FROM THE OLD FARMER'S ALMANAC

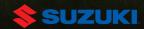


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WEATHER FORECASTS

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August Birthdays, Holidays, History, and More

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Humor Me Grins and groans from the Almanac

WHAT'S NEXT

See what we have in store for our September issue!



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THE MONTH OF AUGUST

Holidays, History, and More

HOLIDAY HAPPENINGS

Aug. 6: Civic Holiday (Canada) Aug. 19: National Aviation Day Aug. 26: Women's Equality Day



THE CRESCENT CITY

New Orleans is celebrating its Tricentennial this year. In 1718, Jean-Baptiste Le Moyne, Sieur de Bienville, founded the southeastern Louisiana city, naming

it after Philippe II, Duke of Orléans, who was Regent of France at the time. The official founding date, however, is unclear: Some honor the city's start when the first clearing of vegetation may have begun, possibly in March or on May 7. Others consider August 25 the true establishment, when hundreds of French colonists arrived to settle in New Orleans and surrounding areas.

Whatever the exact date of its origin, today New Orleans is the largest city in Louisiana. Its original contours follow a bend in the lower Mississippi River, for which it earned the nickname "Crescent City." Considered the birthplace of jazz, New Orleans is famous for its rich blend

MOON WATCH

Last Quarter:

August 4, at 2:18 P.M. EDT

New Moon:

August 11, at

5:58 A.M. EDT

First Quarter:

August 18, at 3:49 A.M. EDT

Full Sturgeon

Moon: August 26, at 7:56 A.M. EDT

TAP FOR MORE ABOUT MOON PHASES

TA AB

TAP FOR MORE ABOUT AUGUST'S FULL MOON

SPECIAL EVENTS

- Perseid meteor shower peaks around Aug. 11–12.
- Partial solar eclipse, Aug. 11; in North America, visible only in very NE Canada.



of cultures, which is reflected in part in its cuisine, music, and architecture. The elaborate Mardi Gras celebration is one of many festivals that hundreds of thousands of people enjoy in the city each year.

In 2005, flooding and high winds from deadly Hurricane Katrina devastated many parts of New Orleans.

While the healing and rebuilding continue, the spirit of the city remains strong.

Ongoing efforts focus on helping individuals, communities, and businesses to recover and on making improvements to ensure the happiness, safety, and prosperity of all residents in the years to come.

AUGUST BIRTHDAYS



15 YEARS AGO (2003)

Aug. 18: Max Charles (American actor) Aug. 28: Quvenzhané Wallis (American actress)

25 YEARS AGO (1993)

Aug. 22: Amanda Reason (Canadian swimmer) Aug. 26: Keke Palmer (American actress/ singer)

50 YEARS AGO (1968)

Aug. 5: Terri Clark (Canadian country music artist) Aug. 14: Catherine Bell (American actress) Aug. 25: Rachael Ray

(American chef)

75 YEARS AGO (1943)

Aug. 11: Jim Kale (Canadian musician) Aug: 17: Robert De Niro (American actor)

100 YEARS AGO (1918)

Aug. 21: Billy Reay (Canadian ice hockey player/coach) Aug. 25: Leonard Bernstein (American composer/conductor) Aug. 30: Ted Williams (American baseball player/manager)

125 YEARS AGO (1893)

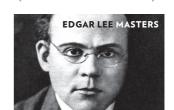
Aug. 17: Mae West (American actress)

150 YEARS AGO (1868)

Aug. 23: Edgar Lee Masters (American poet/novelist)

200 YEARS AGO (1818)

Aug. 1: Maria Mitchell (American astronomer)







BEST DAYS TO DO THINGS

These August dates, deemed to be propitious in astrology, are based on the astrological passage of the Moon. However, consider all indicators before making any major decisions. –*Celeste Longacre*

IN THE GARDEN

Destroy pests and weeds: 1-3, 29, 30

Graft or pollinate: 8, 9

Harvest aboveground crops: 12, 13

Harvest belowground crops: 4, 5

Mow to decrease growth: 13, 14

Mow to increase growth: 1–3

Pick fruit: 12, 13

Plant aboveground crops: 16, 17, 26

Plant belowground crops: 8, 9

Prune to discourage growth: 1–3

Prune to encourage growth: 18–20



PERSONAL

Advertise to sell: 16, 17

Ask for a loan: 5, 9

Begin diet to gain weight: 13, 17

Begin diet to lose weight: 5, 27

Buy a home: 13, 17

Color hair: 4, 5, 31

Cut hair to discourage growth: 4, 5, 27

Cut hair to encourage growth: 14, 15

Get married: 14, 15

Have dental care: 12, 13

Move (house/household): 6, 7

Perm hair: 23–25

Quit smoking: 5, 27

Straighten hair: 18–20

Travel for pleasure: 10, 11

Wean children: 5, 27

AROUND THE HOUSE

Bake: 8, 9

Brew: 16, 17

Can, pickle, or make sauerkraut: 8,

9, 27

Demolish: 16, 17

Dry fruit/vegetables/meat: 1–3,

28 - 30

End projects: 10

Lay shingles: 10, 11

Make jams/jellies: 26, 27

Paint: 4, 5, 14, 15

Start projects: 12

Wash floors: 26, 27

Wash windows: 1-3, 28-30

OUTDOORS

Begin logging: 21, 22

Go camping: 18–20

Go fishing: 11–26

Set posts or pour concrete: 21, 22

ON THE FARM

Breed animals: 16, 17

Castrate animals: 23–25

Cut hay: 1-3, 29, 30

Purchase animals: 8, 9

Set eggs: 5, 23, 24

Slaughter livestock: 16, 17

Wean animals: 5, 27





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TAP FOR
MERCURY IN
RETROGRADE
DATES

APP EXTRA!

TAP FOR

AUGUST

MOON PHASES

GARDENING BY THE MOON'S SIGN

Use the August dates shown in the Moon's Astrological Place calendar below to find the best days for the following garden tasks:

PLANT, TRANSPLANT, AND GRAFT: Cancer, Scorpio, Pisces, or Taurus

HARVEST: Aries, Leo, Sagittarius, Gemini, or Aquarius

BUILD/FIX FENCES OR GARDEN BEDS: Capricorn

CONTROL INSECT PESTS, PLOW, AND WEED: Aries, Gemini, Leo, Sagittarius, or Aquarius

PRUNE: Aries, Leo, or Sagittarius. During a waxing Moon, pruning encourages growth; during a waning Moon, it discourages growth.

THE MOON'S ASTROLOGICAL PLACE IN AUGUST

| 1 Aries | 9 Cancer | 17 Scorpio | 25 Aquarius |
|-----------------|-------------------|-----------------------|------------------|
| 2 Aries | 10 Leo | 18 Sagittarius | 26 Pisces |
| 3 Aries | 11 Leo | 19 Sagittarius | 27 Pisces |
| 4 Taurus | 12 Virgo | 20 Sagittarius | 28 Aries |
| 5 Taurus | 13 Virgo | 21 Capricorn | 29 Aries |
| 6 Gemini | 14 Libra | 22 Capricorn | 30 Aries |
| 7 Gemini | 15 Libra | 23 Aquarius | 31 Taurus |
| 8 Cancer | 16 Scorpio | 24 Aquarius | |

MERCURY IN RETROGRADE

Sometimes the other planets appear to be traveling backward through the zodiac; this is an illusion. We call this illusion *retrograde motion*.

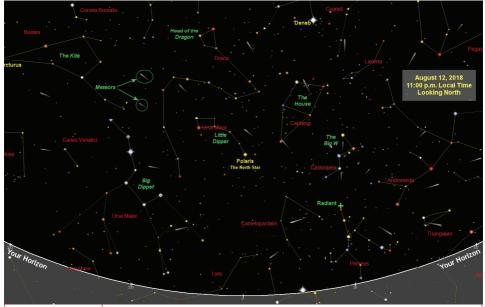
Mercury's retrograde periods can cause our plans to go awry. However, this is an excellent time to reflect on the past. Intuition is high during these periods, and coincidences can be extraordinary.

When Mercury is retrograde, remain flexible, allow extra time for travel, and avoid signing contracts. Review projects and plans at these times, but wait until Mercury is direct again to make any final decisions.

In 2018 to come, Mercury will be retrograde during July 26–August 19 and November 17–December 6.

-Celeste Longacre





APP EXTRA!
TAP TO GET
A PRINTABLE
AUGUST
SKY MAP

APP EXTRA!
TAP TO
FOLLOW
OHIOAN JEFF
DETRAY'S SKY

ADVENTURES

THE BEST METEOR SHOWER OF 2018!

n any clear night, you're bound to see a handful of meteors, or shooting stars. They occur when small chunks of cosmic debris—called meteoroids—strike Earth's upper atmosphere at high speed. Friction from air molecules causes the meteoroids to quickly heat and vaporize, and we see them as brief streaks of light.

The vast majority of meteoroids are small—from the size of a pebble to only as big as grains of sand, to even tinier particles no larger than the period at the end of this sentence. Still, in the instant when they are destroyed by air friction, even tiny meteoroids create a bright streak of light—a meteor—for us to enjoy. More rarely, a larger space rock won't burn away completely as it enters Earth's atmosphere, and parts of it will reach the ground. Then it's called a meteorite.



To summarize . . .

Meteoroid = a rock or other debris traveling through space.

Meteor = a meteoroid that burns up in the atmosphere; a shooting star.

Meteorite = the remains of a meteoroid that reaches the ground.

The few meteors that you see on a typical night are completely random. Occasionally, however, our planet encounters a dense stream of meteoroids, resulting in lots of "shooting stars" in a short period of time—a meteor shower. There are about a dozen major meteor showers each year, along with several minor ones. On the night of August 12–13, we'll be treated to the Perseid meteor shower, or, simply, the Perseids, the best shower of 2018. It's called the Perseids because the meteors associated with the shower all seem to be streaming away from a point (called the radiant) in the constellation Perseus, as shown on this month's map.

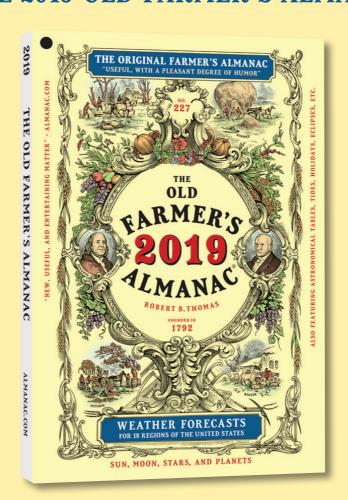
The source of the meteoroids causing the Perseids is a trail of debris left behind by Comet Swift-Tuttle. Every 133 years, Swift-Tuttle passes through the inner Solar System (where Earth is located), shedding small bits and pieces of itself. Each year in August, Earth plows into Swift-Tuttle's debris stream, and we see a fine meteor shower. For this year's Perseids, the Moon will be a very thin crescent, and thus its glare will be minimal, allowing us to see rather faint meteors.

To maximize your viewing experience, find a dark location well away from city lights, busy streets, and other sources of man-made illumination. You want it to be as dark as possible, and you want a wide-open viewing site with few trees and other obstructions. A treeless, rural hilltop is ideal. It's best to recline or lie on a sleeping bag; don't risk a stiff neck! Be prepared for a chill; even in August, you'll cool off quickly when lying under the open sky.

Don't stare at the radiant; the meteors can appear in *any* part of the sky. Let your eyes wander, perhaps enjoying the stars and constellations featured on the map. Pay the most attention to parts of the sky that are darkest at your viewing site. Following these recommendations, you may see a shooting star every couple of minutes. Several minutes may pass with no meteors at all, and then you might see several in quick succession—so don't get discouraged!

Coming Soon!

THE 2019 OLD FARMER'S ALMANAC





Simple Ways to Save \$\$\$

Budgets are tight for many of us. If you've squeezed and squeezed and squeezed yours yet again, maybe these few tips can help you to squeeze some more—and have a little creative fun along the way.



We calculate that do-it-ourselves cuts and trims save our two-person household about \$600 a year.

CUT YOUR OWN HAIR

If you adopt a simple hairdo, you can easily learn to cut and trim your own hair (and beards, for men). Online and beauty-supply stores sell precision hair-cutting scissors and trimming appliances.

I've cut my own hair since I took over from my mom while I was in high school. Over the decades, I've had long hair that needed only occasional trimming; short, pixie cuts that I had to spike every couple of weeks; and various midlength 'do's. I've cut a lot of men's and

children's hair, too.

We calculate that do-it-ourselves cuts and trims save our twoperson household about \$600 a year.

ELIMINATE "PHANTOM LOADS"

Also called "vampires of the household," "phantom loads" refers to the electricity used by appliances and electronic devices after you've turned them off or left them in standby mode.

Electronic devices that are notorious currentsucking vampires include home entertainment devices with remote controls, appliances with digital clocks, and electronics that use a power adaptor (or wall cube). You can put these devices on power strips that you turn off when you aren't using them. "Smart" power strips cost a bit more, but allow you to shut off some devices and leave others on standby. Eliminating these phantoms can save as much as 10 percent of your electricity bill.

The red LED lights that you see glowing at night will remind you that these appliances are using electricity even after you've turned them off.

Now look around



Patronize thrift stores and yard/rummage sales.

for power adaptors, also called "wall cubes," "wall warts," and "power bricks," which are used with devices such as hair dryers and cellphone chargers. These are typically warm to the touch and drawing power. Unplug these when not in use.

If your electric bill is \$100 a month, you could save about \$120 a year by reducing phantom loads.

GENERATE LESS TRASH

I think of the Depression-era slogan "Use it up, wear it out, make it do, or do without" as a good way to increase my "disposable" income.

Reducing the trash that we generate and throw away saves money, energy, and the community (taxpayer) the costs of disposing of it. Here are a few ways to reduce your household trash.

- The easiest and simplest: If you don't need it, don't buy it. Living in an advertising-saturated consumer society makes this psychologically difficult. I think of it as a spiritual discipline.
- Patronize thrift stores and yard/rummage sales and accept hand-medowns from friends, neighbors, and relatives. If you can use or repurpose

things, you'll have less need to buy new stuff and less stuff to throw away. (That being said, I never acquire a used or discarded mattress or piece of upholstered furniture. There's too much possibility of bedbug infestation, and these critters are notoriously difficult and expensive to eradicate once they've established themselves in your home.)

- Buy in bulk whenever possible: grains, beans, nuts and other dried foods; soap; lightbulbs. You'll produce less packaging trash and benefit from the lower per-unit cost.
- Buy the most durable



Choose cheap, safe, at-hand household cleaning supplies.

products that you can afford and keep using them, even if they go out of style. I think that we should start a movement to make sturdiness and durability the epitome of high style.

- Choose cheap, safe, at-hand household cleaning supplies to eliminate the need for expensive commercial formulations. A lot of these products—baking soda, vinegar, borax, oatmeal, olive oil—do double or triple duty as articles of health, beauty, and/or hygiene.
- If you have a garden, repurpose newspaper,

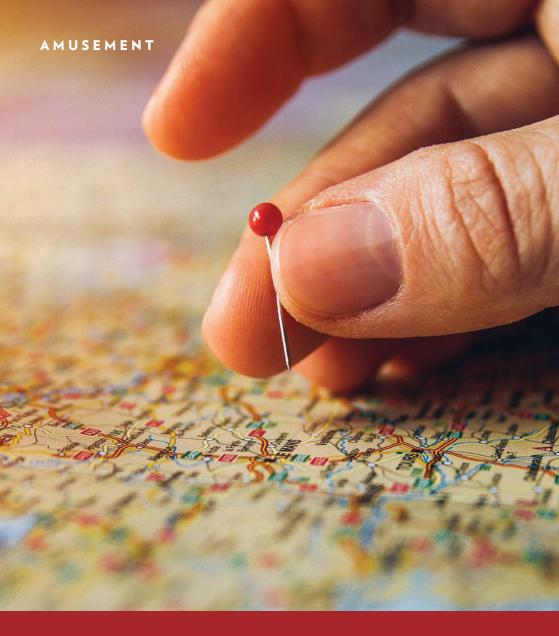
- cardboard, worn rugs, and worn-out clothing as weed-suppressing, waterconserving mulch. Top it off with a little hay, straw, pine needles, or lawn clippings to improve the aesthetics. Recycle your kitchen and yard wastes into a compost pile.
- Host a neighborhood paint-trading (tool-trading, etc.) party. The idea? Everyone arrives with leftover paint, stain, varnish, and similar products that they don't need. Set all of the articles on tables and let people walk around and choose products that they'd like to take home

and use. The rules: Each item should be in its original container, tightly closed, and should bear a tag with the original owner's name and telephone number. People must agree to take home the products that they brought if no one else wants them.

Depending on how vigorously you pursue these suggestions, you could save hundreds of dollars a year!

-Margaret Boyles





GPS Unplugged

A careful look at a real map can reveal some pretty strange facts.

AMUSEMENT



elying on satellites and coordinates of latitude and longitude, today's Global Positioning System (GPS) has all but eliminated the need for paper maps. Still, printed versions can often reveal interesting anomalies that you won't find on your dashboard or handheld GPS viewer. Perhaps fun facts like the following can encourage an appreciation of the products of old-fashioned, tried-and-true cartography.

- If North Carolina were turned on its northeastern corner. it would extend to Boston, Massachusetts.
- If North Carolina were turned on its southwestern corner, it would extend past Indiana and reach Lake Michigan.
- The western tip of Virginia is 25 miles west of Detroit. Its northern tip is north of Atlantic City, New Jersey.
- The entire Chesapeake Bay lies north of Cairo, Illinois.
- Louisville, Kentucky, is closer to Windsor, Ontario, than it is to Memphis, Tennessee.
- Michigan's Isle Royale in Lake Superior is farther north than the northern tip of Maine.
- While in Los Angeles, note

AMUSEMENT

that it is east of Reno, Nevada, and—for the record—San Diego is almost east of the states of Oregon and Washington.

- Travel due west of Beaufort, South Carolina, and you reach not Los Angeles, but Mexico.
- All of Florida is south of California.
- Due north of Rome, Georgia, is Lake Superior, the westernmost of the five Great Lakes.
- Connecticut is south of northernmost Pennsylvania, as is Cape Cod, Massachusetts.
- Southernmost Canada is not only south of northernmost Pennsylvania, but also within 138 miles of being as far south as the Mason-Dixon Line.
- Most of Vermont and New Hampshire, along with virtually all of Maine, lies north of Cape Sable, Nova Scotia.
- A little farther south, did you know that the Atlantic end of the Panama Canal is west of its Pacific coast end? What's more, the canal is due south of Charleston, South Carolina.
- Virtually the entire continent of South America is east of Savannah, Georgia.

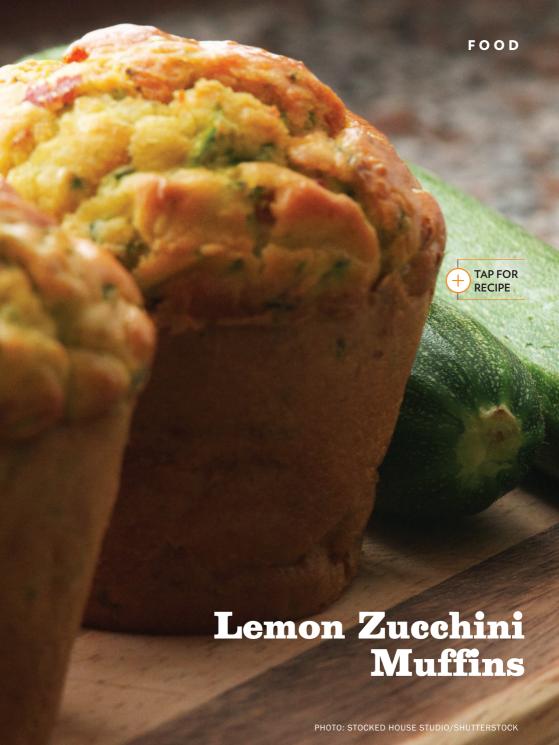
-Almanac editors





Zucchini Recipes

In honor of Sneak Some Zucchini Onto Your Neighbor's Porch Day (August 8), here are a few recipes to share along with your bumper crop.



LEMON ZUCCHINI MUFFINS

2 cups all-purpose flour

1/2 cup sugar

1 tablespoon baking powder

2 teaspoons freshly grated lemon zest

1/2 teaspoon salt

1/4 teaspoon ground nutmeg

1/2 cup chopped walnuts

1/2 cup raisins

2 eggs

1/2 cup milk

1/3 cup vegetable oil

1 cup packed shredded zucchini

Preheat oven to 400°F. Line cups of a standard muffin tin with paper liners, or mist with nonstick cooking spray.

In a bowl, whisk together flour, sugar, baking powder, lemon zest, salt, and nutmeg. Stir in nuts and raisins.

In a separate bowl, beat eggs, then beat in milk and oil. Add to flour mixture, then add zucchini and stir until just blended. Fill muffin cups. Bake for 20 to 24 minutes, or until a toothpick inserted into the center comes out clean and tops are golden brown.

Makes 12 muffins.





PHOTO: LOU EASTMAN

APPLE ZUCCHINI SLAW

DRESSING:

- 1/3 cup mayonnaise
- 3 tablespoons cider vinegar
- 1 tablespoon sugar
- 1 teaspoon caraway seeds

SLAW:

4 cups coarsely shredded zucchini

- 1/4 cup thinly sliced green onions
- 2 Granny Smith apples
- 1 Fuji apple
- 1/4 teaspoon salt
- 1/4 teaspoon freshly ground black pepper

For dressing: In a small bowl, whisk together all ingredients until well blended. Set aside.

For slaw: In a bowl, combine zucchini and green onions.

Core apples and cut into 1/2-inch chunks. Stir apples into zucchini mixture.

Pour dressing over zucchini mixture and toss lightly until well coated. Sprinkle with salt and pepper and mix again. Cover and chill for 3 hours to allow flavors to blend.

To serve, use a slotted spoon to transfer slaw into a serving bowl and discard any liquid left behind.

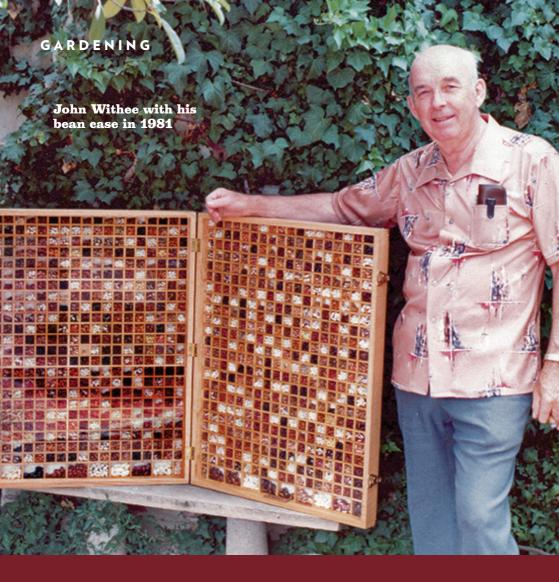
Makes 6 servings.



dunk in egg, and then dredge in bread crumbs. Lay each slice in prepared skillet in a single layer until almost full. Cook for

Serve immediately or transfer to a baking sheet and warm in a 300°F oven until ready to serve. If using, pass sour cream or pasta sauce and Parmesan cheese at the table.

Makes 6 servings.



John Withee's Bean Bag

The simplest solution for threshing dried beans . . .

GARDENING

he late John
Withee was once
known in seedsaving circles as the "Bean
Man" for his devotion
to saving heirloom bean
seeds.

He developed a unique system for threshing dried beans—the kind of beans that you'll harvest any day now and bake this winter or save to plant in the spring. In 1980, John showed us how his threshing method works. We've never found a better system, and we recommend it to anyone who faces a big pile of dried bean plants this fall.

If you handpick the pods, stuff them into a burlap bag or a sack that can breathe and hang them up in your barn or garage until they're crisp—they should rustle when you squeeze them. If you have too many plants to pick by hand, pull them up by the roots and dry them outdoors on a rack.

MAKE A DRYING RACK

To make a rack in minutes, drive two 6-foot-long poles into the ground about 8 inches apart. Run some wire

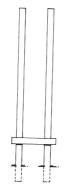


Fig. 1.

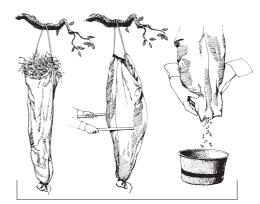


Fig. 2.

or sturdy twine across the connecting poles or secure a strip of wood to the poles about a foot from the ground (see Fig. 1). Taking a good cluster of plants in each hand, lay them across the wire from opposite sides, and repeat to the top. They will balance each other well enough to stay in the rack. When the stack reaches the top of the two poles, wind another piece of wire or twine across the top to hold the plants in place until they are crisp.

PREPARE THRESHING BAGS

Take a piece of burlap and make a cone 5 feet long and 3 feet wide at the top, tapering to a 6-inch opening at the bottom.

On a good, dry day—ideally, one with some wind—hang it from a

branch outside and tie the bottom tightly with a piece of string. Load the dried bean plants into the top. With two clubs (large wooden spoons, lengths of dowels, or even drumsticks), beat the bag on opposite sides to get the beans out of the pods (see Fig. 2).

When the bottom feels full of beans, put a large container under the bag and open it slowly. The beans will tumble out, leaving most of the chaff in the bag.

If bits of chaff and dust get into the beans, spread a blanket on the ground and drop the beans onto it. (Remember to work on a windy day.) After two or three drops, the beans will be nice and clean.



JOHN WITHEE, THE "BEAN MAN"

Born in Portland, Maine, in 1910, John Withee had a lifelong love of the legume. He was raised on them, grew them, and sought out old varieties of them from his childhood as well as others that at first were unknown to him. By 1975, he had over 200 varieties. (One of his favorites was 'Jacob's Cattle'.) By 1979, the number was 680. In 1981, his collection totaled 1,186 heirloom varieties, and he had a following of gardeners who propagated his seeds. A short time later, Withee transferred his beans to Seed Savers Exchange, an organization that would perpetuate his visions of diversity, sharing, and preserving heirloom varieties. He died in 1993.

RED LIGHTNING FORETELLS A DRY SPELL.

TAP TO FIND OUT THE WEATHER HISTORY OF THE DAY

LOVE ALL THINGS WEATHER? TAP FOR THE WEATHER FOLKLORE OF THE DAY

HOW WE MAKE OUR PREDICTIONS

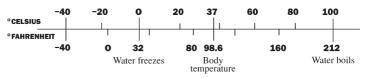
We derive our weather forecasts from a secret formula that was devised by the founder of this Almanac, Robert B. Thomas, in 1792. Thomas believed that weather on Earth was influenced by sunspots, which are magnetic storms on the surface of the Sun.

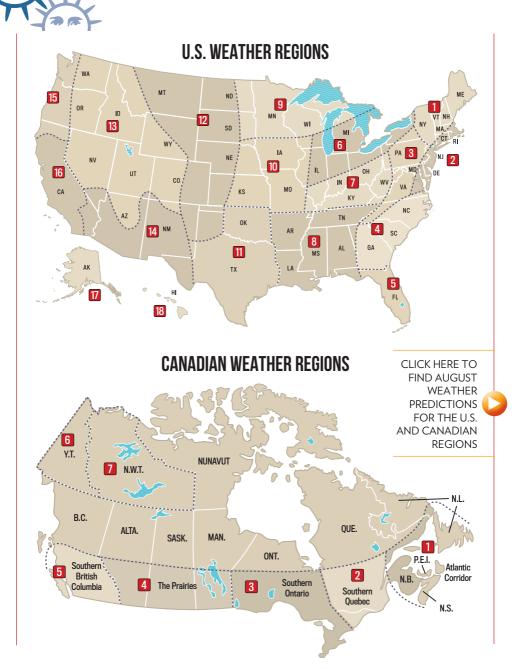
Over the years, we have refined and enhanced this formula with state-of-the-art technology and modern scientific calculations. We employ three scientific disciplines to make our long-range predictions: solar science, the study of sunspots and other solar activity; climatology, the study of prevailing weather patterns; and meteorology, the study of the atmosphere. We predict weather trends and events by comparing solar patterns and historical weather conditions with current solar activity.

Our forecasts emphasize temperature and precipitation deviations from averages, or normals. These are based on 30-year statistical averages prepared by government meteorological agencies and updated every 10 years. Most-recent tabulations span the period 1981 through 2010.

We believe that nothing in the universe happens haphazardly, that there is a cause-and-effect pattern to all phenomena. However, although neither we nor any other forecasters have as yet gained sufficient insight into the mysteries of the universe to predict the weather with total accuracy, our results are almost always very close to our traditional claim of 80 percent.

CELSIUS-FAHRENHEIT TABLE







CLIMATE, CHANGE, AND CO₂

How each affects the weather

day; weather is the condition of the atmosphere over relatively short periods of time, from seconds to a few years. Less apparent are changes in climate: Climate is the average and range of weather events over longer periods, from decades to centuries—or longer.

In fact, Earth's climate has been changing for more than a billion years. Slight shifts in Earth's orbit, the activity of the Sun (such as observed in sunspot cycles, a factor in our forecasts) and volcanoes, the composition of the atmosphere, and even the frequency and magnitude of collisions with extraterrestrial objects have resulted in dramatic changes in Earth's climate. These include several Ice Ages, when much of the planet was frozen, and several warm periods, during which tropical temperatures reached all the way to the poles.

Climate is what we expect, weather is what we get.

-Mark Twain, American writer (1835-1910)

Earth's atmosphere acts to keep temperatures—and therefore, our weather—relatively steady: Our day-to-night temperature range is between about 10 and 30 degrees F. Compare this to the atmosphere-less Moon, where the temperature normally varies more than 500 degrees F between day and night! Lunar temperatures range from about 260°F during the day to minus 280°F at night.

Our planet's climate and temperature stability occur because Earth's atmosphere works in much the same way as the glass in a greenhouse. The glass allows sunlight to enter the greenhouse unimpeded, where it heats the air and ground within, yet the glass prevents the heat from leaving. So it is that sunlight heats Earth's atmosphere and ground, yet the atmosphere prohibits a lot of the heat from escaping back into space.

he gases in Earth's atmosphere, our greenhouse, play a key role in maintaining this stability. Nearly 99 percent of our atmospheric gases consists of nitrogen and oxygen. However, it's the other gases—ozone,

CATACLYSMIC CHANGE

About 66 million years ago, a comet or asteroid hit Earth near Mexico's Yucatán Peninsula. The impact, which had a force with more than a billion times the energy of an atomic bomb, sent so much soot into the atmosphere that it substantially reduced the amount of sunlight reaching Earth's surface, thereby causing the average temperature to drop by nearly 50 degrees F for the next 30 years.

This dramatic cooling, combined with the diminished sunlight—which lessened the ability of plants and plankton to carry out photosynthesis—is believed to have caused the extinction of about three-quarters of all of the plant and animal species then on Earth, including nearly all of the dinosaurs.

However, the situation also provided opportunities. Mammals were the primary winners, evolving into new forms, including horses, whales, bats, and primates, with apes and then humans eventually becoming the dominant species.

water vapor, methane, and carbon dioxide—that cause the greenhouse effect (the capture of heat in the atmosphere) in varying ways.

Ozone is not a significant concern with regard to climate change. Scientists generally agree that it has stabilized in the atmosphere. Water vapor produces clouds, and their presence can increase temperatures (by blocking heat from escaping into space) or decrease temperatures (by blocking sunlight from reaching Earth), depending upon the altitude and thickness of the clouds. Some believe that methane released into the atmosphere by permafrost melt may, in the coming decades, cause an acceleration of warming; this would be significant. Carbon dioxide (CO₂) is another story: It has received the most attention with regard to its effect in

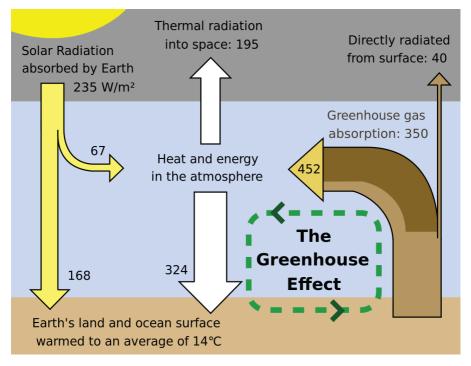
potentially changing Earth's climate.

Historically, the amount of CO₂ in the atmosphere has varied from about 180 parts per million during Ice Ages to nearly 300 parts per million during the interglacial periods. However, since the late 1700s, which marked the beginning of the Industrial Revolution, the amount of carbon dioxide in the atmosphere has increased; today, it is more than 400 parts per million, or about 0.04 percent of the atmosphere.

Some scientists believe this to be only a trace amount—a quantity too small to change Earth's climate. But a substantial majority believe the increase in carbon dioxide to be the driving force behind recent climate change, citing, in particular, the fact that the 10 warmest years in millennia,

QUANTIFYING CO₂

The first ongoing, real-time measurements of carbon dioxide $({\rm CO}_2)$ in the atmosphere were undertaken by Charles David Keeling at Mauna Loa observatory in Hawaii in 1958. He continued taking measurements until he died in 2005. At this time, supervision of the project was taken over by his son, Ralph, a professor of geochemistry at Scripps Institution of Oceanography in California. These records represent the best known and most widely accepted atmospheric ${\rm CO}_2$ measurements. (Daily and historic records can be seen at www.CO2.earth/daily-co2.) Today, measurements are also made at many other sites around the world, as well as by satellite. Historical ${\rm CO}_2$ levels from the past 800,000 years are estimated by measuring bubbles of air trapped in the Arctic and Antarctic ice sheets.



averaged across the entire Earth, have all occurred since 1998, when CO₂ presence has been at its highest.

any of these same scientists believe that the primary cause of the escalation of CO₂ is the burning of fossil fuels such as coal, oil, and gasoline. What's more, this majority believes that as carbon dioxide continues to increase, Earth's temperature will continue to grow warmer, on average, and fundamental weather patterns will

change, resulting in both more flooding and more droughts.

Detractors disagree, and often point to other relatively warm periods in history, such as the 1930s in the United States, as an indication that recent "warmest years" are part of Earth's natural cycles.

Whichever view is correct, we can be certain that weather and climate will continue to change, and we will all experience the effects.

> -Michael Steinberg, Old Farmer's Almanac meteorologist



HUMOR ME

GRINS AND GROANS FROM THE ALMANAC ARCHIVES



SAFETY FIRST

A longhaired man walked into the general store. "Do you sell stale eggs?" he asked.

"No," answered the grocer with a smile, "but I've got some."

"Well, give me all you've got," said the stranger.

As he bundled up the eggs, the grocer laughed and said, "I guess you're going to see *Hamlet* tonight at the opera house."

"No," said the stranger grimly. "I'm going to *play* Hamlet tonight at the opera house."

00PS!

"Why, Freddie!" exclaimed the mother of a precocious 5-year-old. "Aren't you ashamed to have called your Aunt Mary 'stupid'? Now, you go over to her at once and tell her you're sorry!"

"Auntie," said the little fellow a few moments later, "I'm awful sorry you're so stupid."

CLUELESS

An irascible father administered a sound spanking to his son. After he had finished, to drive home the message, he thundered:

"Now, tell me why I punished you!" "That's just it,"



sobbed the boy. "You spank the daylights out of me and don't even know why!"



INSPIRED GRACE

The minister had dropped in just as preparations for supper were nearly finished, and the good housewife felt obliged to delay the meal while she prepared something adequate for the occasion. When the meal was served, this was the minister's grace:

The Lord be praised! How I'm amazed To see how things have mended.
Shortcake and tea
For supper I see
Where milk and mush were intended.

CONTRADICTORY DIALOGUE

"Well, friend, you are first, at last. You used to be behind, before. I am glad to see you getting to be more early, of late."

"Why, yes! I thought I would turn *square* around, straight off, and *come* at once to be ready to *go*."

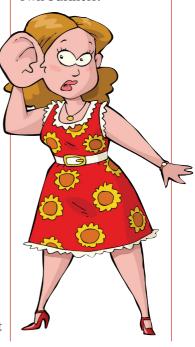
"We must be getting along in short order. I can't stand to sit here, though 'tis bad to bid our friends good-bye."

WAISTED

A milk wagon was struck by a streetcar, and cans of milk and cream flew in every direction. As usual, a crowd gathered. A short man who had squeezed toward the front until his way was blocked by a heavyset woman managed to peek around her and saw the rich cream on the pavement.

"Heavens, what a waste!" he exclaimed.

The woman turned on him and cried, "Now, you mind your own business!"





WHAT'S NEXT



GARDENINGNow's the Time to
Plant a Tree!



CALENDAR
September birthdays;
Moon Watch;
International Day of Peace



NATURALLY
Eat Colorful Plants
for Health



HISTORYThe First Lobotomy



FOOD Best Breakfast Recipes



ASTRONOMY Explore With Our Sky Map

Plus: Weather Update • U.S. and Canadian Weather Forecasts • Gardening by the Moon's Sign • Best Days to Do Things •

• Humor • and much more in the September *EXTRA!*

CELEBRATING THE ALMANAC'S 226TH YEAR!