of Exodus, the *khamsin* is called quite simply *ruah kadim,* an east wind.

This is pretty much the way *khamsin*s behave in Israel to this day: they blow violently all night and generally weaken in the late morning or early afternoon, when westerly sea breezes slow them down, only to pick up the next night and blow some more. They're unnerving enough when you're trying to sleep with the windows rattling, let alone when you're out in the desert. ●

Edited for space and clarity

WORD PLAY A Rebus puzzle is a picture representation of a common word or phrase. How the letters/images appear within each box will give you clues to the answer! For example, if you saw the letters "LOOK ULEAP," you could guess that the phrase is "Look before you leap." *Answers are on the last page!*



MATHEMATICS

Sudoku

#179 PUZZLE NO. 6198939

2	7					4		
	6	1				7		5
5				8	6			2
			2			6	3	4
		2			5			
9								
4			1	3	7			6
	8				2			
	9		5					

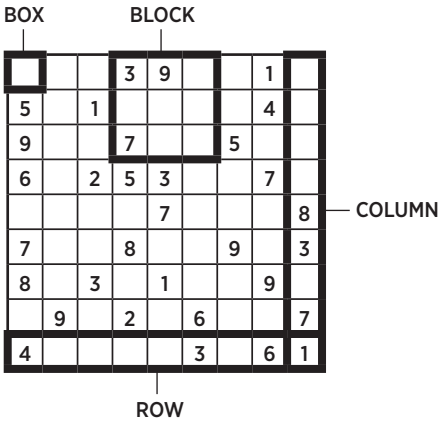
#180 PUZZLE NO. 269529

5	7		9				4	
				2	7			
6				1				8
3		2			8			
						9	1	6
	6			5	9		2	3
						5		
			2				6	
7		3	8					

©Sudoku.cool

SUDOKU HOW-TO GUIDE

1. Each block, row, and column must contain the numbers 1–9.
2. Sudoku is a game of logic and reasoning, so you should not need to guess.
3. Don't repeat numbers within each block, row, or column.
4. Use the process of elimination to figure out the correct placement of numbers in each box.
5. The answers appear on the last page of this newsletter.



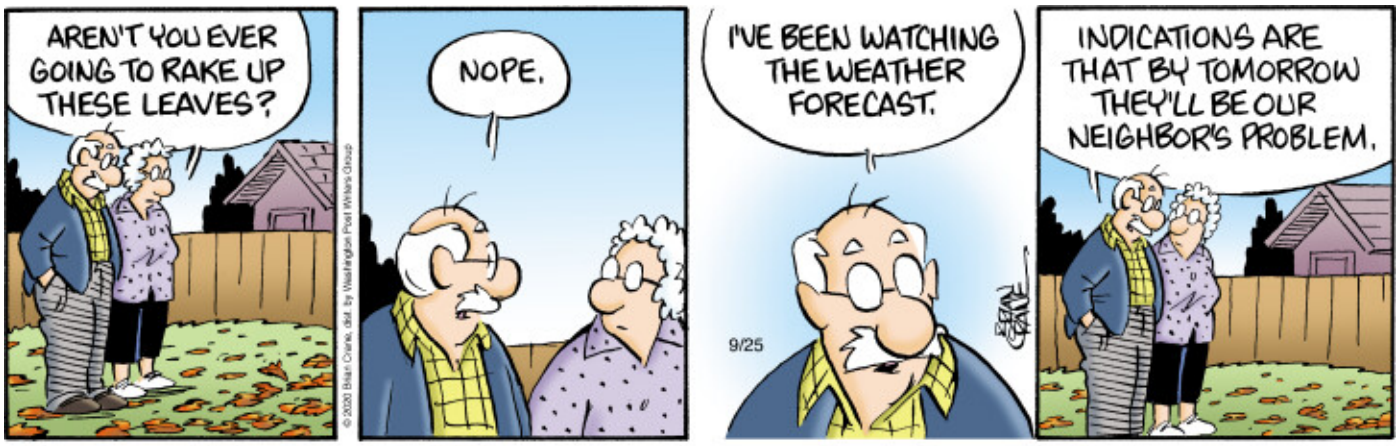
What the example will look like solved

2	4	8	3	9	5	7	1	6
5	7	1	6	2	8	3	4	9
9	3	6	7	4	1	5	8	2
6	8	2	5	3	9	1	7	4
3	5	9	1	7	4	6	2	8
7	1	4	8	6	2	9	5	3
8	6	3	4	1	7	2	9	5
1	9	5	2	8	6	4	3	7
4	2	7	9	5	3	8	6	1

"The pessimist complains about the wind; the optimist expects it to change; the realist adjusts the sails."

WILLIAM ARTHUR WARD // American writer

Icons from the Noun Project



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"You cannot kill a breeze, a wind, a fragrance; you cannot kill a dream or an ambition."

MICHEL ONFRAY // French writer

"A great wind is blowing, and that gives you either imagination or a headache."

CATHERINE THE GREAT // Empress of Russia

"If you reveal your secrets to the wind, you should not blame the wind for revealing them to the trees."

KHALIL GIBRAN // Lebanese writer

DID YOU KNOW?

In Greek mythology, the anemoi were four **wind gods**, causing wind from the four compass points.

A **gale** is officially defined as a wind of between 32 and 63 miles per hour. A wind blowing from 4 to 31 mph is a breeze.

The tips of the blades of wind turbines move at speeds of up to **200 mph**.

The first house in the world to have its electricity supplied by wind power was in Kincardineshire, **Scotland in 1887**.

Wind power now provides **four per cent** of the world's energy.

Idiom

"Run like the wind"

Meaning To run very fast

Origin No one is really certain of the origin of "run like the wind" but what is known is that early horse racing fans urged their favorites to run like the wind. Considering that during the days before mechanized vehicles, horses, and other animals could only be outrun by the wind, this charming, old-fashioned expression makes sense.

Source: www.gingersoftware.com/content/phrases/run-like-the-wind/

EARLY WINDMILLS ALSO TURNED **ANTI-CLOCKWISE** BUT LATER MAKERS SHIFTED MAINLY TO CLOCKWISE.

Source: www.express.co.uk/life-style/top10facts/546895/Top-10-facts-about-wind

ART + CULTURE

A Poem for Jesse

BY SONIA SANCHEZ

your face like
summer lightning
gets caught in my voice
and I draw you up from
deep rivers
taste your face of a
thousand names
see you smile
a new season
hear your voice
a wild sea pausing in the wind

Sonia Sanchez — poet, activist, scholar — was the Laura Carnell Professor of English and Women's Studies at Temple University. She is the recipient of both the Robert Frost Medal for distinguished lifetime service to American poetry and the Langston Hughes Poetry Award. One of the most important writers of the Black Arts Movement, Sanchez is the author of sixteen books.

WRITING PROMPT
In writing, wind has often been a divided symbol. Zora Neale Hurston uses wind as a symbol for a character's change in her novel *Their Eyes Were Watching God*, while writers like Joan Didion note the violent effects winds such as the Santa Ana winds can have on people in *Los Angeles Notebook*. This week, reflect on your own experiences and associations with wind, both positive and negative, as inspiration for a poem, short story, or creative non-fiction essay.

Word Search

L	O	D	O	A	O	R	G	O	H	C	I	A	I
O	O	O	L	W	T	E	L	H	A	H	W	G	S
T	E	N	E	I	O	O	N	C	A	A	D	H	I
O	H	S	D	O	W	I	V	R	D	O	I	A	L
L	P	S	L	O	A	R	T	C	O	S	O	A	H
S	G	D	P	R	N	A	H	E	R	L	H	V	N
D	D	H	G	H	N	W	D	H	O	L	L	O	W
I	D	L	E	L	A	R	R	H	S	S	A	I	A
R	V	R	L	L	K	A	P	O	R	O	O	O	O
T	P	A	R	A	K	E	E	T	S	S	N	L	D
H	N	T	O	N	A	W	L	I	W	A	G	A	P
E	D	O	H	A	D	E	A	R	T	H	C	P	E
S	E	L	L	C	E	L	E	S	T	I	A	L	W
C	W	I	E	H	A	R	S	O	V	A	P	O	R

LONDON
PARAKEETS
HOLLOW
DIRT
CHAOS
WILD
CELESTIAL
EARTH
GRAIN
VAPOR

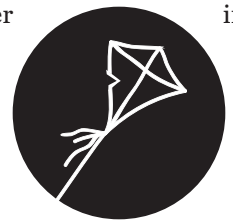
SCIENCE

No One Breezes Through Life When the Wind Just Blows and Blows

BY DANIELLA MILETIC | *The Age* | August 7, 2018

In at least one busy inner-city daycare centre in Melbourne, an experienced child-care worker has just checked the city's weather forecast and sighed. It's not good news for her or her team.

Strong winds are set to rattle the city with full force this week again after a July which saw records tumble and she knows that, when it blows, her hopes for a quiet day will be dashed.



''When it's windy, our children scream and shout more often, they are less able to move safely around spaces, and they can have trouble hearing others and making decisions,'' she explains. ''We keep a close eye on the weather report and choose to be inside when the wind kicks up.

''It seems to influence children to different degrees — but it can be quite frightening and seems to put some children on edge.''

Like this educator, many share an intuitive (and somewhat obvious) belief that weather can shift our emotions. But can wind shift our moods? If so, why?

Dr Lewis Mitchell, a lecturer in Applied Mathematics at the University of Adelaide, believes from his own research that weather undoubtedly affects our mood.

''Scientists have been studying this both in the lab and 'in the wild' since the 1970s, and there definitely seems to be an association there,'' Dr Mitchell says.

In one 2008 study, German researchers set out to discover whether day-to-day weather could sway moods and found that temperature, wind, sunlight and length of days had an effect on negative moods but little effect on positive moods**.** Sunlight was found to lessen how tired people felt, with respondents reporting feeling more lethargic on days filled with rain.

Dr Mitchell says that the study found that increased wind power was associated with a higher "negative affect" — meaning people were more likely to feel irritable, jittery, or distressed.

Cases of people suffering from all of the characteristics of full-blown seasonal affective disorder (SAD), also known as "winter blues", are rare in Australia because even in winter there is enough light to avoid it. Nonetheless, research has found winter still has an impact on mood and light therapy is often used as a treatment for SAD.

Dr Mitchell says there is new research that is mining social media data. ''In particular, scientists have recently discovered connections between weather and climate and how we express ourselves on social media, which is a really exciting research direction," he says.

A US study, published in 2015, found that higher wind speeds were associated with increased levels of depression as expressed on Twitter.

His own, unpublished research is also pointing in this direction. ''I've found in my own research previously, when looking at the words used in geotagged tweets, that there appeared to be a 'happiest' temperature at around 30 degrees.

''Interestingly, when asking around about this, I heard that there's a superstition amongst health professionals in emergency departments that pregnant women are more likely to go into labour when it's windy ... so this is certainly appears to be a widely-held belief."

One Melbourne study published in *The Lancet* found that the brain makes more serotonin – known to raise spirits and make you more active and alert – on sunny days than on grey ones. Researchers from the Baker IDI Heart and Diabetes Institute found serotonin levels in the brain were directly related to the number of hours of bright sunlight.

Less research has been done on our physical reaction to wind, although some researches think that our feelings of irritability and wind are connected to positively-charged electrons.

Even less research has been done on the influence of wind on children.

''It's tough to say, because there doesn't seem to be enough data yet,'' Dr Mitchell said. ''The studies I've seen haven't been able to tease out much in the way of differences between age groups. That could be because of a lack of data, or because the weather effects everybody equally – we just can't say yet.''

Meanwhile, some Melburnian educators remain convinced it is the case. Whether research proves it or not, for many, windy weather equals a tough day in the classroom.

According to the weather forecast for Melbourne this week, teachers could have a rough week ahead.

"I can't say I have any evidence, but when it is windy and I'm on yard duty it's definitely not nice,'' one inner-city primary school teacher told *The Age* on Tuesday. "It's chaotic. The kids will line up and there is always a problem or an issue." ●

Edited for space

ART

How One Artist Learned to Sculpt the Wind

Artist Janet Echelman studied ancient craft, travel the world and now collaborates with a team of specialists to choreograph the movement of air

BY LUCY HARVEY | *Smithsonian Magazine* | November 20, 2015

"I am starting to list the sky as one of my materials," says sculptor Janet Echelman who produces aerial, net-like sculptures that are suspended in urban airspaces.

Her pieces, created from high-tech fiber developed originally for NASA spacesuits, are described as "living and breathing" because they billow and change shape in the wind. During the day, they cast shadows and at night, they are transformed by computer-controlled lights into "luminous, glowing beacons of color."

Echelman is one of nine leading contemporary artists commissioned to create installations for the inaugural exhibition titled "Wonder" at the Renwick Gallery of the Smithsonian American Art Museum.

For the Renwick's historic Grand Salon, Echelman created an immersive piece, called *1.8,* that incorporates her first ever textile carpet, made of regenerated nylon fibers from old fishing nets, as well as a hand-knotted rope and twine sculpture suspended from the ceiling.

"I wanted the visitor to be within the work," she says with a faint southern lilt that hints at her Florida roots. Seating is sprinkled throughout the gallery to enable visitors to observe the swelling and surging of the net, which will be caused by artificial wind gusts manufactured by Echelman's creative team.

"Outside, it's very much about responding to the environment, but for this exhibit we get to sculpt the air currents to choreograph the movement," she explains.

According to Echelman, her sculpture is inspired by data supplied by NASA and NOAA, the National Oceanic and Atmospheric Administration, measuring the effects of the earthquake and tsunami that ravaged Tohoku, Japan in 2011. The shape of the net is based on a 3D image of the tsunami's force created by Echelman's team.

"The piece aims to show how interconnected our world is, when one element moves, every other element is affected," she says.

Echelman has been widely recognized for her innovative art form. She won a Guggenheim fellowship for exceptional creative ability, received a Smithsonian American Ingenuity award, and gave a TED-talk in 2011 that has garnered nearly 1.5 million views.

Visual art, however, was not Echelman's first passion. She grew up playing the piano and attending summer camp at the Tanglewood Institute, a pre-professional program associated with the Boston Symphony orchestra. She also won a prestigious regional competition that earned her a coveted soloist spot with the Florida Orchestra.

"Music taught me the patience to take things apart and improve each component, but for my professional day job, I like a blank canvas rather than the job of reinterpreting someone else's work," she explains.

While an undergraduate at Harvard, she took her first visual art classes; and one assignment—to write about an artist's entire body of work—unwittingly set her on her current path. She wrote about Henri Matisse and traced his trajectory from painting to the paper cutouts he developed at the end of his life when he was wheelchair bound.

"That's the way I want to live. I want to be responsible for defining my medium," Echelman remembered thinking.

Following college, she was applied to seven art schools and was rejected by all of them, so she decided to move to Bali to become a painter on her own. Echelman had lived in Indonesia briefly during a junior-year abroad program, and she wanted to collaborate with local artisans to combine traditional Batik textile methods with contemporary painting.

Echelman says that her parents had differing opinions of her unorthodox plan. "My father, an endocrinologist, asked whether any of my college professors had told me that I had talent and should pursue art. The

answer was no," she admits. "But my mom, a metal smith and jewelry designer, thought it was a fine thing to want to do and gave me $200 to buy supplies," she recalls.

"It wasn't that I had the goal to become an artist, but I wanted to be involved in the making of art everyday," says Echelman.

For the next ten years, Echehlman painted and studied various forms of high art and artisanal crafts through a mix of fellowships, grants and teaching jobs. Along the way, she managed to earn an MFA in Visual Arts from Bard College and a Masters in Psychology from Lesley University.

"My system was to go and learn craft methods passed down from generation to generation," she explains. She sought out opportunities to study Chinese calligraphy and brush painting in Hong Kong, lace making in Lithuania, and Buddhist garden design in Japan.

Immortalized in her TED talk is the story of how she first hit upon the idea of creating volumetric sculpture out of fishing nets. Echelman was on a Fulbright Lectureship in India in 1997 where she planned to teach painting and exhibit her work. The paints that she sent from America failed to arrive, and while searching for something else to work with, she noticed the fishermen bundling their nets at the water's edge.

Nearly two decades after those first fish net sculptures, known as the *Bellbottom Series*, Echelman has created scores of artworks that have flown over urban spaces on four continents. Her first permanent outdoor sculpture was installed over a traffic circle in Porto, Portugal in 2005. The work, called *She changes* consists of a one-ton net suspended from a 20-ton steel ring. Only five years later, high tech materials had developed so quickly that she could now attach her sculptures to building facades without the need for the heavy steel ring support.

Maintaining her permanent sculptures is serious business. These pieces, which float over such cities as Seattle, Washington, Phoenix, Arizona, and Richmond, British Columbia, undergo regular maintenance protocols to ensure they are safely airborne. Protecting wildlife is also a priority for Echelman. The artist's website maintains that her sculptures do not harm birds because her nets are made of thicker ropes with wider openings than those used to trap birds.

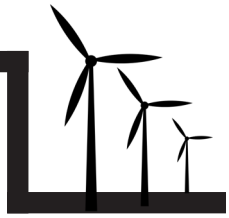
For each new work, Echelman consults with a cadre of architects, aeronautical engineers, lighting designers and computer programmers throughout the world.

"I don't have a deep knowledge of all these disciplines. But I consider myself a collaborator," she says. "I have an idea, a vision and we work together to realize it," she continues.

Echelman also gratefully acknowledges that she has realized the twin goals she set for herself as a fresh-faced undergraduate in an earlier century. She has succeeded in defining her own medium and she is happily involved in the making of art every day. ●

Edited for space

RANDOM-NEST



Types of Winds

BY SONIA MADAAN | EARTH ECLIPSE

1. Trade Winds
Trade winds are the dominating patterns of easterly surface winds present at the tropics in the direction of the Earth's equator. The trade winds primarily blow from the southeast in the Southern Hemisphere and from the northeast in the Northern Hemisphere. They play a part in steering the flow of tropical cyclones that develop above the world's oceans.

2. Monsoon Winds
Monsoons are the seasonal wind in southern Asia blowing from the southwest (bringing rain) in summer and from the northeast in winter. These winds last for many months within the tropical regions. The term was coined to mean large seasonal winds moving from the Arabian Sea and the Indian Ocean in the southwest bringing heavy downpours in the regions.

3. Polar Easterlies
The polar easterlies are also referred to as polar Hadley cells. They are the prevailing cold and dry winds that propel from the high-temperature regions of the polar heights at the south and north poles moving towards the low-pressure regions within the westerlies at high latitudes.

4. The Westerlies
The Westerlies are the winds in the middle latitudes in the ranges of 35 to 65 degrees. These winds blow from the west to the east and determine the traveling directions of extratropical cyclones in a similar direction. The winds are mainly from the northwest in the Southern Hemisphere and southwest in the Northern Hemisphere.

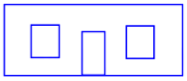
5. Local Winds
Local winds are the ordinary winds. They are influenced by various landforms such as vegetation, hill, plains, water bodies, mountains and so on. The blow variedly and the changes are because of different temperatures and pressure regions during the night and day.

Local winds are the kind of winds that are focused as part of daily weather by the meteorological department on broadcast media such as radio and TV. The speeds of local winds range from mild to strong but just for a few hours, and they only blow over short distances. Common examples of local winds are the land and sea breezes, and valley and mountain breezes.

6. Doldrums
Doldrums are a belt of calms and light winds between the northern and southern trade winds of the Atlantic and Pacific. They occur along a very low-pressure area around the equator where the prevailing winds are calmest. Doldrums occur as a result of constant sun's radiation.

HOW TO DRAW A WINDMILL

1.



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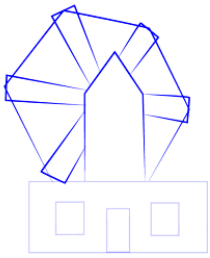

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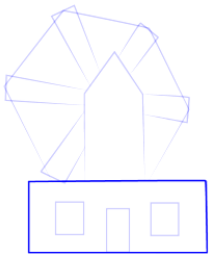

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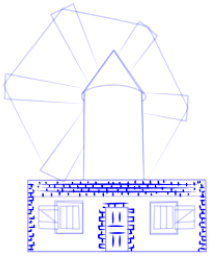
5.

6.



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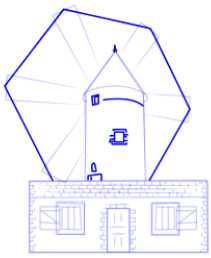

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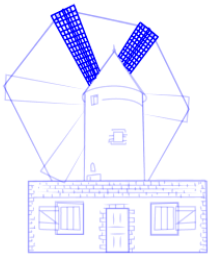

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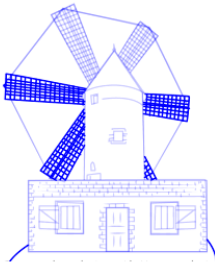

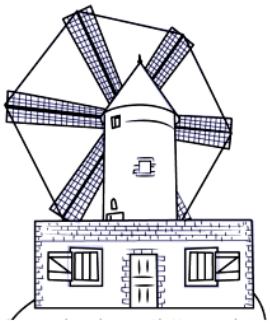

SHWOOSH!

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Words of Encouragement

On its most basic level, wind indicates a change. Literally a migration of cooler, denser air pushing against a high-pressure air system, wind can physically and metaphorically indicate a period of change; the evolution of the warm still seasons into much windier ones, the scuttling of leaves across the ground, the gender push of turbines. But wind grown upon itself can turn into a powerful force. A small gust upon the banks of the Bahamas can build into a tropical storm and then into hurricanes as disastrous as Katrina.

Even with a more destructive example, wind reminds us of the powerful building nature forces hold. Even minute actions, felt soft as a breeze, over time can swell into an important force. Even in different cultures, wind is recognized for its great ability to change; for example, in Malaysia there is a phrase that roughly translates to "eat the wind" and encourages people to take the energy from the wind into themselves. We hope you enjoy this edition of *The Warbler* and can find an energizing power within yourself to make changes like the wind.

Julia

Answers

SUDOKU #179

2	7	8	3	5	1	4	6	9
3	6	1	9	2	4	7	8	5
5	4	9	7	8	6	3	1	2
8	5	7	2	1	9	6	3	4
6	3	2	8	4	5	9	7	1
9	1	4	6	7	3	5	2	8
4	2	5	1	3	7	8	9	6
7	8	6	4	9	2	1	5	3
1	9	3	5	6	8	2	4	7

SUDOKU #180

5	7	1	9	8	3	6	4	2
8	3	4	6	2	7	1	5	9
6	2	9	5	1	4	7	3	8
3	9	2	1	6	8	4	7	5
4	8	5	7	3	2	9	1	6
1	6	7	4	5	9	8	2	3
2	4	6	3	9	1	5	8	7
9	1	8	2	7	5	3	6	4
7	5	3	8	4	6	2	9	1

Rebus Puzzle
Page 3

1. From top to bottom
2. Painting by numbers
3. Overexposed

Send ideas and comments to:

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UNTIL NEXT TIME!