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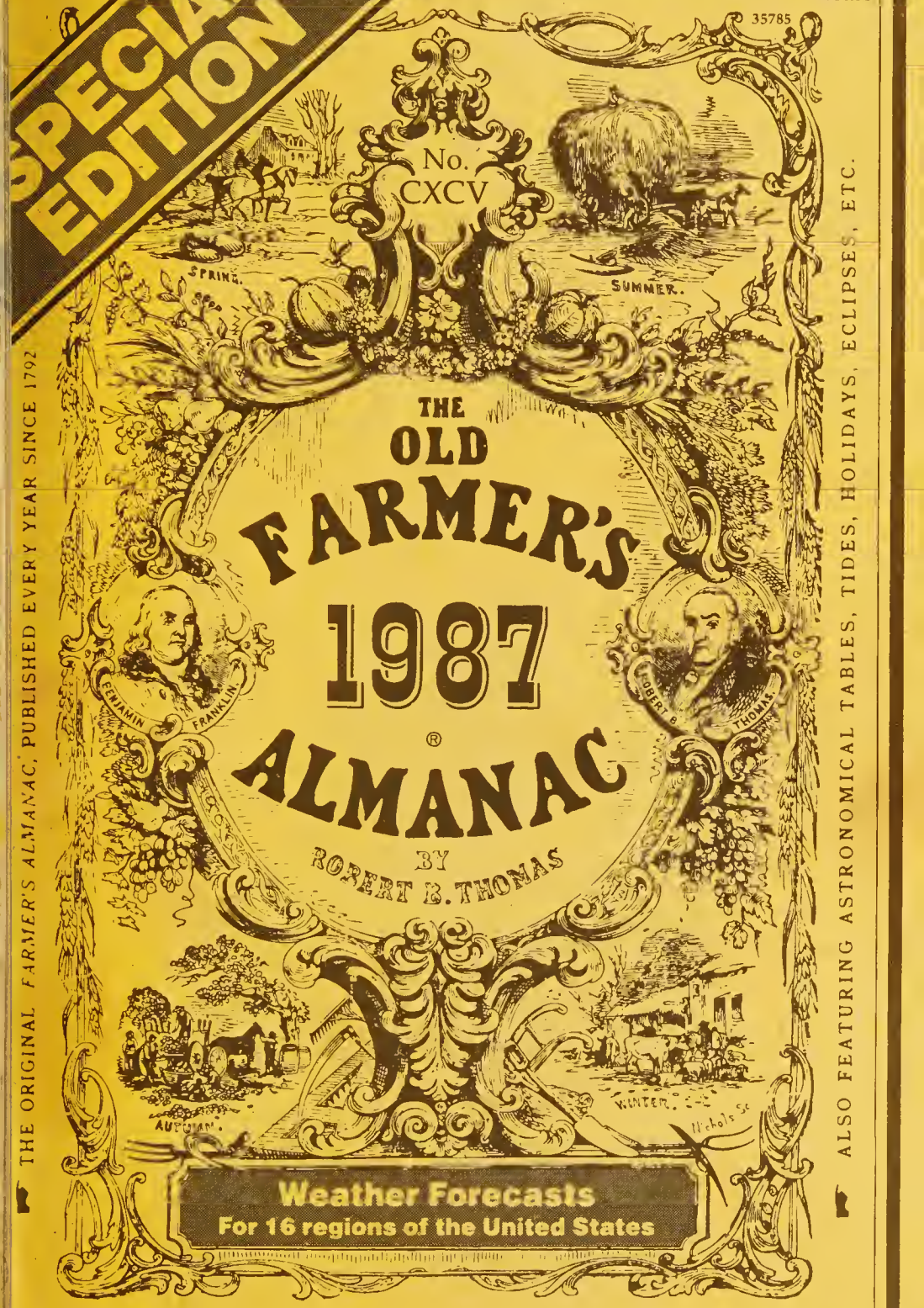

THE OLD FARMER'S 1987 ALMANAC®

BY ROBERT B. THOMAS

Weather Forecasts
For 16 regions of the United States

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THE

OLD FARMER'S ALMANAC

CALCULATED ON A NEW AND IMPROVED PLAN
FOR THE YEAR OF OUR LORD

1987

Being 3rd after BISSEXTILE or LEAP YEAR, and (until July 4)
211th year of American Independence

FITTED FOR BOSTON, AND THE NEW ENGLAND STATES, WITH SPECIAL CORRECTIONS AND CALCULATIONS TO ANSWER FOR ALL THE UNITED STATES.

Containing, besides the large number of Astronomical Calculations and the Farmer's Calendar for every month in the year, a variety of

NEW, USEFUL, AND ENTERTAINING MATTER.
ESTABLISHED IN 1792

BY ROBERT B. THOMAS

Design the winter on the window pane;
Admit pale sun through cobwebs left from autumn;
Remember summer when the flies are stilled;
Remember spring, when the cold spider sleeps.
— Conrad Aiken

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Editor
Jud Hale

To Patrons

The first edition of this almanac was published in 1792, the year George Washington helped lay the cornerstone for the United States capitol building. And it's been going strong every year since then. To try to explain why this little yellow-covered annual continues not only to endure but to remain a best-seller would be as difficult as it would have been to persuade Calvin Coolidge to sing tenor to "Drink to Me Only with Thine Eyes."

It can't be the cover — so important to everything else on newsstands these days. Aside from the outside border and larger type for the number of the year, we've changed the cover only three times since 1793 — and the last change occurred way back in 1853.

Some say it's the only publication in America that includes accurate and easily read astronomical information for each day. Maybe. But sometimes it seems that fewer rather than more people are interested in what precise minute the Sun will rise or that Venus will be at its greatest brilliancy on December 11th.

Surely the weather predictions, then. On this page in 1793, founder Robt. B. Thomas said, "As to my judgment of the weather, I need say but little; for you will in one year's time, without any assistance of mine, very easily discover how near I have come to the truth." And so it is today. We'll do pretty well and then we'll miss something, perhaps even a blizzard. As Mr. Thomas said, there's no way to fudge it. We're comfortable with that. But we'll admit that, although our weather forecasts turn out a lot better than mere guessing (which some jealous meteorologists accuse us of doing!), there's still just enough art involved to keep long-range weather forecasting from being a totally reliable science.

If we've endured because of the editorial features, then maybe we should credit, in part, a 195-year-old sense of humor. That's not to say this year's features on such matters as surefire cures for toothaches and how *not* to rob a bank shouldn't be taken any way but seriously!

The success of this publication is, of course, a combination of things including good luck and particularly, now as we grow older and older, a comforting sense of tradition and continuity engendered by our very reappearance each fall. Maybe one more thing. Mother Ann Lee, founder of the Shakers in this country, once said, "Do all your work as though you had a thousand years to live, and as you would if you knew you must die tomorrow."

For 195 years we've tried.

J.D.H.

* * *

We're indebted to: Dr. Richard Head for all the weather data; Susan Mahnke Peery, assisted by Mary Sheldon, Anna Larson, Jody Saville, Dee Fonville, and Andrew Rothovius, for the editorial work; John Pierce as managing editor; Jill Shaffer as designer; Mary Lewis and Ann Card for production work; Steve Klett and staff for graphic services; Dottie Guy and staff for ad production; George Greenstein, astronomical calculations; Fred Schaaf, astronomical consultant; and Castle Freeman, Jr., Farmer's Calendar essays.

However, it is by our works and not our words that we would be judged. These, we hope, will sustain us in the humble though proud station we have so long held in the name of

Your ob'd servant,

June 1986

Robt. B. Thomas.

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FEATURES

INDEX OF CHARTS, TABLES, FORECASTS, AND DEPARTMENTS

INTRODUCTION

Including How to Use This Almanac Anywhere in the U.S.A.

THE LEFT-HAND CALENDAR PAGES

(Pages 18-42)

These pages will provide you with the phases of the moon; the hour and minute of the sun's rising and setting for each day of the year and month; the length of each day; the times of high tides in Boston in the morning and evening ("11¼" under "Full Sea Boston, A.M." means that the high tide that morning will be at 11:15 A.M. — with the number of feet of high tide shown for some of the dates on the right calendar pages); the hour and minutes of the moon's rising and setting; the declination of the sun in degrees and minutes (angular distance from the celestial equator); the moon's place in the heavens; and finally, in the far right column, the moon's age. The moon's place and age apply, without correction, throughout the United States.

The moon's place given on the left-hand pages is its *astronomical* place in the heavens. (*All* calculations in this Almanac, except for the astrological information on pages 61 and 84-87, are based on astronomy, not astrology.) As well as the 12 constellations of the Zodiac, five other abbreviations appear in this column: Ophiuchus (OPH) is a constellation primarily north of the Zodiac, but with a small corner between Scorpio and Sagittarius. Orion (ORI) is a constellation whose northern limit just reaches the Zodiac between Taurus and Gemini. Auriga (AUR) lies just northeast of Taurus. Sextans (SEX) lies south of the Zodiac except for a corner that just touches it near Leo. Cetus (CET) lies south of the Zodiac, just south of Pisces and Aries.

Eastern Standard Time is used throughout this Almanac. (Be sure to add one hour for Daylight Saving Time between April 5 and October 25.) **All of the times on the left-hand calendar pages are calculated for Boston.** Key letters accompany much of the data; they are provided for the correction of Boston times to other localities. Here's how. . .

Sunrise, Sunset

Note the Key letter to the right of each time for sunrise and sunset in the column entitled "Key." To find the time of sunrise or sunset for your area, consult the Time Correction Tables (pages 49-53). Find your city or the city nearest you and locate the figure, expressed in minutes, in the appropriate Key letter column. Add, or subtract, that figure to the time given for Boston. The result will be accurate to within 5 minutes for latitudes north of 35°, 10 minutes for latitudes 30°-35°, and 15 minutes for latitudes 25°-30°.

Example: April 19 (Easter) sunrise in Boston is 4:57 A.M., EST, with Key letter B (p. 28). To find the time of sunrise in Madison, Wisconsin, look on page 51. Key letter B for Madison is +12 minutes, so sunrise in Madison is 5:09 A.M., CST. Use the same process for sunset. (Add one hour for Daylight Saving Time April 5-October 25.)

Moonrise, Moonset

Moonrise and moonset are figured the same way except that an additional correction factor (see table below) based on longitude should be used. For the longitude of your city, consult pages 49-53.

Longitude of city	58°-76°	77°-89°	90°-102°	103°-115°	116°-127°	128°-141°	142°-155°
Correction minutes	0	+1	+2	+3	+4	+5	+6

Example: To determine moonrise in Salt Lake City, Utah, for September 15, 1987, see page 38. Moonrise in Boston is 10:34 P.M., EST, with Key letter A. For Salt Lake City, time

correction A (page 52) is +49 minutes, moving moonrise to 11:23 P.M. The longitude of Salt Lake City is 111° 53′, so the additional correction is +3 minutes. Moonrise in Salt Lake City, Utah, is therefore 11:26 P.M., MST. (Add one hour for Daylight Saving Time.) Follow the same procedure to determine moonset.

Sundials

Also in the left-hand calendar pages is a column headed "Sun Fast." This is for changing sundial time into local clock time. A sundial reads natural, or sun, time which is neither Standard nor Daylight time except by coincidence. Simply *subtract* Sun Fast time to get local clock time and use Key letter C (pages 49-53) to correct the time for your city. (Add one hour for Daylight Saving Time April 5-October 25.)

Example:	**Boston**	**Chicago**
Sundial reading, March 1	12:00	12:00
Subtract Sun Fast	−3	−3
Add Key C (for Chicago)		+6
Clock Time	11:57 EST	12:03 CST

Rising and Setting of the Planets

The times of rising and setting of visible planets, with the exception of Mercury, are given for Boston on pages 10-11. To convert these times to those of other localities (pages 49-53), follow the same procedure as that given for finding the times of sunrise and sunset.

Length of Day

The "Length of Day" column for Boston (pages 18-42) tells how long the sun will be above the horizon. Use the Time Correction Tables (pages 49-53) to determine sunrise and sunset times for your city. Add 12 hours to the time of sunset, subtract the time of sunrise, and you will have the length of day.

Length of Twilight

Subtract from time of sunrise for dawn. Add to time of sunset for dark.

Latitude	25°N to 30°N	31°N to 36°N	37°N to 42°N	43°N to 47°N	48°N to 49°N
	h m	h m	h m	h m	h m
Jan. 1 to Apr. 10	1 20	1 26	1 33	1 42	1 50
Apr. 11 to May 2	1 23	1 28	1 39	1 51	2 04
May 3 to May 14	1 26	1 34	1 47	2 02	2 22
May 15 to May 25	1 29	1 38	1 52	2 13	2 42
May 26 to July 22	1 32	1 43	1 59	2 27	—
July 23 to Aug. 3	1 29	1 38	1 52	2 13	2 42
Aug. 4 to Aug. 14	1 26	1 34	1 47	2 02	2 22
Aug. 15 to Sept. 5	1 23	1 28	1 39	1 51	2 04
Sept. 6 to Dec. 31	1 20	1 26	1 33	1 42	1 50

Dawn and Dark

The approximate times dawn will break and dark descend are found by applying the length of twilight taken from the table above to the times of sunrise and sunset at any specific place. The latitude of the place (see pages 49-53) determines the column from which the length of twilight is to be selected.

Boston (latitude 42° 22′)		**Los Angeles (latitude 34° 3′)**	
Sunrise April 1	5:27 A.M.	Sunrise April 1	5:52 A.M.
Length of twilight	−1:33	Length of twilight	−1:26
Dawn breaks	3:54 A.M.	Dawn breaks	4:26 A.M.
Sunset April 1	6:10 P.M.	Sunset April 1	6:20 P.M.
Length of twilight	+1:33	Length of twilight	+1:26
Dark descends	7:43 P.M.	Dark descends	7:46 P.M.

THE RIGHT-HAND CALENDAR PAGES
(Pages 19-43)

These pages are a combination of astronomical data; specific dates in mainly the Anglican church calendar, inclusion of which has always been traditional in American and English almanacs (though we also include some other religious dates); tide heights at Boston (the left-hand calendar pages include the daily times of high tides; the corrections for your locality are on pages 44-45); quotations; anniversary dates; appropriate seasonal activities; and a rhyming version of the weather forecasts for New England. (Detailed forecasts for the entire country are presented on pages 64-79.)

The following is a short summary of the highlights from this year's right-hand calendar pages, the signs used, and a sample (the first part of December 1986) of a calendar page explained. . . .

Movable Feasts and Fasts for 1987

Epiphany	Jan. 6	Low Sunday	Apr. 26
Septuagesima Sunday	Feb. 15	Rogation Sunday	May 24
Shrove Tuesday	Mar. 3	Ascension Day	May 28
Ash Wednesday	Mar. 4	Whit Sunday-Pentecost	June 7
Palm Sunday	Apr. 12	Trinity Sunday	June 14
Good Friday	Apr. 17	Corpus Christi	June 18
Easter Day	Apr. 19	1st Sunday in Advent	Nov. 29

The Seasons of 1987

Winter (1986)	Dec. 21	11:02 P.M. E.S.T.	(Sun enters Capricorn)
Spring	Mar. 20	10:52 P.M. E.S.T.	(Sun enters Aries)
Summer	June 21	5:11 P.M. E.S.T.	(Sun enters Cancer)
Fall	Sept. 23	8:45 A.M. E.S.T.	(Sun enters Libra)
Winter (1987)	Dec. 22	4:46 A.M. E.S.T.	(Sun enters Capricorn)

Chronological Cycles for 1987

Golden Number (Lunar Cycle)	12	Roman (A.U.C.)	2740	Jan. 14
Epact	30	Nabonassar	2736	Apr. 27
Solar Cycle	8	Japanese	2647	Jan. 1
Dominical Letter	D	Grecian	2299	Sept. 14
Roman Indiction	10	(Seleucidae)		(or Oct. 14)
Year of Julian Period	6700	Indian (Saka)	1909	Mar. 22
		Diocletian	1704	Sept. 12
ERA — Year	**Begins**	Islamic (Hegira)*	1408	Aug. 25
Byzantine 7496	Sept. 14	Chinese (Lunar)	4624	Jan. 29
Jewish (A.M.)* 5748	Sept. 23	(Hare)		

*Year begins at sunset.

Determination of Earthquakes

Note, on right-hand pages 19-43, the dates when the moon (☾) "runs high" or "runs low." The date of the high begins the most likely five-day period of earthquakes in the northern hemisphere; the date of the low indicates a similar five-day period in the southern hemisphere. You will also find on these pages a notation for moon on the Equator (☾ on Eq.) twice each month. At this time, in both hemispheres, is a two-day earthquake period.

Names and Characters of the Principal Planets and Aspects

Every now and again on these right-hand calendar pages, you will see symbols conjoined in groups to tell you what is happening in the heavens. For example, ☌♀♄ opposite January 24, 1987, on page 23 means that Venus ♀ and Saturn ♄ are on that date in conjunction ☌ or apparently near each other.

Here are the symbols used . . .

☉ The Sun	♀ Venus	♃ Jupiter	♆ Neptune
☾ The Moon	⊕ The Earth	♄ Saturn	♇ Pluto
☿ Mercury	♂ Mars	♅ Uranus	

☌ Conjunction, or in the same degree
☍ Opposition, or 180 degrees
☊ Ascending Node
☋ Descending Node

Sample Page

(from December 1986—page 21)

Day of the month. Day of the week. For detailed regional forecasts, see pages 64-79.

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather
1	M.	New ● Cuban refugees began airlift to Miami, 1965 • Tides 11.5 9.9	A
2	Tu.	☾ at perig. • *A lie has no legs to stand on, but it gets places.* • 11.7 9.9	dusting
3	W.	☾ runs low • ☌♆☾ • Anna Freud born, 1895 • — 11.8	for
4	Th.	☌♄☉ • *Instinct is the nose of the mind.* •	adjusting,
5	Fr.	Folding theater-chair patented, 1854 • Walt Disney born, 1901 • 9.6 11.1	then
6	Sa.	**St. Nicholas** • W.L. Mackenzie King elected Canadian Prime Minister, 1921	some
7	E	**2nd S. Advent** • ☌♂☾ • ☌♃☾ •	more
8	M.	**Concept. of Virgin Mary** • John Lennon killed, 1980 •	on top
9	Tu.	☾ on Eq. • Ball-bearing roller skates patented, 1854 • Tides 9.1 9.0	of that.
10	W.	☾ at ☊ • *Well begun is half done.* • Emily Dickinson born, 1830 •	Mild?
11	Th.	♀ Gr. Brilliancy • 27°, San Francisco, 1932 • 9.4 8.5	Silly
12	Fr.	Marconi sent first transatlantic wireless radio signal, 1901 •	child —
13	Sa.	**St. Lucy** • Dick Van Dyke born, 1925 • Tides 9.6 8.4	turn
14	E	**3rd S. Advent** • ☌♂☉ • Tides 9.7 8.4	up the

The moon is at perigee, or its closest approach to the earth.

Conjunction — closest approach — of Saturn and the Sun.

St. Nicholas, the 4th-century Archbishop of Myra, who is regarded as the patron saint of children. (Certain religious feasts and civil holidays appear in this typeface.)

The Dominical Letter for 1986 was E because the first Sunday of the year fell on the fifth day of January. The letter for 1987 is D.

The moon is at the ascending node, crossing from below to above the ecliptic plane.

Third Sunday of Advent. Events in the church calendar generally appear in this typeface.

Morning tide, shown to be at 9:45 A.M. on the left-hand page, will be 9.7 feet. Evening tide, at 10:30 P.M., will be 8.4 feet.

NOTE: The values of Key Letters are given in the Time Correction Tables. (See pages 49-53.)

Earth at Aphelion and Perihelion 1987

The Earth will be at Perihelion on January 4, 1987, when it will be 91,400,005 miles from the Sun. The Earth will be at Aphelion on July 3, 1987, when it will be 94,512,258 miles from the Sun.

How the Almanac Weather Forecasts Are Made

Our weather forecasts are determined both by the use of a secret weather forecasting formula devised by the founder of this almanac in 1792 and by the most modern scientific calculations based on solar activity. We believe nothing in the universe occurs haphazardly; there is a cause-and-effect pattern to all phenomena, including weather. It follows, therefore, that we believe weather is predictable. It is obvious, however, that neither we nor anyone else has as yet gained sufficient insight into the mysteries of the universe to predict weather with anything resembling total accuracy.

Holidays, 1987

(*) Are recommended as holidays with pay for all employees. (**) State observances only.

Jan. 1 (*) New Year's Day
Jan. 19 (*) Martin Luther King's Birthday
(**) Robert E. Lee's Birthday (Ala., Ark., Miss., S.C., Tenn.);
Confederate Heroes Day (Tex.)
Feb. 2 Groundhog Day
Feb. 12 (**) Abraham Lincoln's Birthday
Feb. 14 Valentine's Day
Feb. 16 (*) George Washington's Birthday (Presidents' Day)
Mar. 2 (**) Texas Independence Day
Mar. 15 (**) Andrew Jackson Day (Tenn.)
Mar. 17 (**) St. Patrick's Day; Evacuation Day (Boston and Suffolk Co., Mass.)
Mar. 30 (**) Seward's Day (Alaska)
Apr. 13 (**) Thomas Jefferson's Birthday (Ala., Okla.)
Apr. 14 Passover
Apr. 17 Good Friday
Apr. 19 Easter; Greek Orthodox Easter
Apr. 20 (**) Patriots Day (Me., Mass.)
Apr. 22 (**) Oklahoma Day
Arbor Day (Nebr.)
Apr. 24 (**) Arbor Day (except Alaska, Nebr.)
Apr. 27 (**) Fast Day (N.H.);
Confederate Memorial Day (Ala., Ga., Miss.)
May 1 May Day
May 8 (**) Harry S. Truman's Birthday (Mo.)
May 10 Mother's Day
May 16 Armed Forces Day
May 25 (*) Memorial Day
June 1 (**) Statehood Day (Tenn.)
June 11 (**) King Kamehameha I Day (Hawaii)
June 14 Flag Day
June 17 (**) Bunker Hill Day (Boston and Suffolk Co., Mass.)
June 20 (**) West Virginia Day
June 21 Father's Day
July 1 Canada Day
July 4 (*) Independence Day
July 24 (**) Pioneer Day (Utah)
Aug. 2 (**) American Family Day (Ariz.)
Aug. 3 (**) Colorado Day
Aug. 9 (**) Herbert Hoover Day (Iowa)
Aug. 10 (**) Victory Day (R.I.)
Aug. 15 (**) Bennington Battle Day (Vt.)
Aug. 27 (**) Lyndon B. Johnson's Birthday (Tex.)
Sept. 7 (*) Labor Day
Sept. 9 (**) Admission Day (Calif.)
Sept. 12 (**) Defenders' Day (Md.)
Sept. 24 Rosh Hashanah
Sept. 28 (**) Frances Willard Day (Wis.)
Oct. 3 Yom Kippur
Oct. 12 (*) Columbus Day
(**) Pioneer Day (S. Dak.)
Oct. 18 (**) Alaska Day
Oct. 24 United Nations Day
Oct. 31 Halloween
(**) Nevada Day
Nov. 3 Election Day
Nov. 11 (*) Veterans Day (Armistice Day)
Nov. 12 Elizabeth Cady Stanton Day
Nov. 14 Sadie Hawkins Day
Nov. 26 (*) Thanksgiving Day
Dec. 10 (**) Wyoming Day
Dec. 15 Bill of Rights Day
Dec. 16 Chanukah
Dec. 21 (**) Forefathers Day (New England)
Dec. 25 (*) Christmas Day

GLOSSARY

Aph. — Aphelion: Planet reaches point in its orbit farthest away from the sun.

Apo. — Apogee: Moon reaches point in its orbit farthest from the earth.

Conj. — Conjunction: Time of apparent closest approach to each other of any two heavenly bodies.

Declination: Measure of angular distance any celestial object lies perpendicularly north or south of celestial equator; analogous to terrestrial latitude. The Almanac gives the sun's declination at noon E.S.T.

Dominical Letter: Used for the ecclesiastical calendar and determined by the date on which the first Sunday of the year falls. If Jan. 1 is a Sunday, the Letter is A; if Jan. 2 is a Sunday, the Letter is B; and so to G when the first Sunday is Jan. 7. In leap years the Letter applies through February and then takes the Letter before.

Eclipse, Annular: An eclipse in which sunlight shows around the moon.

Eclipse, Lunar: Opposition of sun and moon with the moon at or near node.

Eclipse, Solar: Conjunction of sun and moon with the moon at or near node.

El. — Elongation: Apparent angular distance of a member of the solar system from the sun as seen from the earth.

Epact: A number from 1 to 30 to harmonize the lunar year with the solar year, used for the ecclesiastical calendar. Indicates the moon's age at the instant Jan. 1 begins at the meridian of Greenwich, England.

Eq. — Equator: A great circle of the earth equidistant from the two poles.

Equinox, Fall: Sun passes from northern to southern hemisphere.

Equinox, Spring: Sun passes from southern to northern hemisphere.

Evening Star: A planet that is above the horizon at sunset and less than 180° east of the sun.

Golden Number: Denoting the year in the 19-year cycle of the moon. The moon phases occur on the same dates every nineteen years.

Gr. El.: Greatest Elongation.

Inf. — Inferior: Conjunction in which the planet is between the sun and the earth.

Julian Period: A period of 7,980 Julian years, being a period of agreement of solar and lunar cycles. Add 4,713 to year to find Julian year.

Moon's Age: The number of days since the previous new moon. First Quarter: Right half of moon illuminated. Full Moon: Moon reaches opposition. Last Quarter: Left half of moon illuminated. New Moon: Sun and Moon in conjunction.

Moon Runs High or Low: Day of month moon is highest or lowest exactly above the South point of observer's horizon.

Morning Star: A planet that is above the horizon at sunrise and less than 180° west of the sun in right ascension.

Node: Either of the two points where the moon's orbit intersects the ecliptic.

Occultations: Eclipses of stars by the moon.

Opposition: Time when the sun and moon or planet appear on opposite sides of the sky (El. 180°).

Perig. — Perigee: Moon reaches point in its orbit closest to the earth.

Perih. — Perihelion: Planet reaches point in its orbit closest to the sun.

R.A. — Right Ascension: The coordinate on the celestial sphere analogous to longitude on the earth.

Roman Indiction: A cycle of 15 years established Jan. 1, A.D. 313 as a fiscal term. Add 3 to the number of years in the Christian era and divide by 15. The remainder is the year of Roman Indiction — no remainder is 15.

Solar Cycle: A period of 28 years, at the end of which the days of the month return to the same days of the week.

Solstice, Summer: Point at which the sun is farthest north of the celestial equator: Sun enters Cancer. **Winter:** Point at which the sun is farthest south of the celestial equator: Sun enters Capricorn.

Stat. — Stationary: Halt in the apparent movement of a planet against the background of the stars just before the planet comes to opposition.

Sun Fast: Subtract times given in this column from your sundial to arrive at the correct Standard Time.

Sunrise & Sunset: Visible rising and setting of the sun's upper limb across the unobstructed horizon of an observer whose eyes are 15′ above ground level.

Sup. — Superior: Superior Conjunction; indicates that the sun is between the planet and the earth.

Twilight: Begins or ends when stars of the sixth magnitude disappear or appear at the zenith; or when the sun is about 18 degrees below the horizon.

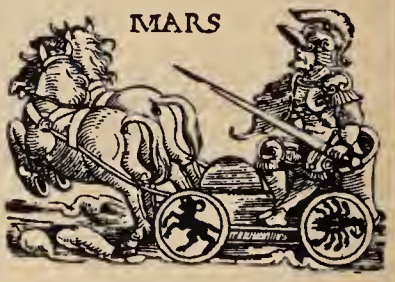
THE VISIBLE PLANETS, 1987

The times of rising or setting of the planets Venus, Mars, Jupiter, and Saturn on the 1st, 11th, and 21st of each month are given below. The approximate time of rising or setting of these planets on other days may be found with sufficient accuracy by interpolation. For an explanation of Key Letters (used in adjusting the times given here for Boston to the time in your town), see page 4 and pages 49-53. Key Letters appear as capital letters beside the time of rising or setting. (For definitions of morning and evening stars, see page 9.)

VENUS is a brilliant object in the morning sky from the beginning of the year until mid July (when it becomes too close to the Sun for observation) and in the evening sky from the end of September until the end of the year. Venus is in conjunction with Saturn on January 24 and November 20, with Jupiter on May 4, and with Mercury on July 12 and October 20.

Boldface — P.M. Lightface — A.M.

Jan. 1	rise	3:28	D	May 1	rise	3:38	C	Sept. 1	**set**	**6:31**	D
Jan. 11	"	3:35	D	May 11	"	3:26	B	Sept. 11	"	**6:19**	C
Jan. 21	"	3:45	E	May 21	"	3:16	B	Sept. 21	"	**6:06**	C
Feb. 1	rise	3:58	E	June 1	rise	3:07	B	Oct. 1	**set**	**5:54**	B
Feb. 11	"	4:09	E	June 11	"	3:03	A	Oct. 11	"	**5:43**	B
Feb. 21	"	4:16	E	June 21	"	3:04	A	Oct. 21	"	**5:34**	B
Mar. 1	rise	4:20	E	July 1	rise	3:10	A	Nov. 1	**set**	**5:29**	A
Mar. 11	"	4:20	D	July 11	"	3:22	A	Nov. 11	"	**5:29**	A
Mar. 21	"	4:17	D	July 21	"	3:40	A	Nov. 21	"	**5:36**	A
Apr. 1	rise	4:10	D	Aug. 1	rise	4:04	A	Dec. 1	**set**	**5:49**	A
Apr. 11	"	4:04	C	Aug 11	"	4:28	A	Dec. 11	"	**6:07**	A
Apr. 21	"	3:49	C	Aug. 21	"	4:53	B	Dec. 21	"	**6:30**	A
								Dec. 31	**set**	**6:55**	A



MARS can only be seen in the evening sky for the first six months of the year, as it moves through Pisces, Aries, Taurus (passing 6° N. of Aldebaran on April 21), Gemini (passing 6° S. of Pollux on June 27), and into Cancer in early July. It soon becomes too close to the Sun for observation until shortly before mid October when it reappears in the morning sky in Virgo. It passes 3° N. of Spica on November 12 and moves into Libra in early December, where it remains for the rest of the year.

Jan. 1	**set**	**10:38**	C	May 1	**set**	**9:50**	E	Sept. 1	rise	4:56	B
Jan. 11	"	**10:35**	C	May 11	"	**9:42**	E	Sept. 11	"	4:49	B
Jan. 21	"	**10:32**	C	May 21	"	**9:32**	E	Sept. 21	"	4:43	B
Feb. 1	**set**	**10:28**	D	June 1	**set**	**9:19**	E	Oct. 1	rise	4:36	C
Feb. 11	"	**10:25**	D	June 11	"	**9:05**	E	Oct. 11	"	4:30	C
Feb. 21	"	**10:22**	D	June 21	"	**8:50**	E	Oct. 21	"	4:23	C
Mar. 1	**set**	**10:19**	D	July 1	**set**	**8:33**	E	Nov. 1	rise	4:17	C
Mar. 11	"	**10:16**	D	July 11	"	**8:14**	E	Nov. 11	"	4:10	D
Mar. 21	"	**10:12**	E	July 21	"	**7:53**	E	Nov. 21	"	4:05	D
Apr. 1	**set**	**10:08**	E	Aug. 1	**set**	**7:30**	D	Dec. 1	rise	3:59	D
Apr. 11	"	**10:03**	E	Aug. 11	"	**7:07**	D	Dec. 11	"	3:54	D
Apr. 21	"	**9:57**	E	Aug. 21	rise	5:03	B	Dec. 21	"	3:49	D
								Dec. 31	rise	3:43	D

JUPITER can only be seen in the evening sky at the beginning of the year in Aquarius; it moves into Pisces in early February. In mid March it becomes too close to the Sun for observation until shortly before mid April when it reappears in the morning sky in Pisces, in which constellation it remains for the rest of the year. Its westward elongation gradually increases until it is at opposition on October 18, when it is visible throughout the night. Jupiter is in conjunction with Mercury on April 19 and with Venus on May 4.

Jan. 1	set	**9:57**	B	May 1	rise	3:43	B	Sept. 1	rise	**8:18**	B
Jan. 11	"	**9:26**	B	May 11	"	3:09	B	Sept. 11	"	**7:38**	B
Jan. 21	"	**8:57**	B	May 21	"	2:35	B	Sept. 21	"	**6:57**	B
Feb. 1	set	**8:25**	B	June 1	rise	1:57	B	Oct. 1	rise	**6:09**	B
Feb. 11	"	**7:57**	C	June 11	"	1:22	B	Oct. 11	"	**5:27**	B
Feb. 21	"	**7:29**	C	June 21	"	12:47	B	Oct. 21	set	5:51	D
Mar. 1	set	**7:07**	C	July 1	rise	12:11	B	Nov. 1	set	5:01	D
Mar. 11	"	**6:40**	C	July 11	rise	**11:36**	B	Nov. 11	"	4:15	D
Mar. 21	rise	6:02	C	July 21	"	**11:00**	B	Nov. 21	"	3:31	D
Apr. 1	rise	5:25	C	Aug. 1	rise	**10:19**	B	Dec. 1	set	2:49	D
Apr. 11	"	4:51	B	Aug. 11	"	**9:41**	B	Dec. 11	"	2:08	D
Apr. 21	"	4:17	B	Aug. 21	"	**9:02**	B	Dec. 21	"	1:29	D
								Dec. 31	set	12:52	D

SATURN rises shortly before sunrise at the beginning of the year in Ophiuchus, in which constellation it remains throughout the year, and can only be seen in the morning sky until early March. Its westward elongation gradually increases until it is at opposition on June 9, when it can be seen throughout the night. From early September until late November it can only be seen in the evening sky; it then becomes too close to the Sun for observation. Saturn is in conjunction with Venus on January 24 and again on November 20.

Jan. 1	rise	5:18	E	May 1	rise	**9:45**	E	Sept. 1	set	**10:36**	A
Jan. 11	"	4:44	E	May 11	"	**9:03**	E	Sept. 11	"	**9:57**	A
Jan. 21	"	4:09	E	May 21	"	**8:21**	E	Sept. 21	"	**9:20**	A
Feb. 1	rise	3:31	E	June 1	rise	**7:34**	E	Oct. 1	set	**8:42**	A
Feb. 11	"	2:55	E	June 11	"	**6:51**	E	Oct. 11	"	**8:06**	A
Feb. 21	"	2:19	E	June 21	set	3:33	A	Oct. 21	"	**7:30**	A
Mar. 1	rise	1:49	E	July 1	set	2:51	A	Nov. 1	set	**6:50**	A
Mar. 11	"	1:12	E	July 11	"	2:09	A	Nov. 11	"	**6:15**	A
Mar. 21	"	12:34	E	July 21	"	1:27	A	Nov. 21	"	**5:40**	A
Apr. 1	rise	**11:47**	E	Aug. 1	set	12:43	A	Dec. 1	set	**5:05**	A
Apr. 11	"	**11:07**	E	Aug. 11	"	12:02	A	Dec. 11	"	**4:30**	A
Apr. 21	"	**10:26**	E	Aug. 21	set	**11:19**	A	Dec. 21	rise	6:45	E
								Dec. 31	rise	6:11	E

MERCURY can be seen low in the east before sunrise between these approximate dates: March 6-April 29, July 12-August 12, November 3-December 6. The planet is brighter at the end of each period; best conditions in northern latitudes occur in mid November. It is visible low in the west after sunset between these approximate dates: January 26-February 21, May 15-June 26, August 30-October 22. The planet is brighter at the beginning of each period; best conditions in high northern latitudes occur in mid February; in low northern latitudes, in late May and early June.

DO NOT CONFUSE 1) Venus with Saturn in late January, with Jupiter in early May, and with Mercury just before mid July and just after mid October; in all cases Venus is the brighter object. 2) Mercury with Jupiter just after mid April, when Jupiter is the brighter object. 3) Mercury with Mars in the first three weeks of June, when Mercury is the brighter object. The reddish tint of Mars should assist in its identification.

ECLIPSES FOR 1987

There will be four eclipses in 1987, two of the Sun and two of the Moon. Lunar eclipses technically are visible from the entire night side of the Earth; solar eclipses are visible only in certain local areas. Both lunar eclipses in 1987 will be visible in the United States and Canada; neither solar eclipse will be visible here.

1. Annular-total eclipse of the Sun, March 29. This eclipse will be visible in southern South America, part of Antarctica, most of Africa, extreme southeastern Europe, and southwestern Asia.

2. Penumbral eclipse of the Moon, April 13. This lunar eclipse begins at 7:20 P.M. EST and ends at 11:18 P.M. EST. The beginning will be visible throughout eastern portions of the United States and Canada. In western and central regions, the Moon will rise eclipsed. The end will be visible throughout the United States and Canada. This eclipse belongs to the initial penumbral series preceding the umbral eclipse of May 16, 2041.

3. Annular eclipse of the Sun, September 22. This solar eclipse will be visible in Asia, the Philippines, Indonesia, New Guinea, northeastern Australia, and New Zealand.

4. Penumbral eclipse of the Moon, October 6-7. This eclipse will be visible throughout the United States and Canada, except that the beginning will not be visible in Alaska and extreme northwestern Canada. The eclipse begins at 8:53 P.M. EST on October 6 and ends at 1:10 A.M. EST on October 7.

FULL MOON DAYS

	1987	*1988*	*1989*	*1990*	*1991*		*1987*	*1988*	*1989*	*1990*	*1991*
Jan.	14	3	21	10	30	July	10	28	18	7	26
Feb.	13	2	20	9	28	Aug.	9	27	16	6	25
Mar.	15	3	22	11	30	Sept.	7	25	15	4	23
Apr.	13	2	20	9	28	Oct.	6	24	14	4	23
May	13	1/31	20	9	28	Nov.	5	23	13	2	21
June	11	29	19	8	26	Dec.	5	23	12	2/31	21

PRINCIPAL METEOR SHOWERS

Shower	Best Hour (EST)	Radiant Direction*	Date of Maximum**	Approx. Peak Rate (/hr.)	Associated Comet
Quadrantid	5 A.M.	N.	Jan. 4	40-150	—
Lyrid	4 A.M.	S.	Apr. 21	10-15	1861 I
Eta Aquarid	4 A.M.	S.E.	May 4	10-40	Halley
Delta Aquarid	2 A.M.	S.	July 30	10-35	—
Perseid	4 A.M.	N.	Aug. 11-13	50-100	1862 III
Draconid	9 P.M.	N.W.	Oct. 9	10	Giacobini-Zinner
Orionid	4 A.M.	S.	Oct. 20	10-70	Halley
Taurid	midnight	S.	Nov. 9	5-15	Encke
Andromedid	10 P.M.	S.	Nov. 25-27	10	Biela
Leonid	5 A.M.	S.	Nov. 16	5-20	1866 I
Geminid	2 A.M.	S.	Dec. 13	50-80	—
Ursid	5 A.M.	N.	Dec. 22	10-15	—

* Direction from which the meteors appear to come.
** Date of actual maximum occurrence may vary by one or two days in either direction.

BRIGHT STARS, 1987

The upper table shows the Eastern Standard Time when each star transits the meridian of Boston (i.e., lies directly above the horizon's south point there), and its altitude above that point at transit on the dates shown. The time of transit on any other date differs from that on the nearest date listed by approximately four minutes of time for each day. For a place outside Boston the local time of the star's transit is found by correcting the time at Boston by the value of Key Letter "C" for the place. (See footnote.)

Star	Constellation	Magni-tude	Time of Transit (E.S.T.) **Boldface—P.M.** Lightface—A.M. Jan. 1	Mar. 1	May 1	July 1	Sept. 1	Nov. 1	Alt.
Altair	Aquila	0.8	**12 51**	8 59	4 59	12 59	**8 51**	**4 51**	56.3
Deneb	Cygnus	1.3	**1 41**	9 49	5 50	1 50	**9 42**	**5 42**	87.5
Fomalhaut	Psc. Austr.	1.2	**3 56**	**12 04**	8 04	4 04	12 01	**7 57**	17.8
Algol	Perseus	2.2	**8 07**	**4 15**	**12 15**	8 15	4 11	12 11	88.5
Aldebaran	Taurus	0.9	**9 34**	**5 42**	**1 42**	9 42	5 39	1 39	64.1
Rigel	Orion	0.1	**10 12**	**6 20**	**2 21**	10 21	6 17	2 17	39.4
Capella	Auriga	0.1	**10 14**	**6 22**	**2 22**	10 22	6 19	2 19	85.4
Bellatrix	Orion	1.6	**10 23**	**6 31**	**2 31**	10 31	6 28	2 28	54.0
Betelgeuse	Orion	0.7	**10 53**	**7 01**	**3 01**	11 01	6 58	2 58	55.0
Sirius	Can. Maj.	-1.4	**11 43**	**7 51**	**3 51**	11 51	7 47	3 47	31.0
Procyon	Can. Min.	0.4	12 40	**8 45**	**4 45**	**12 45**	8 41	4 41	52.9
Pollux	Gemini	1.2	12 46	**8 51**	**4 51**	**12 51**	8 47	4 47	75.7
Regulus	Leo	1.4	3 09	**11 14**	**7 14**	**3 14**	11 10	7 10	59.7
Spica	Virgo	1.0	6 26	2 34	**10 30**	**6 30**	**2 26**	10 27	36.6
Arcturus	Bootes	-0.1	7 17	3 25	**11 21**	**7 21**	**3 17**	11 17	66.9
Antares	Scorpius	var.09	9 29	5 37	1 38	**9 34**	**5 30**	**1 30**	21.3
Vega	Lyra	0.0	11 37	7 45	3 45	**11 41**	**7 38**	**3 38**	86.4

Risings and Settings. The times of the star's rising and setting at Boston on any date are found by applying the interval shown to the time of the star's transit on that date. Subtract the interval for the star's rising; add it for its setting. The times for a place outside Boston are found by correcting the times found for Boston by the values of the Key Letters shown. (See footnote.) The directions in which the star rises and sets shown for Boston are generally useful throughout the United States. Deneb, Algol, Capella, and Vega are circumpolar stars — this means that they do not appear to rise or set but are above the horizon.

Star	Int. hr.m.	Rising Key	Dir.	Setting Key	Dir.	Star	Int. hr.m.	Rising Key	Dir.	Setting Key	Dir.
Altair	6 36	B	EbN	D	WbN	Procyon	6 23	B	EbN	D	WbN
Fomalhaut	3 59	E	SE	A	SW	Pollux	8 01	A	NE	E	NW
Aldebaran	7 06	B	ENE	D	WNW	Regulus	6 49	B	EbN	D	WbN
Rigel	5 33	D	EbS	B	WbS	Spica	5 23	D	EbS	B	WbS
Bellatrix	6 27	B	EbN	D	WbN	Arcturus	7 19	A	ENE	E	WNW
Betelgeuse	6 31	B	EbN	D	WbN	Antares	4 17	E	SEbE	A	SWbW
Sirius	5 00	D	ESE	B	WSW						

NOTE: The values of Key Letters are given in the Time Correction Tables.
(See pages 49-53.)

LETTERS TO THE ASTRONOMER

Dr. George Greenstein, astronomer
for *The Old Farmer's Almanac,* answers readers' questions

Why was Halley's Comet so dim in 1986 when history talks of its spectacular appearance at the Battle of Hastings, the Fall of Jerusalem, and even in 1910?

Because it passed very far from us in 1986. Both Halley's Comet and the Earth travel in regular orbits about the Sun, but this does not mean each succeeding encounter is the same. Some are close and some are distant. If you and a friend commute to work by routes that cross, the two of you may not necessarily pass one another — or even see one another — each morning. It would depend on when each one of you sets forth.

Are stars evenly distributed throughout the universe?

No, they are not. In our vicinity they are more or less randomly scattered about, but occasionally there is a dense cluster — the Pleiades for instance. With a backyard telescope or a good pair of binoculars, you can find more distant but larger clusters containing hundreds of thousands of stars. The great globular cluster in Hercules is a good example. Biggest of all is the mighty Milky Way galaxy in which we live: hundreds of billions of suns arranged in a gigantic pinwheel, shot through with winding spiral arms and rotating on its axis once every two hundred million years.

How many planets have rings?

Prior to 1977 people thought only Saturn had rings. But in that year people observing an occultation (covering-up) of a distant star by Uranus accidentally found that the star suddenly dimmed and brightened a number of times just before and then again just after being obscured by the planet. They hypothesized these dimmings were caused by the star's passing behind a series of rings. Next came Jupiter: the Voyager space probe found rings there in 1979. Right now Voyager is on its way to Neptune and is due to arrive there in 1989. We're all waiting.

Why do we care that the moon is "running high" or "running low," as the Almanac *calendar pages say?*

As the equator wraps about the Earth, so the celestial equator wraps about the sky. It runs in an arc from east to west, passing low in the south — and the farther north one stands, the lower it passes. When the Moon "runs low," it is the farthest beneath this equator, and if you live sufficiently far north, it will actually never rise above the horizon that night. For those of us in more temperate zones, the Moon will still be very low in the sky at these times. Similarly, it will be unusually high in the sky when it "runs high."

Would you be interested in traveling to space?

Depends on who's driving. □□

This May Be Your Lucky (or Unlucky) Day

☐ ACCORDING TO HESIOD, WRITING IN the 8th century B.C., each day in the month was to be regarded not only for its weather but for its favor in the eyes of the gods. Here is how these days were regarded by the ancients.

1 Holy.
2 Luckless.
3 Luckless.
4 Holy. Build ships. Bring home bride. Avoid heartfelt troubles. Fate day.
5 Avoid. Unkindly and terrible.
6 Changeable.
7 Holy.
8 Geld the boar and the bull. Beget
9 or bear. Both these days good for the works of man.
10 Favorable day for a man to be
11 born. Shear sheep and reap fruits.
12 Better still. Geld mules.
13 Set plants, but do not sow.
14 Holy above all. Favorable for girl to be born. Tame sheep, mules, horned oxen, and dogs.
15 Brings nothing.
16 Fence the sheepcote. Geld kids or sheep. Favorable for male to be born but unfavorable for girl to be born or married. Unfavorable day for plants.
17 Cut timbers.
18 Luckless.
19 Improves towards evening.
20 A wise man is born on this day.
21 Luckless.
22 Luckless.
23 Luckless.
24 Best in morning—less good towards evening. Avoid heartfelt troubles. Fate day.
25 Changeable.
26 Changeable.
27 Launch ships. Open brine jars. Yoke oxen.
28 Luckless.
29 Luckless.
30 Look over work. Deal out supplies.
31 Luckless.

Hesiod also did some dire prophesying on his account—but don't let it get you down.

"For now truly is a race of iron and men never rest from labor and sorrow by day, and from perishing by night . . . and Zeus will destroy this race of mortal men when they come to have gray hair on the temples at their birth. The father will not agree with his children nor guest with host nor comrade with comrade, nor brother be dear to brother as aforetime. Men will dishonour their parents as they grow quickly old . . . and one man will sack another's city. There will be no favour for the man who keeps his oath or for the just or for the good; but rather men will praise the evildoer and his violent dealing. Strength will be right and reverence will cease to be; and the wicked will hurt the worthy man, speaking false words against him, and will swear an oath upon them . . . and bitter sorrows will be left for mortal men and there will be no help against evil." ☐☐

Have a Happy Friday the 13th

There'll be three of them in 1987. If that bothers you, you may have a case of triskaidekaphobia.

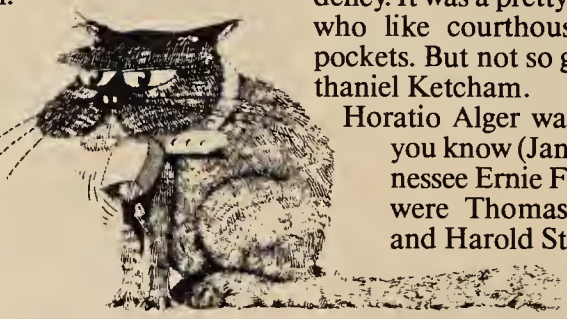
by Rick Horowitz
illustrated by Bob Johnson

☐ FEELING A LITTLE BIT EDGY one particular day a month? Do the little hairs on your arms start darting around with minds of their own? Do you find you're looking behind you everywhere you go? Are you sure there's something out there, but you can't quite name it?

Wrap your tongue around this one: triskaidekaphobia.

Triskaidekaphobia is the fear of the number 13. If you've got it, you're not alone. And you're probably at your worst on a 13th that's also a Friday.

The town fathers of French Lick Springs, Indiana, once decreed that all black cats in town should wear bells on Friday the 13th.



"If you want to break the spell of a broken mirror on Friday the 13th," suggested a man in Denton, Texas, "go to the top of the highest mountain or building and burn all your socks with holes in them."

In years past, ocean liners scheduled to leave port on the 13th (Friday or not) would often contrive to delay their departures until after midnight, and there are other people who simply won't travel on that day.

But why all the fuss? What's made 13 such a worrisome number, Friday such a troublesome time? The people who claim to know such things offer two contending possibilities. There were 13 people at the Last Supper, they point out, and the crucifixion of Christ occurred on a Friday. That's one.

Here's two, from Norse mythology: Twelve Norse gods were enjoying a dinner feast in Valhalla when a 13th — the cruel, mischievous god Loki — intruded and caused the death of Baldur the Beautiful, the embodiment of joy and gladness. Nobody knows what day of the week that was.

In any event, that's where the experts think it came from, but where has it gone? *Are* 13ths particularly unlucky?

Well, as with so many things, where you stand depends on where you sit. For example, on Friday the 13th of July in 1900, Teddy Roosevelt laid the cornerstone for a new county courthouse in New York and spoke of the need for honesty in government. "During the exercises," a newspaper reported the next day, "Nathaniel Ketcham, who was on the platform, had his pockets picked of $140, another man lost $103, and several watches were stolen." It was a good day for Roosevelt, who in a year's time would succeed to the presidency. It was a pretty good day for folks who like courthouses and for pickpockets. But not so good a day for Nathaniel Ketcham.

Horatio Alger was born on a 13th, you know (January). So was Tennessee Ernie Ford (February). So were Thomas Jefferson (April) and Harold Stassen (April). Fort Sumter, South Carolina, was captured on a 13th (April), igniting the Civil War.

The "Potato War" over the Bavarian Succession ended on May 13th in 1717. Ludwig II, the insane king of Bavaria, drowned on the 13th of June in 1886, and Alexander the Great died of fever in Babylon on the very same date in 323 B.C.

Some 750,000 pounds of paper fluttered down around Charles Lindbergh during a ticker-tape parade in New York City on June 13, 1927. That was

lucky for "Lucky Lindy," less lucky for the garbage men.

On July 13, 1865, Horace Greeley said, "Go west, young man." On July 13, 1881, Billy the Kid, who did, was shot dead in New Mexico. On July 13, 1930, the first television broadcast was aired. Good luck or bad? It all depends: How do *you* feel about "Falcon Crest"?

The Luray Caverns in Virginia were discovered on the 13th of August in 1878 — great luck for bumper sticker salesmen. Francis Scott Key wrote "The Star-Spangled Banner" on September 13, 1814 — very good luck, unless you go to ball games a lot. And on that same date in 1857, Milton S. Hershey, candy-maker, was born. Hershey also died on a 13th, in October of 1945.

Richard Nixon nominated Gerald Ford to replace the recently departed Spiro Agnew as vice president on October 13, 1973. That was a lucky break for Mr. Ford; not so lucky, it turned out, for Mr. Nixon.

The Holland Tunnel connecting New York and New Jersey opened on November 13, 1927. And on the 13th one month later 10-year-old violinist Yehudi Menuhin made a spectacular Carnegie Hall debut.

All in all, the 13th has a mixed record, historically speaking. Still, some people just don't take very kindly to it. The Turks, it's said, almost expunged the number from their vocabulary. In many of the streets and squares of Florence, Italy, 12½ substitutes for 13. French socialites known as "quatorziens" ("fourteeners") once made themselves available as emergency fill-ins when a dinner party unexpectedly contained exactly 13 people.

On the other hand, in Madagascar 13 means nothing. They consider six the unlucky number there. In Japan it's three. But in China the number three — and nine, which is three times three — is considered very lucky indeed.

Then there are those who consider the number 13 quite lucky, like some theatrical people of old, who tried to sign all their contracts on that day. Or in Great Britain, where eating Christmas pudding in 13 different houses before January 1 was supposed to bring joy and prosperity in the next year.

President Eisenhower was lucky, too; he was even made honorary president of Missouri's Lucky 13 Club, consisting of that state's 13 presidential electors. They liked the fact that "Ike Eisenhower" had 13 letters. Maybe Gary (4) Hartpence (9) should have thought about that before his famous syllablectomy years ago.

In fact, the U.S.A. is so full of lucky 13ths that even normally superstitious political types should put their minds at ease. George Washington laid the cornerstone for the White House on a 13th (October 1792). The cornerstone for the Supreme Court was laid on the same date in 1932. There were 13 original colonies, of course, and the Great Seal of the United States contains 13

stars, 13 bars, and an eagle with 13 tail feathers, holding 13 arrows and 13 olive branches. "E Pluribus Unum" even has 13 letters.

You'd think all that would calm at least the American triskaidekaphobes, but no such luck.

Anyhow, for those who made it past 1986's only double whammy date, Friday, June 13: Congratulations. But be careful — 1987's got three of them (February, March, and November).□□

1986 NOVEMBER, THE ELEVENTH MONTH

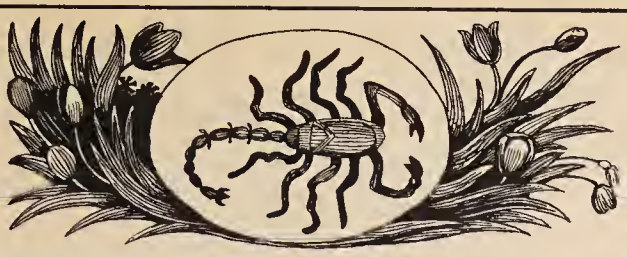
The Great Square of Pegasus is high in the southwest. Overhead at mid evening is its neighbor Andromeda, containing the fuzzy spot of light that is M31, the Great Galaxy over two million light years distant. Cassiopeia the Queen forms a bright chair or a letter M high in the north, while the Big Dipper (in Britain called the Plough) scrapes the northern horizon. Mercury passes right in front of the Sun on the 12th for its first transit in 13 years; unfortunately this rare event will not be visible from the United States. A sequence of conjunctions of the Moon begins on the 3rd with Mercury and is followed on the 4th with Saturn and Uranus and on the 5th with Neptune. Mercury makes a bright appearance in the morning sky at month's end, following Venus in the east before dawn.

ASTRONOMICAL CALCULATIONS

●	New Moon	2nd day	1st hour	3rd min.
☽	First Quarter	8th day	16th hour	12th min.
○	Full Moon	16th day	7th hour	13th min.
☾	Last Quarter	24th day	11th hour	51st min.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h.m.	Key	☽ Sets h.m.	Key	Declination of sun ° ′	☽ Place	☽ Age
305	1	Sa.	6 17	D	4 38	B	10 21	31	10	10½	5 A M 28	E	4 P M 13	B	14S.29	VIR	29
306	2	E	6 19	D	4 37	B	10 18	31	10¾	11¼	6 47	E	4 43	A	14 48	LIB	0
307	3	M.	6 20	D	4 35	B	10 15	31	11½	—	8 09	E	5 21	A	15 07	LIB	1
308	4	Tu.	6 21	D	4 34	B	10 13	31	12	12¼	9 30	E	6 09	A	15 25	SCO	2
309	5	W.	6 22	D	4 33	B	10 11	31	1	1¼	10 44	E	7 09	A	15 44	OPH	3
310	6	Th.	6 24	D	4 32	B	10 08	31	1¾	2	11 A M 45	E	8 21	A	16 02	SAG	4
311	7	Fr.	6 25	D	4 31	B	10 06	31	2¾	3	12 P M 33	E	9 37	B	16 20	SAG	5
312	8	Sa.	6 26	D	4 30	B	10 04	31	3¾	4	1 10	E	10 P M 53	B	16 37	CAP	6
313	9	E	6 27	D	4 28	B	10 01	31	5	5¼	1 39	E	— —	–	16 55	CAP	7
314	10	M.	6 29	D	4 27	A	9 58	31	6	6¼	2 02	D	12 A M 07	C	17 12	AQU	8
315	11	Tu.	6 30	D	4 26	A	9 56	31	7	7½	2 23	D	1 17	C	17 28	AQU	9
316	12	W.	6 31	D	4 25	A	9 54	31	8	8¼	2 42	C	2 25	D	17 45	PSC	10
317	13	Th.	6 32	D	4 24	A	9 52	31	8¾	9¼	3 02	B	3 31	E	18 01	PSC	11
318	14	Fr.	6 34	D	4 23	A	9 49	31	9½	10	3 22	B	4 37	E	18 16	PSC	12
319	15	Sa.	6 35	D	4 23	A	9 48	30	10¼	10¾	3 46	B	5 42	E	18 31	ARI	13
320	16	E	6 36	D	4 22	A	9 46	30	10¾	11½	4 14	A	6 48	E	18 46	ARI	14
321	17	M.	6 37	D	4 21	A	9 44	30	11½	—	4 47	A	7 53	E	19 01	TAU	15
322	18	Tu.	6 38	D	4 20	A	9 42	30	12	12	5 28	A	8 56	E	19 15	TAU	16
323	19	W.	6 40	D	4 19	A	9 39	30	12¾	12¾	6 16	A	9 52	E	19 29	TAU	17
324	20	Th.	6 41	D	4 19	A	9 38	29	1¼	1½	7 13	A	10 41	E	19 43	ORI	18
325	21	Fr.	6 42	D	4 18	A	9 36	29	2	2¼	8 14	B	11 22	E	19 57	GEM	19
326	22	Sa.	6 43	D	4 17	A	9 34	29	2¾	3	9 18	B	11 A M 55	E	20 10	CAN	20
327	23	E	6 45	D	4 17	A	9 32	29	3¾	3¾	10 25	B	12 P M 23	E	20 23	CAN	21
328	24	M.	6 46	D	4 16	A	9 30	28	4½	4¾	11 P M 31	C	12 47	D	20 35	LEO	22
329	25	Tu.	6 47	D	4 15	A	9 28	28	5¼	5½	— —	–	1 08	D	20 47	LEO	23
330	26	W.	6 48	D	4 15	A	9 27	28	6¼	6½	12 A M 39	D	1 28	D	20 58	VIR	24
331	27	Th.	6 49	D	4 14	A	9 25	27	7	7½	1 47	D	1 49	C	21 09	VIR	25
332	28	Fr.	6 50	D	4 14	A	9 24	27	7¾	8¼	3 00	E	2 12	B	21 20	VIR	26
333	29	Sa.	6 51	D	4 14	A	9 23	27	8¾	9¼	4 16	E	2 38	B	21 30	VIR	27
334	30	E	6 52	E	4 13	A	9 21	26	9½	10	5 A M 37	E	3 P M 11	B	21S.40	LIB	28



From gold to gray our mild sweet day
Of Indian summer fades too soon;
But tenderly above the sea
Hangs, white and calm, the hunter's moon.
— John Greenleaf Whittier

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	*Weather* ↓
1	Sa.	**All Saints** • Dark day in New England, 1716 • Tides {10.8 10.2	*Good*
2	E	**24th S. af. P.** • **All Souls** • New ● • ☿ stat.	
3	M.	☌☿☾ • ☾ at perig. • Bob Feller born, 1918 •	*riddance!*
4	Tu.	General Election Day • ☌♄☾ • ☌♁☾	*Clear then*
5	W.	Guy Fawkes' plot, 1605 • ♀ at inf. ☌ • ☌♆☾ • {9.9 11.4	*inter-*
6	Th.	**St. Leonard** • ☾ runs low • John Philip Sousa born, 1854	*mittents.*
7	Fr.	*Fine words butter no parsnips.* • "Galloping Gertie" bridge collapsed, Tacoma, Wash., 1940	*Cold*
8	Sa.	♃ stat. • ☌♁☾ • "Beer Hall Putsch," Munich, 1923 {8.9 10.0	*that's*
9	E	**25th S. af. P.** • Eastern seaboard blackout, 1965 •	*season-*
10	M.	☌♃☾ • Skunks hibernate • Martin Luther born, 1483 • {8.9 9.4	*able;*
11	Tu.	**St. Martin** • **Veterans Day** • Indian Summer begins.	*heavy*
12	W.	☾ on Eq. • ☿ transits ☉ • 105°, Craftonville, Calif., 1906 •	*rain*
13	Th.	☾ at ♌ • Hudson River frozen at Albany, N.Y., 1920 • Tides {9.8 9.2	*then*
14	Fr.	*A growing moon and a flowing tide are lucky times to marry in.* • Tides {10.0 9.2	*snow*
15	Sa.	Sadie Hawkins Day • 45" snow, Watertown, N.Y., 1900 •	*up north.*
16	E	**26th S. af. P.** • Full Beaver ○ •	*Unreason-*
17	M.	*If you lend to the poor, you get your interest from God.* • Gordon Lightfoot born, 1938	*able!*
18	Tu.	Lewis and Clark expedition reached the Pacific, 1805 • Tides {8.8 9.9	*Icy then*
19	W.	☾ at apo. • 1st model train set sold, Goppinzen, Germany, 1891 •	*nicey,*
20	Th.	☾ runs high • Indian Summer ends. • Tides {8.4 9.4	*outlook*
21	Fr.	Prune grapevines now. • *Be wisely worldly, not worldly wise.* •	*dicey.*
22	Sa.	**St. Cecilia** • ☿ stat. • Wiley Post born, 1898 • {8.0 8.9	*Dress*
23	E	**27th S. af. P.** • ♀ stat. • Tides {7.9 8.7	*your*
24	M.	*If there be ice in November that will bear a duck, There'll be nothing thereafter but sleet and muck.*	*turkey*
25	Tu.	**St. Catherine** • O.J. Simpson gained 273 yards for Buffalo Bills vs. Detroit Lions, 1976	
26	W.	☾ on Eq. • *Alice in Wonderland* published, 1865 • Tides {8.6 8.8	*warm:*
27	Th.	**Thanksgiving Day** • Jimi Hendrix born, 1942 • {9.2 9.0	*heavy*
28	Fr.	☾ at ♉ • *If a man would have half his wishes, he would double his troubles.*	*snow-*
29	Sa.	☌♀☾ • ☿ Gr. Elong. (20° West) • Tides {10.5 9.5	*storm!*
30	E	**1st Sun. in Advent** • **St. Andrew** • ☌☿☾	

"We may achieve climate, but weather is thrust upon us."
— O.Henry

Farmer's Calendar

The partridge is not a large bird. It's smaller than a crow, not a great deal bigger than a jay. It seems bigger than it is because it makes a big commotion: the partridge is the land mine of the fall woods. With a sudden blast among the dead leaves, it bursts from under your very feet and goes racketing off into the woods, its wings making a noise like a great flail. You get the impression of a sizable bird, when all you really have had is a sizable scare.

There is no wilder bird in the woods. Don't look for the partridge to come up to your window and partake prettily of the store-bought seed you spread for less rugged species that have made their peace with men. The partridge is unreconstructed. It stands by the meager winter woods and eats rough because that's the way a partridge ought to do. The partridge is like the old mountain man years ago who walked 10 miles into the village and 10 miles back every day along the new road. When someone asked him whether a car wouldn't make the trip easier, he said, "It would." When he was asked why he didn't get one, then, he said, "We don't have — autos," making it clear that the contempt he allowed himself to express on that occasion was more than worth its purchase by a 20-mile walk.

The partridge has two selves, one down, one up. In summer it lives in the hardwoods and brush country. It's a retiring bird then, a shy bird. In the winter the partridge moves into the evergreen thickets, and at that time, too, it stays pretty low and slow. In the spring, however, the mother partridges are out with their broods. You see them briskly crossing the dirt roads; you see them along the meadow's edge. And in the fall the partridge plays its trick, popping out of your back pocket and zinging away once more into the gray woods.

DECEMBER, THE TWELFTH MONTH

Mighty Orion, the most spectacular of all the constellations, is high in the east; the Pleiades are overhead, and Cygnus the Swan is low in the west. Aldebaran and the V-shaped Hyades of Taurus the Bull's face follow the Pleiades. Venus, the yellow-white queen of planets, is again at greatest brilliancy on December 11 and can be seen low in the east before sunrise. Mars finally catches Jupiter and passes just half a degree south of the now far brighter planet for a lovely sight in the south after sunset on the evening of December 18. Geminid meteors, as plentiful as one per minute or better, might be seen after moonset on the mornings of the 13th and 14th. The solstice will be at 11:02 P.M. EST on the 21st. The days begin to lengthen on the 26th.

ASTRONOMICAL CALCULATIONS

●	New Moon	1st day	11th hour	44th min.
☽	First Quarter	8th day	3rd hour	3rd min.
○	Full Moon	16th day	2nd hour	6th min.
☾	Last Quarter	24th day	4th hour	18th min.
●	New Moon	30th day	22nd hour	11th min.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h.m.	Key	☽ Sets h.m.	Key	Declination of sun ° ′	☽ Place	☽ Age
335	1	M.	6 54	E	4 13	A	9 19	26	10¼	11	7AM00	E	3PM55	A	21S.50	SCO	0
336	2	Tu.	6 55	E	4 13	A	9 18	26	11¼	11¾	8 20	E	4 51	A	21 59	OPH	1
337	3	W.	6 56	E	4 12	A	9 16	25	—	12	9 30	E	6 00	A	22 07	SAG	2
338	4	Th.	6 57	E	4 12	A	9 15	25	12¾	1	10 26	E	7 18	B	22 15	SAG	3
339	5	Fr.	6 58	E	4 12	A	9 14	24	1½	1¾	11 08	E	8 38	B	22 23	CAP	4
340	6	Sa.	6 59	E	4 12	A	9 13	24	2½	2¾	11AM41	E	9 55	C	22 30	CAP	5
341	7	E	7 00	E	4 12	A	9 12	24	3½	3¾	12PM07	D	11PM08	C	22 37	AQU	6
342	8	M.	7 01	E	4 12	A	9 11	23	4½	5	12 29	D	— —	–	22 44	AQU	7
343	9	Tu.	7 01	E	4 12	A	9 11	23	5½	6	12 48	C	12AM17	D	22 50	PSC	8
344	10	W.	7 02	E	4 12	A	9 10	22	6½	7	1 08	B	1 23	D	22 55	PSC	9
345	11	Th.	7 03	E	4 12	A	9 09	22	7½	8	1 28	B	2 29	E	23 00	PSC	10
346	12	Fr.	7 04	E	4 12	A	9 08	21	8¼	8¾	1 50	B	3 34	E	23 05	ARI	11
347	13	Sa.	7 05	E	4 12	A	9 07	21	9	9½	2 16	A	4 39	E	23 09	ARI	12
348	14	E	7 06	E	4 12	A	9 06	20	9¾	10½	2 47	A	5 44	E	23 13	TAU	13
349	15	M.	7 06	E	4 12	A	9 06	20	10½	11	3 26	A	6 48	E	23 17	TAU	14
350	16	Tu.	7 07	E	4 13	A	9 06	19	11	11¾	4 12	A	7 46	E	23 19	TAU	15
351	17	W.	7 08	E	4 13	A	9 05	19	11¾	—	5 06	A	8 37	E	23 21	ORI	16
352	18	Th.	7 08	E	4 13	A	9 05	19	12¼	12½	6 06	A	9 20	E	23 23	GEM	17
353	19	Fr.	7 09	E	4 14	A	9 05	18	1	1	7 10	B	9 57	E	23 24	CAN	18
354	20	Sa.	7 09	E	4 14	A	9 05	18	1¾	1¾	8 14	B	10 26	E	23 25	CAN	19
355	21	E	7 10	E	4 15	A	9 05	17	2½	2½	9 20	C	10 50	D	23 26	LEO	20
356	22	M.	7 10	E	4 15	A	9 05	17	3	3¼	10 25	C	11 12	D	23 26	LEO	21
357	23	Tu.	7 11	E	4 16	A	9 05	16	3¾	4	11PM32	D	11 32	D	23 26	LEO	22
358	24	W.	7 11	E	4 16	A	9 05	16	4¾	5	— —	–	11AM51	C	23 25	VIR	23
359	25	Th.	7 12	E	4 17	A	9 05	15	5½	6	12AM39	D	12PM12	B	23 23	VIR	24
360	26	Fr.	7 12	E	4 18	A	9 06	15	6¼	6¾	1 51	E	12 35	B	23 21	VIR	25
361	27	Sa.	7 12	E	4 18	A	9 06	14	7¼	7¾	3 07	E	1 04	B	23 19	LIB	26
362	28	E	7 13	E	4 19	A	9 06	14	8¼	8¾	4 28	E	1 41	A	23 16	LIB	27
363	29	M.	7 13	E	4 20	A	9 07	13	9	9¾	5 49	E	2 30	A	23 13	SCO	28
364	30	Tu.	7 13	E	4 20	A	9 07	13	10	10½	7 05	E	3 33	A	23 09	SAG	0
365	31	W.	7 13	E	4 21	A	9 08	12	10¾	11½	8AM09	E	4PM49	A	23S.05	SAG	1

Ring in the valiant man and free,
The larger heart, the kindlier hand;
Ring out the darkness of the land,
Ring in the Christ that is to be.
— *Alfred Tennyson*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather ↓
1	M.	New ● Cuban refugees began airlift to Miami, 1965 • Tides {11.5 9.9	*A*
2	Tu.	☾ at perig. • *A lie has no legs to stand on, but it gets places.* • {11.7 9.9	*dusting*
3	W.	☾ runs low • ☌♆☾ • Anna Freud born, 1895 • {— 11.8	*for*
4	Th.	☌♄☉ • *Instinct is the nose of the mind.* •	*adjusting,*
5	Fr.	Folding theater-chair patented, 1854 • Walt Disney born, 1901 • {9.6 11.1	*then*
6	Sa.	**St. Nicholas** • W.L. Mackenzie King elected Canadian Prime Minister, 1921	*some*
7	E	**2nd S. Advent** • ☌☊☾ • ☌♃☾ •	*more*
8	M.	**Concept. of Virgin Mary** • John Lennon killed, 1980 •	*on top*
9	Tu.	☾ on Eq. • Ball-bearing roller skates patented, 1854 • Tides {9.1 9.0	*of that.*
10	W.	☾ at ♌ • *Well begun is half done.* • Emily Dickinson born, 1830 •	*Mild?*
11	Th.	♀ Gr. Brilliancy • 27°, San Francisco, 1932 • {9.4 8.5	*Silly*
12	Fr.	Marconi sent first transatlantic wireless radio signal, 1901 •	*child —*
13	Sa.	**St. Lucy** • Dick Van Dyke born, 1925 • Tides {9.6 8.4	*turn*
14	E	**3rd S. Advent** • ☌☊☉ • Tides {9.7 8.4	*up the*
15	M.	*The human race has improved everything except people.* • Tides {9.8 8.4	*thermo-*
16	Tu.	Full Cold ○ • ☾ at apo. • Ice jam on Ohio River, Warsaw, Ky., backed up river 100 mi., 1917	
17	W.	☾ runs high • Ember Day • John Greenleaf Whittier born, 1807 •	*stat!*
18	Th.	1st official automobile speed record set: 39.24 m.p.h., 1898 • Tides {8.4 9.6	*Don't*
19	Fr.	☌☊♃ • ☌☿♄ • Ember Day •	*forget to*
20	Sa.	Ember Day • *Calm seas now.* • Richard Daley died, 1976 • Tides {8.3 9.4	
21	E	**4th S. Advent • St. Thomas** • Solstice, 11:02 P.M. EST	
22	M.	*A good heart is the sun, for it shines bright and never changes.* • Tides {8.3 9.0	*clean*
23	Tu.	Hospital ship U.S.S. *Relief* launched, 1919. • Tides {8.5 8.8	*the*
24	W.	☾ on Eq. • *Green Christmas, White Easter.* • Kit Carson born, 1809	*chimney.*
25	Th.	**Christmas Day** • ☾ at ♉ • ☌☿☊	*Cold*
26	Fr.	**St. Stephen** • "Of Thee I Sing" opened, N.Y.C., 1931 • {9.5 8.7	*snap,*
27	Sa.	**St. John • Chanukah** • ☌♆☉ • ☌♀☾	*then*
28	E	**1st S. af. Ch. • Holy Innocents** •	*an-*
29	M.	**St. Thomas** • ☌♄☾ • Pablo Casals born, 1876 • {11.0 9.3	*other*
30	Tu.	☾ at perig. • New ● • *Hail and farewell.* • {11.4 9.6	*storm —*
31	W.	**St. Sylvester** • *Begin the New Year square with every man.* •	*jiminy!*

Farmer's Calendar

Across the road, down at the bottom of the hill, a brook runs through the woods. It runs south alongside this property, then turns east and drops down by pools, rapids, and little falls toward the highway and the river valley. That brook has no name. Its length is less than three miles, and this time of year there is no part of it you couldn't jump. Over its course the brook runs through dark woods, beneath big old hemlocks growing above it on steep banks and among hardwoods and brush in places where the land levels off.

If you don't mind scrambling here and there and beating the bushes a little, you can follow the brook right down nearly to the village. It's a pretty rough hike: nobody but deer hunters has much business in those woods at any time, and now the deer hunters are gone. In December most years, the brook is full, but it seems sluggish. The water is black, and along some of the narrower passages there is ice along the banks. The trees are bare. On the ground their fallen leaves are a wet, dull cover — part of the earth again, almost. Some years there will have been a little snow, but along the brook the ground remains bare until the heavy snows begin and the water freezes over.

The brook seems to wait for the snow. In the last of the year it is subdued. Any day it will be changed by snow, by ice, by sun. For now it keeps its quiet course among the rocks and pools. The brook awaits the transformation that comes to the hills for all to see, but that only a few will attend in this unvisited corner of the land. Getting down the brook in real winter is too hard for me; but now, for the last time this year, I can come out of the woods beside the brook where it reaches the bottom of the valley and see the water pass silently under the road and away.

The Milky Way arches directly overhead now, running from northwest to southeast across the cold winter skies. Sirius, the brightest winter star, rises around sunset to the lower left of Orion. The Quadrantid meteor shower, on the 3rd and 4th, is the largest of them all, reaching as many as two silvery shooting stars per minute streaking from the east just before morning twilight. Evening observers can watch the dimming planet Mars each week become farther left of brighter Jupiter in the southwest at nightfall. On the 4th the Earth is at perihelion at 6 P.M. EST (the latest date this happens for decades to come). On the 15th comes the best time all year for seeing Venus; look to the east just before sunrise — Venus will be in conjunction with Antares that night. On the 26th the Moon is in conjunction with Saturn, Venus, and Uranus.

ASTRONOMICAL CALCULATIONS

☽	First Quarter	6th day	17th hour	36th min.
○	Full Moon	14th day	21st hour	31st min.
☾	Last Quarter	22nd day	17th hour	47th min.
●	New Moon	29th day	8th hour	46th min.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
1	1	Th.	7 14	E	4 22	A	9 08	12	11¾	—	9 A M 00	E	6 P M 11	B	23S.00	SAG	2
2	2	Fr.	7 14	E	4 23	A	9 09	11	12½	12½	9 38	E	7 33	B	22 55	CAP	3
3	3	Sa.	7 14	E	4 24	A	9 10	11	1¼	1½	10 07	D	8 50	C	22 49	AQU	4
4	4	**D**	7 14	E	4 25	A	9 11	10	2¼	2½	10 31	D	10 04	D	22 43	AQU	5
5	5	M.	7 14	E	4 26	A	9 12	10	3	3½	10 52	C	11 P M 13	D	22 37	AQU	6
6	6	Tu.	7 14	E	4 27	A	9 13	9	4	4¼	11 12	C	— —	–	22 30	CET	7
7	7	W.	7 13	E	4 28	A	9 15	9	5	5¼	11 32	B	12 A M 20	E	22 23	PSC	8
8	8	Th.	7 13	E	4 29	A	9 16	8	6	6½	11 A M 54	B	1 26	E	22 15	ARI	9
9	9	Fr.	7 13	E	4 30	A	9 17	8	6¾	7½	12 P M 19	A	2 32	E	22 06	ARI	10
10	10	Sa.	7 13	E	4 31	A	9 18	8	7¾	8¼	12 49	A	3 37	E	21 57	TAU	11
11	11	**D**	7 13	E	4 32	A	9 19	7	8½	9¼	1 24	A	4 41	E	21 48	TAU	12
12	12	M.	7 12	E	4 33	A	9 21	7	9¼	10	2 08	A	5 40	E	21 38	TAU	13
13	13	Tu.	7 12	E	4 34	A	9 22	6	10	10¾	3 00	A	6 34	E	21 28	AUR	14
14	14	W.	7 12	E	4 36	A	9 24	6	10¾	11¼	3 58	A	7 20	E	21 18	GEM	15
15	15	Th.	7 11	E	4 37	A	9 26	6	11¼	—	5 02	B	7 57	E	21 08	CAN	16
16	16	Fr.	7 11	E	4 38	A	9 27	5	12	12	6 07	B	8 29	E	20 56	CAN	17
17	17	Sa.	7 10	E	4 39	A	9 29	5	12½	12½	7 12	B	8 55	E	20 45	LEO	18
18	18	**D**	7 10	E	4 40	A	9 30	5	1¼	1¼	8 18	C	9 17	D	20 33	LEO	19
19	19	M.	7 09	E	4 42	A	9 33	4	1¾	2	9 23	D	9 37	D	20 20	LEO	20
20	20	Tu.	7 08	E	4 43	A	9 35	4	2½	2½	10 29	D	9 56	C	20 07	VIR	21
21	21	W.	7 08	E	4 44	A	9 36	4	3¼	3½	11 P M 38	E	10 15	C	19 54	VIR	22
22	22	Th.	7 07	D	4 45	A	9 38	4	4	4¼	— —	–	10 37	B	19 41	VIR	23
23	23	Fr.	7 06	D	4 47	A	9 41	3	4¾	5¼	12 A M 49	E	11 02	B	19 27	VIR	24
24	24	Sa.	7 05	D	4 48	A	9 43	3	5½	6¼	2 05	E	11 A M 34	A	19 13	LIB	25
25	25	**D**	7 05	D	4 49	A	9 44	3	6½	7¼	3 23	E	12 P M 15	A	18 58	SCO	26
26	26	M.	7 04	D	4 50	A	9 46	3	7½	8½	4 40	E	1 10	A	18 43	OPH	27
27	27	Tu.	7 03	D	4 52	A	9 49	2	8½	9½	5 49	E	2 18	A	18 28	SAG	28
28	28	W.	7 02	D	4 53	A	9 51	2	9½	10¼	6 45	E	3 37	B	18 12	SAG	29
29	29	Th.	7 01	D	4 54	A	9 53	2	10½	11¼	7 30	E	5 00	B	17 56	CAP	0
30	30	Fr.	7 00	D	4 56	A	9 56	2	11½	—	8 03	E	6 22	C	17 39	CAP	1
31	31	Sa.	6 59	D	4 57	A	9 58	2	12	12¼	8 A M 30	D	7 P M 40	D	17S.23	AQU	2

And till our shadows meet,
Till time burns through the ice,
Thus frozen shall we ever stay
Locked in this paradise.
— *Laurie Lee*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	*Weather* ↓
1	Th.	**Circumcision • New Year's Day** • {11.7 —}	*Red*
2	Fr.	*The days have lengthened one cock's stride.* • Tides {9.8 11.5} •	*eyes*
3	Sa.	Opening of Congress first televised, 1947 • Tides {9.8 11.1}	*at morning,*
4	D	**2nd S. af. Ch.** • ⊕ at perihelion • ☌☿☾	
5	M.	☾ on Eq. • ☌☌☾ • Twelfth Night • Tides {9.8 10.5}	*sailor*
6	Tu.	**Epiphany** • ☾ at ♌ • Great Plains blizzard, 1886 •	*take*
7	W.	*When the cat mourns for the mouse, do not take her seriously.* • Tides {9.4 8.6}	*warning!*
8	Th.	Lord Baden-Powell died, 1941 • 90°, L.A., 1923 •	*Drips 'n'*
9	Fr.	Joan Baez born, 1941 • 5.9 earthquake, E. Canada and N.E., 1982 • {9.2 7.9}	*drab.*
10	Sa.	First oil gusher, Beaumont, Tex., 1901 • Tides {9.2 7.9} •	*Whoa!*
11	D	**1st S. af. Epiph.** • Thomas Hardy died, 1928 •	*Heaps*
12	M.	☿ at sup. ☌ • *Is it progress if a cannibal uses a knife and fork?* •	*of*
13	Tu.	**St. Hilary** • ☾ runs high • ☾ at apo. • Tides {9.5 8.1}	*snow!*
14	W.	Full Wolf ○ • "Great Freeze" of 1205 (lasted until Mar. 22), England • {9.6 8.2}	*Fair*
15	Th.	♀ Gr. Elong. (47° W.) • ☌ ♀ Antares • Tides {9.7 —}	*then*
16	Fr.	Robert William Service born, 1874 • Dizzy Dean born, 1911 • {8.4 9.7}	*flurry —*
17	Sa.	Fog in January makes a wet spring. • -45°, Int. Falls, Minn., 1982 • {8.5 9.7}	*crystal*
18	D	**2nd S. af. Epiph.** • Cary Grant born, 1904 •	*ball's*
19	M.	Martin Luther King's Birthday • Robt. E. Lee born, 1807 • Tides {8.7 9.4}	*blurry:*
20	Tu.	☾ on Eq. • Favorable day for birth of males. • Tides {8.9 9.1}	*Thought*
21	W.	**St. Agnes** • ☾ at ♉ • -22°, Akron, Ohio, 1985 • Tides {9.0 8.8}	*we*
22	Th.	**St. Vincent** • If clear, propitious all year. • Tides {9.2 8.5}	*saw*
23	Fr.	Elizabeth Blackwell, first U.S. female physician, earned M.D., 1849 • Tides {9.4 8.3} •	*a*
24	Sa.	☌♀♄ • Raccoons mate. • Rubber heel patented, 1899 • {9.6 8.2}	*thaw!*
25	D	**3rd S. af. Epiph.** • **Conv. of Paul** •	*Aw,*
26	M.	☌♄☾ • ☌♀☾ • ☌♉☾ • Angela Davis born, 1944 •	*it*
27	Tu.	☾ runs low • ☌♆☾ • Edison patented electric light, 1880 •	*didn't*
28	W.	☾ at peri. • Alexander MacKenzie born, 1822 • {11.1 9.4}	*last —*
29	Th.	New ● • Myles Standish's wife, Rose, died, 1621 • {11.4 9.8}	*another*
30	Fr.	*The devil can cite Scripture for his purpose.* • Charles I beheaded, 1649	*snowy*
31	Sa.	☌♀♉ • Scotch tape first sold, 1928 • Tides {10.1 11.3}	*blast!*

Farmer's Calendar

In the spring of 1919, from Principe Island off the Guinea Coast of West Africa, where he had gone on a scientific expedition to observe a total eclipse of the sun occurring at the time, Sir Arthur Stanley Eddington, a British astronomer, announced that his observations indicated a tiny shift in the apparent positions of certain stars near the sun. The seeming displacement of the stars amounted to no more than a fraction of a degree, but it made a mighty noise in the scientific world; for Eddington's observations offered the first experimental proof of the General Theory of Relativity, which Albert Einstein had introduced in 1916. Einstein held that light has mass and is therefore subject to gravity. It followed that light rays passing a massive body like the sun ought to be bent by the gravitational attraction of that body. That bending of the light issuing from stars visible during the eclipse was what A. S. Eddington saw in Africa; the shift in the stars' apparent positions was due to their light's being deflected as it passed the sun. Einstein had predicted the shift to within .03 second of arc of what Eddington found. The General Theory of Relativity was a theory no longer.

If Eddington had only checked with me, I could have saved him a lot of travel. To be convinced of the truth of the Theory of Relativity, no one need go any farther than New England in January — the longest 31 days of the year. The other long months — October, August, May, and the rest — accomplish their 31 days in 31 days. In January the same span of time lasts far longer. Why, in 1961 January lasted until the afternoon of April 10. A lot depends on who's looking, just as Einstein said; and you don't need an African eclipse or a fancy sextant to prove that if you've waited out January here in the North.

This year's best chance to see elusive Mercury occurs during the first half of February. The fleet planet is best observed in the west about 45 minutes after sunset around the 12th, when it has a greatest elongation of 18° east from the Sun. Jupiter and Mars are farther up in the southwest as darkness deepens, while Venus and Saturn rise in the east a few hours before dawn. The most interesting event of the month may be the occultation of the bright star Spica by the waning Moon. Look for the star to be eclipsed around 7 A.M. EST on the 18th. This spectacular event will be visible everywhere except in the extreme eastern United States and Canada. In the evening sky the winter constellations are spectacular. The glorious star Sirius is highest now at mid evening. To the upper left of this brightest Dog Star (which is in Canis Major, the Big Dog) shines Procyon, the brilliant star of Canis Minor, the Little Dog. Still higher are the less bright twin lights of Gemini, Castor and Pollux. The full Moon this month, which occurs on the 13th, is called the Snow Moon.

ASTRONOMICAL CALCULATIONS

☽	First Quarter	5th day	11th hour	21st min.
○	Full Moon	13th day	15th hour	59th min.
☾	Last Quarter	21st day	3rd hour	57th min.
●	New Moon	27th day	19th hour	51st min.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
32	1	D	6 58	D	4 58	A	10 00	1	1	1¼	8 A M 53	D	8 P M 53	D	17S.06	AQU	3
33	2	M.	6 57	D	4 59	A	10 02	1	1¾	2	9 14	C	10 04	D	16 49	PSC	4
34	3	Tu.	6 56	D	5 01	A	10 05	1	2½	3	9 35	B	11 P M 12	E	16 31	PSC	5
35	4	W.	6 55	D	5 02	A	10 07	1	3½	3¾	9 56	B	— —	–	16 14	PSC	6
36	5	Th.	6 54	D	5 03	A	10 09	1	4¼	4¾	10 21	A	12 A M 20	E	15 56	ARI	7
37	6	Fr.	6 53	D	5 05	A	10 12	1	5	5¾	10 49	A	1 27	E	15 37	ARI	8
38	7	Sa.	6 52	D	5 06	B	10 14	1	6	6¾	11 A M 22	A	2 32	E	15 19	TAU	9
39	8	D	6 50	D	5 07	B	10 17	1	7	7¾	12 P M 03	A	3 33	E	15 00	TAU	10
40	9	M.	6 49	D	5 09	B	10 20	1	8	8¾	12 52	A	4 29	E	14 41	AUR	11
41	10	Tu.	6 48	D	5 10	B	10 22	1	8¾	9½	1 49	A	5 17	E	14 21	GEM	12
42	11	W.	6 47	D	5 11	B	10 24	1	9¾	10¼	2 52	A	5 58	E	14 01	GEM	13
43	12	Th.	6 45	D	5 12	B	10 27	1	10¼	11	3 57	B	6 31	E	13 42	CAN	14
44	13	Fr.	6 44	D	5 14	B	10 30	1	11	11½	5 03	B	6 58	E	13 22	LEO	15
45	14	Sa.	6 43	D	5 15	B	10 32	1	11½	—	6 09	C	7 21	D	13 01	LEO	16
46	15	D	6 41	D	5 16	B	10 35	1	12	12¼	7 15	D	7 42	D	12 41	LEO	17
47	16	M.	6 40	D	5 18	B	10 38	1	12¾	12¾	8 22	D	8 01	C	12 21	VIR	18
48	17	Tu.	6 38	D	5 19	B	10 41	1	1¼	1½	9 29	E	8 21	C	12 00	VIR	19
49	18	W.	6 37	D	5 20	B	10 43	1	1¾	2¼	10 40	E	8 42	B	11 39	VIR	20
50	19	Th.	6 36	D	5 21	B	10 45	1	2½	3	11 P M 53	E	9 05	B	11 17	VIR	21
51	20	Fr.	6 34	D	5 23	B	10 49	1	3¼	3¾	— —	–	9 34	A	10 56	LIB	22
52	21	Sa.	6 33	D	5 24	B	10 51	1	4¼	4¾	1 A M 09	E	10 10	A	10 34	SCO	23
53	22	D	6 31	D	5 25	B	10 54	1	5¼	6	2 24	E	10 57	A	10 12	OPH	24
54	23	M.	6 30	D	5 26	B	10 56	2	6¼	7	3 34	E	11 A M 58	A	9 50	SAG	25
55	24	Tu.	6 28	D	5 28	B	11 00	2	7¼	8¼	4 34	E	1 P M 11	A	9 28	SAG	26
56	25	W.	6 26	D	5 29	B	11 03	2	8½	9¼	5 22	E	2 31	B	9 06	CAP	27
57	26	Th.	6 25	D	5 30	B	11 05	2	9½	10	5 59	E	3 52	B	8 44	CAP	28
58	27	Fr.	6 23	D	5 31	B	11 08	2	10¼	11	6 28	D	5 12	C	8 21	AQU	0
59	28	Sa.	6 22	D	5 33	B	11 11	2	11¼	11¾	6 A M 53	D	6 P M 28	D	7S.58	AQU	1

What matter how the night behaved?
What matter how the north wind raved?
Blow high, blow low, not all its snow
Could quench our hearth-fire's ruddy glow.
— *John Greenleaf Whittier*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	*Weather* ↓
1	**D**	**4th S. af. Epiph.** • ☌☌☾ • {10.2 11.0	*Chuck*
2	M.	**Purif. of Mary** • ☾at♉ • Groundhog Day •	*stuck*
3	Tu.	☌☌☾ • Four Chaplains • Horace Greeley born, 1811 • {10.0 9.6	*in*
4	W.	*The best place to find a helping hand is at the end of your arm.* • Tides {9.7 8.9	*the*
5	Th.	**St. Agatha** • Red Buttons born, 1919 • Tides {9.4 8.2	*muck.*
6	Fr.	Accession of Queen Elizabeth II, 1952 • Blizzard, New England, 1978 • {9.0 7.7	*You're*
7	Sa.	American Guernsey Cattle Club organized, 1877 • Tides {8.8 7.4	*naive*
8	**D**	**5th S. af. Epiph.** • Earliest tea-picking day, China •	*if*
9	M.	☾ runs high • ☾ at apo. • Gypsy Rose Lee born, 1914 • Tides {8.8 7.5	*you*
10	Tu.	*Though honey is sweet, do not lick it off a briar.* • Tides {9.0 7.8 •	*believe*
11	W.	☌☿☿ • -15°F., Washington, D.C., 1899 • Tides {9.2 8.1 •	*a*
12	Th.	Lincoln's Birthday • ☿ Gr. Elong. (18° East) •	*groundhog's*
13	Fr.	Full Snow ○ • *He who rides a tiger is afraid to dismount.* • {9.7 8.7	*guess —*
14	Sa.	**St. Valentine** • Snowstorm, New England, 1940 • Tides {9.8 —	*what*
15	**D**	**Septuagesima** • Winter's hack breaks. •	*a*
16	M.	Presidents' Day Holiday • ☾ on Eq. • ☋ stat. • Tides {9.2 9.7	*mess!*
17	Tu.	☾at♉ • ☿ stat. • "Baby Face" Nelson escaped prison, 1932 •	*Mercury*
18	W.	Occult. Spica hy ☾ • 66°F., Boston, 1981 (record high) • {9.6 9.3	*rising,*
19	Th.	Marines landed on Iwo Jima, 1945 • Stan Kenton born, 1912 •	*so's*
20	Fr.	Thunder in February means poor sugaring. • Ansel Adams born, 1902 •	*the*
21	Sa.	☌ Antares ☾ • Pres. Nixon arrived in China, 1972 • {9.7 8.2	*precip.*
22	**D**	**Sexagesima** • ☌☽☾ • ☌☌☾ •	*Don't*
23	M.	☾ runs low • ☌☿☾ • Tides {9.7 8.1 •	*slip*
24	Tu.	**St. Matthias** • ☌☿☾ • Honus Wagner born, 1874 •	*on*
25	W.	☾ at peri. • 28.2″ snow, Blue Hill Observatory, Mass., 1969 • {10.3 8.9	*icy*
26	Th.	*No wife can endure a gambling husband, unless he is a steady winner.* • {10.7 9.5	*slopes.*
27	Fr.	☿ at inf. ☌ • New ● • John Steinbeck born, 1902 •	*Up*
28	Sa.	*The course of true anything never runs smooth.* • Tides {11.1 10.4	*periscopes!*

A book whose sale's forbidden
All men rush to see,
And prohibition turns
One reader into three.

Farmer's Calendar

Toward the end of February, as the season begins to commence to turn, every dooryard, every meadow, every wood is full of clocks. The winter buds are fat on the trees, and the brooks are running under the ice. Chickadees switch from the *dee-dee-dee* song that gives them their name to the peculiar, monotonous chant — two notes with the stress on the first — with which they encourage spring. It sounds like "*come* on, *come* on, *come* on." On the farms the lambs are being born, and at night the shepherd's flashlight bobs along back and forth between the house and the barn. The shepherd hasn't had six hours' sleep together all through the month.

The tops of south-facing hills keep the sunlight longer and longer now against the night, and dusk lingers nearly until six o'clock. Every meadow is a sundial, the shadows of the trees along its edge reaching farther as each afternoon brings a higher sun. If you cared to keep such minute watch in your own backyard, you could tell the day without the aid of a calendar by measuring the angle of a tree's shadow at a certain hour and seeing how the sunlight lies in the open doorway of a shed.

The best clock at my house is Zinnia, an old calico cat. She is slow these days. Fifteen years ago she was a kitten, but that was in a city miles to the south. Zinnia lives in a snug house in the lee of a building. She doesn't get out much. In the dark of winter, days may pass without her appearing at all. But on a bright afternoon in February, Zinnia will climb up on the snowbank near her house and go happily to sleep in the sun. She takes gratefully to the increasing light, and when the sun gets past the middle of the month, she's there to meet it. If Zinnia is asleep on the snow, it's nearly March.

MARCH, THE THIRD MONTH

The familiar constellations of winter — the Milky Way, Orion, the Pleiades, Taurus, and Gemini the twins — all are moving westward as the seasons advance, and set in the early evening this month. Spring begins at 10:52 P.M. EST on the 20th. Venus is getting lower in the east before dawn, but is still much higher than Mercury, which may be seen just before sunrise low in the southeast on the 26th, when it is 28° west of the Sun. On this night, Venus and the Moon are in conjunction, as are Jupiter and the Sun. In the southwest after dark, a giant letter G can be traced with the brilliant stars Aldebaran, Capella, Castor and Pollux, Procyon, Sirius, Rigel, and Betelgeuse. On March 29 an unusual annular-total eclipse of the Sun will bring only 8 seconds of totality, and will be visible only in the South Atlantic Ocean.

ASTRONOMICAL CALCULATIONS

☽	First Quarter	7th day	6th hour	58th min.
○	Full Moon	15th day	8th hour	13th min.
☾	Last Quarter	22nd day	11th hour	22nd min.
●	New Moon	29th day	7th hour	47th min.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
60	1	D	6 20	D	5 34	B	11 14	3	—	12	7 A M 15	C	7 P M 41	D	7S. 36	AQU	2
61	2	M.	6 19	D	5 35	B	11 16	3	12½	12¾	7 35	C	8 52	E	7 13	PSC	3
62	3	Tu.	6 17	D	5 36	B	11 19	3	1¼	1¾	7 57	B	10 02	E	6 50	PSC	4
63	4	W.	6 15	D	5 38	B	11 23	3	2	2½	8 21	B	11 P M 11	E	6 27	ARI	5
64	5	Th.	6 14	D	5 39	B	11 25	3	2¾	3¼	8 47	A	— —	–	6 04	ARI	6
65	6	Fr.	6 12	D	5 40	B	11 28	4	3½	4	9 19	A	12 A M 19	E	5 40	TAU	7
66	7	Sa.	6 10	D	5 41	B	11 31	4	4¼	5	9 58	A	1 23	E	5 17	TAU	8
67	8	D	6 09	D	5 42	B	11 33	4	5¼	6	10 44	A	2 22	E	4 53	AUR	9
68	9	M.	6 07	D	5 43	B	11 36	4	6¼	7¼	11 A M 38	A	3 13	E	4 30	AUR	10
69	10	Tu.	6 05	D	5 45	B	11 40	5	7¼	8¼	12 P M 38	A	3 56	E	4 07	GEM	11
70	11	W.	6 04	C	5 46	B	11 42	5	8¼	9	1 43	B	4 32	E	3 43	CAN	12
71	12	Th.	6 02	C	5 47	B	11 45	5	9	9¾	2 49	B	5 01	E	3 20	CAN	13
72	13	Fr.	6 00	C	5 48	B	11 48	5	9¾	10¼	3 56	C	5 26	E	2 56	LEO	14
73	14	Sa.	5 58	C	5 49	B	11 51	6	10½	11	5 03	C	5 47	D	2 32	LEO	15
74	15	D	5 57	C	5 50	B	11 53	6	11¼	11½	6 10	D	6 07	D	2 09	LEO	16
75	16	M.	5 55	C	5 52	B	11 57	6	11¾	—	7 18	D	6 26	C	1 45	VIR	17
76	17	Tu.	5 53	C	5 53	B	12 00	6	12	12½	8 29	E	6 47	B	1 22	VIR	18
77	18	W.	5 52	C	5 54	B	12 02	7	12¾	1	9 43	E	7 10	B	0 58	VIR	19
78	19	Th.	5 50	C	5 55	C	12 05	7	1¼	1¾	10 P M 59	E	7 37	B	0 34	LIB	20
79	20	Fr.	5 48	C	5 56	C	12 08	7	2	2¾	— —	–	8 10	A	0S. 11	LIB	21
80	21	Sa.	5 46	C	5 57	C	12 11	8	2¾	3½	12 A M 15	E	8 54	A	0N. 13	SCO	22
81	22	D	5 45	C	5 59	C	12 14	8	3¾	4½	1 27	E	9 49	A	0 37	SAG	23
82	23	M.	5 43	C	6 00	C	12 17	8	4¾	5¾	2 29	E	10 A M 56	A	1 00	SAG	24
83	24	Tu.	5 41	C	6 01	C	12 20	9	6	7	3 19	E	12 P M 12	B	1 23	SAG	25
84	25	W.	5 39	C	6 02	C	12 23	9	7¼	8	3 58	E	1 32	B	1 47	CAP	26
85	26	Th.	5 38	C	6 03	C	12 25	9	8¼	9	4 29	E	2 50	C	2 11	CAP	27
86	27	Fr.	5 36	C	6 04	C	12 28	9	9¼	9¾	4 54	D	4 05	C	2 35	AQU	28
87	28	Sa.	5 34	C	6 05	C	12 31	10	10¼	10½	5 17	D	5 19	D	2 58	AQU	29
88	29	D	5 32	C	6 06	C	12 34	10	11	11¼	5 37	C	6 30	D	3 21	PSC	0
89	30	M.	5 31	C	6 08	C	12 37	10	11¾	—	5 58	B	7 41	E	3 45	PSC	1
90	31	Tu.	5 29	B	6 09	C	12 40	11	12	12½	6 A M 21	B	8 P M 51	E	4N. 08	ARI	2

I touched her shadow when the light delayed;
I turned my face away, and yet she stayed.
A bird sang from the center of a tree;
She loved the wind because the wind loved me.
— *Theodore Roethke*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather ↓
1	D	**Quinquagesima** • **St. David** • ☾ on Eq. • ☌♃☾	
2	M.	☾at ♉ • Blackthorn winds, N.E. • Tides 10.5 / 10.6	*Take a*
3	Tu.	**Shrove Tues.** • Sun today brings sun through Lent. •	*break*
4	W.	**Ash Wed.** • ☌☌☾ • Tides 10.2 / 9.4 •	*before*
5	Th.	*Stick to your winter flannels 'Til your flannels stick to you.* • Tides 9.8 / 8.7 •	*the*
6	Fr.	Canada geese migrate. • Ghana's independence, 1957 • 9.3 / 8.0	*freeze;*
7	Sa.	**Sts. Perpetua and Felicitas** • D. Webster's great speech, 1850	*then*
8	D.	**1st Sun. Lent** • Skunks mate. • Tides 8.5 / 7.3	*head*
9	M.	☾ runs high • ☾ at apo. • *Do not tie dogs with sausages.* •	*north*
10	Tu.	Town Meeting Day, N.H. • Harriet Tubman died, 1913 • Tides 8.5 / 7.5	*and*
11	W.	☿ stat. • Ember Day • Blizzard of 1888 began. • Tides 8.7 / 7.8	*bring*
12	Th.	**St. Gregory** • *Having a good wife and rich cabbage soup, seek not other things.*	*your*
13	Fr.	Ember Day • Chester Greenwood patented earmuffs, 1877 • Tides 9.3 / 8.7	*skis!*
14	Sa.	Ember Day • Gold Standard adopted, 1900 • Tides 9.6 / 9.2 •	*Clear*
15	D	**2nd Sun. Lent** • ☾ on Eq. • Full Worm ○	*and*
16	M.	☾at ♉ • Czechoslovakia occupied by Germany, 1939 • 9.9 / —	*frosty;*
17	Tu.	**St. Patrick** • Nat "King" Cole born, 1919 • Tides 9.9 / 9.8	*mild*
18	W.	*Great Estates may venture more; Little Boats must keep near Shore.* • Tides 10.1 / 9.7	*and*
19	Th.	Swallows come back to Capistrano, Cal. • If today is clear, a fertile year. • 10.3 / 9.4	*frisky.*
20	Fr.	Equinox, 10:52 P.M. EST • 50″ snow across Mason-Dixon line, 1958 • 10.3 / 9.0	*This*
21	Sa.	**St. Benedict** • ☌♄☾ • J.S. Bach born, 1685 •	*prog-*
22	D	**3rd S. Lent** • ☌☌☾ • ☌♆☾ •	*nosti-*
23	M.	☾ runs low • Last U.S. Army homing pigeons sold off, 1957 • Tides 9.7 / 8.1	*catin's*
24	Tu.	☾ at apo. • *Valor lies just halfway between rashness and cowardice.* 9.6 / 8.3	*risky.*
25	W.	**Annunciation** • Arturo Toscanini born, 1867 Tides 9.7 / 8.7	*Frozen*
26	Th.	☌♀☾ • ☌♃☉ • ☿ Gr. Elong. (28° W.) •	*snow-girt!*
27	Fr.	☌☿☾ • Dust storms, Kansas, 1880 • Tides 10.3 / 9.9 •	*Wham!*
28	Sa.	☾ on Eq. • Stephen Leacock died, 1944 • Tides 10.5 / 10.3 •	*Bam!*
29	D	**4th S. Lent** • ☾at ♉ • Eclipse ☉ • New ●	
30	M.	Peepers sang. Dedham, Mass., 1748 • *Brevity is the soul of wit.*	*Thank you,*
31	Tu.	♄ stat. • ♁ stat. • Cesar Chavez born, 1927 • Tides 10.7 / 10.0	*lamb!*

Farmer's Calendar

One evening last March I got up at half past three, found my binoculars, and made my way out into the moonless night to take up a position giving me a good look off to the southeast. There I waited, and I saw about everything there is to see around this place between 3:30 and 4:30 A.M. except Halley's Comet, which is what I was looking for. Some months earlier, on several cold winter nights, I had stood at a different spot and listened to my teeth chatter as I looked high in the sky, a little south, where Halley was reported to be fraternizing with the Pleiades. The Pleiades I found then, but no Halley. Now Halley was supposed to be rising east of Sagittarius before dawn, low on the horizon. I leaned against a tree and looked into the southeastern sky.

Somewhere far off a dog barked. There was a little wind, and I could hear it in the trees and around the house. In the no-light, the snow that covered the ground was gray, if it was any color at all. The woods down the hill were scarcely darker than the sky above them, but the top of the sky was crowded with stars. I could make nothing of them. The ancients who picked the constellations out of the wheeling chaos of the night sky must have been a crazy bunch. Imagine seeing bears, dogs, snakes, and fishes in that wild flux. As soon throw a cupful of sugar on the floor and expect to find your name spelled out amongst the scattered grains. Sagittarius eluded me. On the charts it is eight stars that look like a house, that are *said to* look like a teapot, and that are *named for* somebody shooting a bow and arrow. Don't kid me. And for any testimony I can give, Halley's Comet is equally fanciful. I missed it, I guess. When the comet comes back I'll be 116, which is a bit old to be getting up in the middle of the night.

The Milky Way has almost passed from sight, setting early in the evening now. The Big Dipper is almost overhead; not a constellation in itself, it is part of Ursa Major, the Great Bear. That bright star almost overhead is Regulus. The penumbral eclipse of the Moon on the 13th begins at 7:20 P.M. EST and ends at 11:18 P.M. EST. The beginning will be visible throughout eastern portions of both the United States and Canada; in western and central regions the Moon will rise eclipsed. On the 18th the Moon, at perigee, is in conjunction with both Saturn and Uranus; on the 19th with Neptune. On the 25th North American viewers with binoculars may be able to see the crescent Moon occult Venus at about 7 A.M. EST. For most of the United States the Sun will already be up, but even sharp naked-eye vision may reveal the brilliant planet near the Moon.

ASTRONOMICAL CALCULATIONS

☽	First Quarter	6th day	2nd hour	49th min.
○	Full Moon	13th day	21st hour	32nd min.
☾	Last Quarter	20th day	17th hour	16th min.
●	New Moon	27th day	20th hour	36th min.

ADD 1 hour for Daylight Saving Time at 2 A.M. April 5th.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
91	1	W.	5 27	B	6 10	C	12 43	11	12¾	1¼	6 A M 46	B	10 P M 01	E	4 N. 31	ARI	3
92	2	Th.	5 26	B	6 11	C	12 45	11	1½	2	7 16	A	11 P M 08	E	4 54	TAU	4
93	3	Fr.	5 24	B	6 12	C	12 48	12	2	2¾	7 52	A	— —	–	5 17	TAU	5
94	4	Sa.	5 22	B	6 13	D	12 51	12	2¾	3½	8 35	A	12 A M 10	E	5 40	AUR	6
95	5	D	5 20	B	6 14	D	12 54	12	3¾	4½	9 27	A	1 05	E	6 03	AUR	7
96	6	M.	5 19	B	6 15	D	12 56	12	4¾	5½	10 25	A	1 52	E	6 26	GEM	8
97	7	Tu.	5 17	B	6 17	D	13 00	13	5¾	6½	11 A M 28	B	2 30	E	6 48	CAN	9
98	8	W.	5 15	B	6 18	D	13 03	13	6¾	7½	12 P M 33	B	3 02	E	7 11	CAN	10
99	9	Th.	5 14	B	6 19	D	13 05	13	7½	8¼	1 40	B	3 28	E	7 33	LEO	11
100	10	Fr.	5 12	B	6 20	D	13 08	14	8½	9	2 46	C	3 50	D	7 55	LEO	12
101	11	Sa.	5 10	B	6 21	D	13 11	14	9¼	9¾	3 53	D	4 11	D	8 17	LEO	13
102	12	D	5 09	B	6 22	D	13 13	14	10	10¼	5 01	D	4 30	C	8 39	VIR	14
103	13	M.	5 07	B	6 23	D	13 16	14	10½	11	6 12	E	4 50	C	9 01	VIR	15
104	14	Tu.	5 05	B	6 24	D	13 19	15	11¼	11½	7 27	E	5 12	B	9 23	VIR	16
105	15	W.	5 04	B	6 26	D	13 22	15	—	12	8 44	E	5 38	B	9 44	LIB	17
106	16	Th.	5 02	B	6 27	D	13 25	15	12¼	12¾	10 02	E	6 10	A	10 06	LIB	18
107	17	Fr.	5 01	B	6 28	D	13 27	15	1	1½	11 P M 17	E	6 51	A	10 27	SCO	19
108	18	Sa.	4 59	B	6 29	D	13 30	16	1¾	2½	— —	–	7 43	A	10 48	OPH	20
109	19	D	4 57	B	6 30	D	13 33	16	2½	3½	12 A M 23	E	8 48	A	11 09	SAG	21
110	20	M.	4 56	B	6 31	D	13 35	16	3½	4½	1 18	E	10 02	B	11 30	SAG	22
111	21	Tu.	4 54	B	6 32	D	13 38	16	4¾	5½	1 59	E	11 A M 19	B	11 50	CAP	23
112	22	W.	4 53	B	6 33	D	13 40	16	5¾	6¾	2 32	E	12 P M 37	B	12 11	CAP	24
113	23	Th.	4 51	B	6 35	D	13 44	17	7	7¾	2 59	D	1 52	C	12 31	AQU	25
114	24	Fr.	4 50	B	6 36	D	13 46	17	8	8¾	3 21	D	3 04	D	12 51	AQU	26
115	25	Sa.	4 48	B	6 37	D	13 49	17	9	9½	3 42	C	4 14	D	13 10	PSC	27
116	26	D	4 47	B	6 38	D	13 51	17	10	10¼	4 02	C	5 24	E	13 30	PSC	28
117	27	M.	4 45	B	6 39	D	13 54	17	10¾	11	4 23	B	6 34	E	13 49	PSC	0
118	28	Tu.	4 44	B	6 40	D	13 56	17	11½	11½	4 47	B	7 43	E	14 08	ARI	1
119	29	W.	4 43	B	6 41	D	13 58	18	—	12¼	5 15	A	8 52	E	14 27	ARI	2
120	30	Th.	4 41	B	6 42	D	14 01	18	12¼	12¾	5 A M 49	A	9 P M 57	E	14 N. 45	TAU	3

When April pours the colours of a shell
Upon the hills, when every little creek
Is shot with silver from the Chesapeake
In shoals new-minted by the ocean swell.
— *Elinor Wylie*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather ↓
1	W.	**All Fools Day** • First edition *Mother Goose* published, Boston, 1719	*Fool's*
2	Th.	☌☌☾ • *The voice of the Turtle is heard in the land.* • Tides 10.2 / 9.0	*cold,*
3	Fr.	Martin Luther excommunicated by Diet of Worms, 1531 • Tides 9.8 / 8.5 •	*snow*
4	Sa.	**St. Ambrose** • 5 feet of snow, Far West, 1983 • Tides 9.3 / 8.0 •	*we're*
5	D	**5th S. Lent • Passion** • Daylight Saving Time begins.	*told.*
6	M.	☾ at apo. • G.A.R. estab., 1866 • Andre Previn born, 1929	*Hiatus:*
7	Tu.	Ale wives run, Cape Cod, Mass. • Snow fell in every Southern state, 1857 •	*someone*
8	W.	General Omar Bradley died, 1981 • Sonja Henie born, 1912 • Tides 8.4 / 7.7	*must*
9	Th.	♆ stat. • *Where's the man could ease a heart like a satin gown?* •	*hate*
10	Fr.	Catamaran patented by N. Herreshoff, 1877 • Tides 8.9 / 8.6 •	*us!*
11	Sa.	Jackie Robinson became first black man to play major-league baseball, 1947 • 9.2 / 9.2	*The*
12	D	**Palm Sun.** • ☾ on Eq. • Tides 9.4 / 9.7	*Easter*
13	M.	☾ at ♉ • Eclipse ○ • Full Pink ○ • 9.7 / 10.2	*Bunny*
14	Tu.	**Passover** • Space shuttle *Columbia* completed first flight, 1981 • 9.8 / 10.6	*won't*
15	W.	*When the fox cannot reach the grapes, he says they are sour.* • *Titanic* sank, 1912	*find*
16	Th.	Zoom lens first demonstrated, N.Y.C., 1947 • Tides 10.8 / 9.7	*this*
17	Fr.	**Good Fri.** Nikita Krushchev born, 1894 • 10.9 / 9.4	*funny;*
18	Sa.	☌♄☾ • ☌☌☾ • ☾ at peri. • Albert Einstein died, 1955	*eggs-*
19	D	**Easter** • ☾ runs low • ☌♆☾ • ☌☿♃	*streamly*
20	M.	*April showers bring May flowers.* • Tides 10.1 / 8.5 •	*cold 'n'*
21	Tu.	Birthday of Queen Eliz. II • "Red Baron" shot down by Canadian R. Brown, 1918 • 9.8 / 8.5	*wet!*
22	W.	20 tornadoes hit Kansas and Missouri, 1964 • Jack Nicholson born, 1937	*Golden*
23	Th.	**St. George** • N.C. Senator Sam Ervin died, 1985 •	*inter-*
24	Fr.	*Nobody ever fergits where he buried a hatchet.* • Tides 9.7 / 9.7	*spersed*
25	Sa.	**St. Mark** • ☾ at ♉ • ☾ on Eq. • Occult. ♀ by ☾	*with*
26	D	**Low Sun.** • ☌♃☾ • Duane Eddy born, 1938	*winter.*
27	M.	New ● • Fast Day, N.H. • Coretta King born, 1927 • 9.8 / 10.6	*April's*
28	Tu.	Flora's Day, Goddess of Growth • Battle of Sillery, 1760 • 9.6 / 10.5	*cruelest*
29	W.	☋ at ♂ • Dachau liberated by U.S. troops, 1945 • Hirohito born, 1901	*when*
30	Th.	*There is no revenge so complete as forgiveness.* • Tides 10.4 / 9.1	*coolest.*

If young men had wit and old men strength,
Everything might be well done.

Farmer's Calendar

An ill-favored back road in April is the devil's railroad yard, and the devil is a rough switchman. Rounding a bend in a dirt road, you see before you an obscene snarl of mud ruts, some of them more than hubcap deep, black, sticky, bottomless — and lying in a hellish tangle that suggests Dante's tortured dream of the track yards back of North Station following an earthquake. Enter the bad patch, and the ruts seize your vehicle and fling it back and forth, wrenching the wheel, throwing you about inside like a shuttle, forcing creaks and snaps from the structure of your car, banging and scrubbing its undercarriage brutally against the road. The experience is the equivalent of shooting whitewater rapids in a handcar.

It ought to be possible to negotiate ruts in a muddy road just as you'd ride the rails: pick a set of ruts that are the same distance apart as the wheels of your car and simply tool along. In fact, that never works. The rut your car is in will heave you out and into the next rut, which will try to hurl your car clean off the road and into the ditch. A friend of mine has the explanation. "They move, you know," he says. "The ruts. No matter how you steer, the ruts move around and get you."

Of course. The ruts move. That's why you can't avoid them. There is an intelligence at work here. Far below, in the nether world, a goatish figure takes the switch lever in his cloven hoof. The ruts shift, and you slew wildly across the road once again, bouncing helplessly among the black gullies. The devil is behind it, after all. Is it any wonder? Is it any surprise that the Prince of the Air should be drawing a railroad pension just like so many other elderly gentlemen in the country of the old Boston & Maine?

The month's finest event is the close conjunction of the two brightest planets, Venus and Jupiter, low in the east before dawn on the 4th and 5th. On the 11th Spica will be occulted by the Moon at 7 A.M. EDT; the occultation will be visible in far northeastern Canada, Alaska, and Hawaii. On the 15th the Moon is at perigee and in conjunction with Saturn and Uranus. Striking this month is the Big Dipper, upside down but high in the north. A line through Dubhe and Merak, the two outside stars of its bowl, now can be extended downward in the evening to locate the North Star, Polaris. In the opposite direction an arc extending the Dipper's curving handle for a distance a little greater than its length ends in the bright star Arcturus — "arc to Arcturus."

ASTRONOMICAL CALCULATIONS

☽	First Quarter	5th day	21st hour	26th min.
○	Full Moon	13th day	7th hour	51st min.
☾	Last Quarter	19th day	23rd hour	4th min.
●	New Moon	27th day	10th hour	14th min.

ADD 1 hour for Daylight Saving Time.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS – PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
121	1	Fr.	4 40	B	6 44	D	14 04	18	1	1½	6 A M 29	A	10 P M 55	E	15 N.03	TAU	4
122	2	Sa.	4 39	A	6 45	D	14 06	18	1½	2¼	7 17	A	11 P M 44	E	15 21	AUR	5
123	3	D	4 37	A	6 46	D	14 09	18	2¼	3	8 13	A	— —	–	15 39	GEM	6
124	4	M.	4 36	A	6 47	D	14 11	18	3¼	4	9 14	A	12 A M 27	E	15 57	GEM	7
125	5	Tu.	4 35	A	6 48	D	14 13	18	4	4¾	10 19	B	1 01	E	16 14	CAN	8
126	6	W.	4 33	B	6 49	D	14 16	18	5	5¾	11 A M 23	B	1 29	E	16 31	LEO	9
127	7	Th.	4 32	B	6 50	D	14 18	18	5¾	6½	12 P M 29	C	1 53	D	16 48	LEO	10
128	8	Fr.	4 31	B	6 51	D	14 20	18	6¾	7½	1 34	C	2 14	D	17 04	LEO	11
129	9	Sa.	4 30	B	6 52	D	14 22	19	7¾	8¼	2 42	D	2 33	D	17 21	VIR	12
130	10	D	4 29	A	6 53	D	14 24	19	8½	8¾	3 51	D	2 52	C	17 36	VIR	13
131	11	M.	4 27	A	6 54	D	14 27	19	9¼	9½	5 03	E	3 14	B	17 52	VIR	14
132	12	Tu.	4 26	A	6 55	D	14 29	19	10	10¼	6 20	E	3 37	B	18 07	VIR	15
133	13	W.	4 25	A	6 57	D	14 32	19	10¾	11	7 41	E	4 07	B	18 22	LIB	16
134	14	Th.	4 24	A	6 58	E	14 34	19	11¾	11¾	9 00	E	4 44	A	18 36	SCO	17
135	15	Fr.	4 23	A	6 59	E	14 36	19	—	12½	10 12	E	5 34	A	18 51	OPH	18
136	16	Sa.	4 22	A	7 00	E	14 38	19	12½	1¼	11 P M 12	E	6 36	A	19 05	SAG	19
137	17	D	4 21	A	7 01	E	14 40	19	1½	2¼	— —	–	7 49	B	19 19	SAG	20
138	18	M.	4 20	A	7 02	E	14 42	19	2½	3¼	12 A M 00	E	9 08	B	19 32	CAP	21
139	19	Tu.	4 19	A	7 03	E	14 44	19	3½	4¼	12 35	E	10 26	B	19 45	CAP	22
140	20	W.	4 18	A	7 04	E	14 46	19	4½	5¼	1 03	D	11 A M 42	C	19 58	AQU	23
141	21	Th.	4 17	A	7 05	E	14 48	18	5½	6¼	1 27	D	12 P M 55	D	20 10	AQU	24
142	22	Fr.	4 17	A	7 06	E	14 49	18	6¾	7¼	1 47	D	2 05	D	20 22	PSC	25
143	23	Sa.	4 16	A	7 07	E	14 51	18	7¾	8¼	2 07	C	3 13	E	20 34	PSC	26
144	24	D	4 15	A	7 07	E	14 52	18	8¾	9	2 28	B	4 22	E	20 45	PSC	27
145	25	M.	4 14	A	7 08	E	14 54	18	9½	9¾	2 51	B	5 31	E	20 56	ARI	28
146	26	Tu.	4 14	A	7 09	E	14 55	18	10½	10½	3 16	B	6 39	E	21 07	ARI	29
147	27	W.	4 13	A	7 10	E	14 57	18	11	11¼	3 47	A	7 44	E	21 17	TAU	0
148	28	Th.	4 12	A	7 11	E	14 59	18	11¾	11¾	4 25	A	8 46	E	21 27	TAU	1
149	29	Fr.	4 12	A	7 12	E	15 00	18	—	12½	5 11	A	9 39	E	21 37	AUR	2
150	30	Sa.	4 11	A	7 13	E	15 02	18	12½	1¼	6 04	A	10 24	E	21 46	AUR	3
151	31	D	4 11	A	7 13	E	15 02	17	1¼	2	7 A M 04	A	11 P M 01	E	21 N.54	GEM	4

May is lilac here in New England,
May is a thrush singing "sun up!" on a tip-top ash tree,
May is white clouds behind pine trees
Puffed out and marching upon a blue sky.
— *Amy Lowell*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather ↓
1	Fr.	**Sts. Philip and James** • ☌☌☾ • Tides {10.1 8.7	*Rub*
2	Sa.	☾ runs high • Derby Day, Kentucky • Graft fruit trees now. • Tides {9.7 8.4	*your*
3	D	**2nd S. af. E.** • Invention of Cross • ☾ at apo. •	*eyes—*
4	M.	☌♀♃ • 4 Kent State U. students shot, 1970 • Tides {9.0 7.8 •	*sunny*
5	Tu.	Plant corn now, or lose a bushel a day past the middle of May. • {8.7 7.7 •	*skies!*
6	W.	Cherry trees in bloom, Roxbury, Mass., 1817 • Sigmund Freud born, 1856 • {8.5 7.8	*Catch*
7	Th.	☿ at sup. ☌ • Tornado destroyed Natchez, Miss., 1840 • {8.4 8.1	*some*
8	Fr.	*The vices are never so well employed as in combating one another.* • {8.5 8.5	*rays*
9	Sa.	☾ on Eq. • "Charlie McCarthy Show" first broadcast, 1937 • {8.7 9.1 •	*these*
10	D	**3rd S. af. E.** • ☾ at ♉ • Skunks are born now. •	*days.*
11	M.	Three • Occult. Spica by ☾ • Irving Berlin born, 1888 •	*The*
12	Tu.	Chilly • *He who rides a tiger is afraid to dismount.* • Tides {9.4 10.7	*rain*
13	W.	Saints • Full Flower ○ • 4.2 earthquake, New Brunswick, 1983 • {9.6 11.1	*in*
14	Th.	-10° F., Climax, Colorado, 1896 • Gabriel Daniel Fahrenheit born, 1686 • {9.7 11.3	*Maine*
15	Fr.	☌♄☾ • ☌☌☾ • ☾ at peri. • Sputnik III launched, 1958 •	*is*
16	Sa.	☾ runs low • ☌♆☾ • Tides {11.3 9.5 •	*plainly*
17	D	**4th S. af. E.** • A. Lincoln nominated for Presidency, 1860 •	*on*
18	M.	T.V.A. created, 1933 • Brooks Robinson born, 1937 • Tides {10.8 9.1	*the*
19	Tu.	**St. Dunstan** • Anne Boleyn beheaded, 1536 • Tides {10.3 9.1	*gain.*
20	W.	Gasoline $1.29/gal., Sacramento, Cal., 1979 • Lincoln signed Homestead Act, 1862 •	*South*
21	Th.	*He who sleeps in noise is wakened by silence.* • Tides {9.6 9.3 •	*putters*
22	Fr.	☾ on Eq. • Sir Arthur Conan Doyle born, 1859 • Tides {9.3 9.6	*while*
23	Sa.	**St. Julia** • ☾ at ♌ • ☌♃☾ • Tides {9.2 9.9	*North*
24	D	**Rogation Sun.** 182 killed in *Victoria* disaster, London, Ont., 1881	*sput-*
25	M.	**Memorial Day** • Rogation Day • ☌♀☾ • {9.1 10.2 •	*ters.*
26	Tu.	Rogation Day • John Wayne born, 1907 • Tides {9.0 10.3 •	*Rain*
27	W.	**St. Bede** • Rogation Day • New ● • Sam Snead born, 1912 •	*you'll*
28	Th.	**Ascension Day** • Dionne quints born, Ont., 1934 {8.8 10.1	*need*
29	Fr.	☌♀☾ • ☌☌☾ • John F. Kennedy born, 1917	*to save—*
30	Sa.	☾ runs high • First auto race on Indianapolis track, 1911 • {9.9 8.5	*Micro-*
31	D	**1st S. af. Ascen.** • ☾ at apo. • {9.7 8.3	*wave!*

Farmer's Calendar

May Day. To the top of the little hill behind the house, then down toward the village. A warm day with the sun coming deep into the woods through the branches of the bare trees. After I had walked for a while, I was hot and took off my coat. Rather than carry it around with me on my walk, I hung it on a tree by the path because I expected to return that way.

Up the hill the going was through dry leaves and brush, but at the top there was a good deal of ledge, and the woods were thin. There a long, coarse grass grew among the trees. It was green today, and growing in the grass up out of the scattered dead leaves were a million flowers no bigger than your little fingernail, with five pink or purple or white petals on a weak stem. The flower petals had tiny red veins at their bases. Spring beauty *(Claytonia)*. The sunny space at the top of the hill was in reality a field of spring beauties, but the flowers were so small and so unassuming that you might miss them and see no more than a field of brown leaves and tough forest grasses. I sat for a few minutes and watched the flowers. A warm little breeze came up the hill and through the trees. The air was full of flying insects, but none of them bothered. Beyond the opening was a hemlock thicket, and when the wind backed around and came from there, it was cold.

Down the hill on the other side there were small beech trees growing thickly. They still held most of last year's leaves, the color of a tan glove, now rattling in the breeze. When do old beech leaves finally drop away to make room for new? I turned back. Near the edge of the woods I saw ahead of me a man in red. Somebody come to find me in the woods? Who? With what news? No news: I came up to the visitor and found my coat where I had hung it an hour before.

JUNE, THE SIXTH MONTH

Summer begins at 6:11 P.M. EDT on the 21st, but the latest sunset for 40° North is not until about a week later. At the Arctic Circle on the first day of summer, the Sun never sets, but at midnight can be seen just skimming the north point on the horizon. At the North Pole itself there are six months of sunshine, with the Sun attaining its maximum altitude (about 23½°) at the summer solstice. A typical spot in the lower United States on the first day of summer receives about 14 or 15 hours of sunshine. Mercury is 24° from the Sun on the 7th, around which time it can be glimpsed in the west about 45 minutes after sunset. Saturn reaches opposition on the 9th and is visible all night long, rivaling the brightest stars. Look for it in the southeast at dusk. Even a small telescope can show the rings and golden ball of the planet well.

ASTRONOMICAL CALCULATIONS

☽	First Quarter	4th day	13th hour	54th min.
○	Full Moon	11th day	15th hour	50th min.
☾	Last Quarter	18th day	6th hour	3rd min.
●	New Moon	26th day	0 hour	37th min.

ADD 1 hour for Daylight Saving Time.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49 53

Day of Year	Day of Month	Day of Week	⊙ Rises h. m.	Key	⊙ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
152	1	M.	4 10	A	7 14	E	15 04	17	2	2½	8 A M 07	B	11 P M 30	E	22 N. 02	CAN	5
153	2	Tu.	4 10	A	7 15	E	15 05	17	2¾	3½	9 11	B	— —	–	22 10	CAN	6
154	3	W.	4 09	A	7 16	E	15 07	17	3½	4¼	10 15	C	12 A M 00	E	22 18	LEO	7
155	4	Th.	4 09	A	7 16	E	15 07	17	4¼	5	11 A M 20	C	12 16	D	22 25	LEO	8
156	5	Fr.	4 08	A	7 17	E	15 09	17	5¼	5¾	12 P M 24	D	12 35	D	22 32	LEO	9
157	6	Sa.	4 08	A	7 18	E	15 10	16	6	6½	1 31	D	12 54	C	22 39	VIR	10
158	7	D	4 08	A	7 18	E	15 10	16	7	7¼	2 40	E	1 14	C	22 45	VIR	11
159	8	M.	4 08	A	7 19	E	15 11	16	7¾	8¼	3 54	E	1 37	B	22 50	VIR	12
160	9	Tu.	4 07	A	7 20	E	15 13	16	8¾	9	5 12	E	2 03	B	22 55	LIB	13
161	10	W.	4 07	A	7 20	E	15 13	16	9½	9¾	6 33	E	2 36	A	23 00	LIB	14
162	11	Th.	4 07	A	7 21	E	15 14	15	10½	10½	7 50	E	3 20	A	23 04	SCO	15
163	12	Fr.	4 07	A	7 21	E	15 14	15	11¼	11½	8 57	E	4 17	A	23 08	SAG	16
164	13	Sa.	4 07	A	7 22	E	15 15	15	—	12¼	9 52	E	5 28	A	23 12	SAG	17
165	14	D	4 07	A	7 22	E	15 15	15	12¼	1¼	10 33	E	6 48	B	23 16	SAG	18
166	15	M.	4 07	A	7 23	E	15 16	15	1¼	2	11 05	E	8 10	B	23 18	CAP	19
167	16	Tu.	4 07	A	7 23	E	15 16	14	2¼	3	11 P M 31	D	9 30	C	23 21	AQU	20
168	17	W.	4 07	A	7 23	E	15 16	14	3¼	4	— —	–	10 45	C	23 22	AQU	21
169	18	Th.	4 07	A	7 24	E	15 17	14	4¼	5	12 A M 00	D	11 A M 57	D	23 24	PSC	22
170	19	Fr.	4 07	A	7 24	E	15 17	14	5¼	6	12 13	C	1 P M 06	D	23 25	PSC	23
171	20	Sa.	4 07	A	7 24	E	15 17	14	6¼	6¾	12 33	B	2 14	E	23 26	PSC	24
172	21	D	4 07	A	7 24	E	15 17	13	7¼	7¾	12 55	B	3 22	E	23 26	ARI	25
173	22	M.	4 08	A	7 25	E	15 17	13	8¼	8½	1 20	B	4 30	E	23 26	ARI	26
174	23	Tu.	4 08	A	7 25	E	15 17	13	9¼	9¼	1 49	A	5 36	E	23 26	TAU	27
175	24	W.	4 08	A	7 25	E	15 17	13	10	10	2 24	A	6 38	E	23 25	TAU	28
176	25	Th.	4 08	A	7 25	E	15 17	13	10¾	10¾	3 07	A	7 34	E	23 23	TAU	29
177	26	Fr.	4 09	A	7 25	E	15 16	12	11½	11½	3 58	A	8 21	E	23 21	AUR	0
178	27	Sa.	4 09	A	7 25	E	15 16	12	—	12¼	4 56	A	9 00	E	23 19	GEM	1
179	28	D	4 10	A	7 25	E	15 15	12	12¼	12¾	5 58	A	9 32	E	23 16	CAN	2
180	29	M.	4 10	A	7 25	E	15 15	12	12¾	1½	7 02	B	9 58	E	23 13	LEO	3
181	30	Tu.	4 10	A	7 25	E	15 15	11	1½	2	8 A M 06	B	10 P M 20	D	23 N. 10	LEO	4

The traveler owns the grateful sense
Of sweetness near, he knows not whence,
And, pausing, takes with forehead bare
The benediction of the air.
— *John Greenleaf Whittier*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	*Weather* ↓
1	M.	Apple trees blossomed late, New Haven, Conn., 1812 • Tides 9.5 / 8.2 •	*Gather*
2	Tu.	Coronation Day, U.K. • Lou Gehrig died, 1941 • Tides 9.2 / 8.1 •	*ye*
3	W.	*A learned man is a tank; a wise man is a spring.* • Henry James born, 1811	*rosebuds*
4	Th.	W. Churchill said, "We shall fight on the beaches, we shall never surrender," 1940 • 8.7 / 8.3	*while*
5	Fr.	**St. Boniface** • Joe Clark, 16th Can. P.M., born, 1939 • 8.6 / 8.6 •	*ye*
6	Sa.	☾ at ♉ • ☾ on Eq. • Rainy season, Calcutta. • Tides 8.5 / 9.0	*may!*
7	D	**Whit Sunday • Pentecost** • ☿ Gr. Elong (24° E.)	
8	M.	Snow, Salem, Mass., 1816 • Frank Lloyd Wright born, 1869 • 8.7 / 10.0	*Great for*
9	Tu.	♄ at ♂ • Strawberries ripen now. • Tides 8.9 / 10.5 •	*brides,*
10	W.	Birthday of Prince Philip, Duke of Edinburgh • Ember Day •	*but fields*
11	Th.	**St. Barnabas** • ☌♄☾ • Full Strawberry ○ • ☌♎☾ •	
12	Fr.	Ember Day • ☾ runs low • ☌♆☾ • ☾ at peri. • 9.5 / 11.5	*are*
13	Sa.	The Queen's Official Birthday • Ember Day • +2°F., Tamarack, California, 1907	*dried.*
14	D	**Trinity Sunday** • Benedict Arnold died, 1801	*Thanks*
15	M.	Killing frost, N.J., 1746 • Meredith Wilson died, 1984 • 11.4 / 9.7 •	*Lord:*
16	Tu.	♎ at ♂ • *He who limps is still walking.* • Tides 11.0 / 9.7 •	*it*
17	W.	**St. Alban** • Santa Ana winds roasted fruit on trees, Calif., 1859 •	*poured!*
18	Th.	☾ on Eq. • Napoleon defeated at Waterloo, 1815 • Tides 9.9 / 9.7	*Beamy,*
19	Fr.	☾ at ♌ • Don't brew beer while beans blossom. •	*then*
20	Sa.	☌♃☾ • ☿ stat. • Bobby Jones won British Open, 1930 • 9.0 / 9.8	*steamy.*
21	D	**2nd S. af. P.** • Solstice, 6:11 P.M. EDT • 8.7 / 9.8 •	*Fried,*
22	M.	12″ rain in 42 minutes, Holt, Missouri, 1947 • Tides 8.5 / 9.9	*then*
23	Tu.	*Knowledge and timber shouldn't be used until they are seasoned.* •	*electrified!*
24	W.	**Nativity of John the Baptist** • ☌♀☾ •	*Time*
25	Th.	Fasting and prayers to relieve drought, Mass., 1749 • Tides 8.4 / 9.9 •	*for*
26	Fr.	☾ high • New ● • St. Lawrence Seaway dedicated, 1959 •	*the*
27	Sa.	☌♎☾ • ☾ at apo. • 35 U.S. Army advisors sent to Vietnam, 1950 •	*pool?*
28	D	**3rd S. af. P.** • ☿ at ♂ • Tides 9.8 / 8.4 •	*Still*
29	M.	**St. Peter** • 100° F., San Francisco, 1891 • Tides 9.7 / 8.4 •	*too*
30	Tu.	**St. Paul** • Lena Horne and Buddy Rich born, 1917 • Tides 9.6 / 8.5	*cool.*

A man never knows how to say good-bye;
A woman never knows when to say it.

Farmer's Calendar

Woodpeckers, as a family, must know something of Original Sin, as other birds do not; for woodpeckers are, preeminently, birds that eat their bread in the sweat of their faces. Not that it's easy being a flycatcher, say, or a heron or a finch — but the bugs, frogs, and seeds that make the food of those fortunate species are pretty much there for the taking, aren't they? All those birds have to do is be in the right place at the right time. The woodpecker must dig and delve and work for his living. If you have watched one toiling over a tree branch, you know that "wood*pecker*" is a bad name, suggesting a way of foraging more fastidious and less intense than the actions the bird really performs to get its food. You might as well call an open-heart surgeon a "chest pecker." The woodpecker drives his beak into the bark and twists, rips, gouges, scrapes, yanks, and digs. He moves wood. The big pileated woodpeckers around here leave at the foot of a tree a pile of chips that would make an axeman proud. Their smaller friends, the hairy and downy woodpeckers, make less of a mess but are equally assiduous. These birds know that in this world you have to hustle. They go after a tree hammer and tongs; they don't expect lunch simply to wander by.

Woodpeckers make other birds look like triflers. Their lives have a complexity and purpose that remind us of ourselves. They work because they must, and so do we; and neither of us complains. We both get along. But life is unfair. And when a dilettante phoebe floats by a woodpecker's branch, you can see the latter glance up briefly, a little crossly, and then return to his work, like a cobbler looking out his humble window at the passing of a brougham.

JULY, THE SEVENTH MONTH

Earth is at aphelion (farthest from the Sun) at 9 P.M. EDT on the 3rd, but the northern hemisphere is tilted toward the Sun, so we have hot weather. On the 10th Jupiter is at perihelion (nearest the Sun in space) for the first time in 12 years, so it will be at its most brilliant when at opposition in October. This month the Moon is both its closest to (on the 11th) and its farthest from (on the 25th) the Earth for the year; tides near the 11th are among the highest of the year. Visible planets include Saturn in the south all evening and Mercury low in the east before dawn late in the month. Scorpius, with its red star-heart Antares, is prominent under Saturn low in the south. Look for Delta Aquarid meteors from the south after midnight late in the month.

ASTRONOMICAL CALCULATIONS

☽	First Quarter	4th day	3rd hour	35th min.
○	Full Moon	10th day	22nd hour	33rd min.
☾	Last Quarter	17th day	15th hour	18th min.
●	New Moon	25th day	15th hour	38th min.

ADD 1 hour for Daylight Saving Time.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
182	1	W.	4 11	A	7 25	E	15 14	11	2¼	2¾	9 A M 09	C	10 P M 40	D	23 N. 07	LEO	5
183	2	Th.	4 11	A	7 25	E	15 14	11	3	3½	10 13	D	10 58	C	23 02	LEO	6
184	3	Fr.	4 12	A	7 24	E	15 12	11	3¾	4¼	11 A M 17	D	11 17	C	22 58	VIR	7
185	4	Sa.	4 13	A	7 24	E	15 11	11	4½	5	12 P M 23	E	11 P M 38	B	22 52	VIR	8
186	5	**D**	4 13	A	7 24	E	15 11	11	5½	5¾	1 33	E	— —	–	22 47	VIR	9
187	6	M.	4 14	A	7 24	E	15 10	10	6¼	6½	2 47	E	12 A M 01	B	22 41	VIR	10
188	7	Tu.	4 14	A	7 23	E	15 09	10	7¼	7½	4 04	E	12 30	A	22 35	LIB	11
189	8	W.	4 15	A	7 23	E	15 08	10	8¼	8½	5 23	E	1 07	A	22 29	SCO	12
190	9	Th.	4 16	A	7 23	E	15 07	10	9¼	9¼	6 36	E	1 58	A	22 22	OPH	13
191	10	Fr.	4 16	A	7 22	E	15 06	10	10	10¼	7 38	E	3 02	A	22 14	SAG	14
192	11	Sa.	4 17	A	7 22	E	15 05	10	11	11¼	8 25	E	4 19	B	22 07	SAG	15
193	12	**D**	4 18	A	7 21	E	15 03	9	—	12	9 02	E	5 44	B	21 58	CAP	16
194	13	M.	4 19	A	7 21	E	15 02	9	12	12¾	9 31	D	7 07	B	21 50	CAP	17
195	14	Tu.	4 20	A	7 20	E	15 00	9	1	1¾	9 55	D	8 27	C	21 41	AQU	18
196	15	W.	4 20	A	7 19	E	14 59	9	2	2¾	10 17	C	9 43	D	21 31	AQU	19
197	16	Th.	4 21	A	7 19	E	14 58	9	3	3½	10 38	B	10 A M 54	D	21 22	PSC	20
198	17	Fr.	4 22	A	7 18	E	14 56	9	3¾	4½	10 59	B	12 P M 05	E	21 12	PSC	21
199	18	Sa.	4 23	A	7 17	E	14 54	9	4¾	5¼	11 23	B	1 14	E	21 02	ARI	22
200	19	**D**	4 24	A	7 17	E	14 53	9	6	6¼	11 P M 51	B	2 22	E	20 51	ARI	23
201	20	M.	4 25	A	7 16	E	14 51	9	7	7¼	— —	–	3 29	E	20 40	TAU	24
202	21	Tu.	4 26	A	7 15	E	14 49	9	8	8	12 A M 24	B	4 33	E	20 29	TAU	25
203	22	W.	4 27	A	7 14	E	14 47	9	9	9	1 05	A	5 30	E	20 17	TAU	26
204	23	Th.	4 28	A	7 13	E	14 45	9	9¾	9¾	1 53	A	6 20	E	20 05	AUR	27
205	24	Fr.	4 28	A	7 12	E	14 44	9	10½	10½	2 49	A	7 02	E	19 52	GEM	28
206	25	Sa.	4 29	A	7 11	D	14 42	9	11	11¼	3 50	A	7 35	E	19 39	CAN	0
207	26	**D**	4 30	A	7 10	D	14 40	9	11¾	11¾	4 54	B	8 02	E	19 26	CAN	1
208	27	M.	4 31	A	7 09	D	14 38	9	—	12¼	5 58	B	8 25	E	19 13	LEO	2
209	28	Tu.	4 32	A	7 08	D	14 36	9	12½	1	7 02	C	8 46	D	19 00	LEO	3
210	29	W.	4 33	A	7 07	D	14 34	9	1	1½	8 06	C	9 04	C	18 46	LEO	4
211	30	Th.	4 34	A	7 06	D	14 32	9	1¾	2¼	9 09	D	9 22	C	18 31	VIR	5
212	31	Fr.	4 35	A	7 05	D	14 30	9	2½	2¾	10 A M 13	D	9 P M 41	B	18 N. 17	VIR	6

The cricket's chirr reaches far beyond
The quiet pier
To the shimmering axel
Of the first star.
— *Floyd Collins*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	*Weather* ↓
1	W.	Dominion Day, Canada • Buckminster Fuller died, 1983 • Tides 9.4 / 8.5	*This*
2	Th.	Visitation of Mary • Vermont abolished slavery, 1777 • 9.1 / 8.7	*truth's*
3	Fr.	☾ at ♉ • ☾ on Eq. • ⊕ at aphelion • Dog Days begin. 8.9 / 8.8	
4	Sa.	**Independence Day** • Translation of St. Martin of Tours •	*self-*
5	D	**4th S. af. ℙ.** • Occult. Spica by ☾	*evident:*
6	M.	Babe Ruth hit homer in first All-Star game (A.L.5, N.L.2), 1933 • 8.4 / 9.7	*weather's*
7	Tu.	St. Frances Cabrini, first U.S. saint, canonized, 1946 • Tides 8.5 / 10.2	*elegant!*
8	W.	☌♄☾ • Ziegfield Follies opened, 1907 • Frost, Waltham, Mass., 1816	*Drizzly,*
9	Th.	☌♎☾ • *A fool and her money are soon courted.* • Tides 8.9 / 11.1	*then*
10	Fr.	☾ runs low • ☌♆☾ • Full Buck ○ • Tides 9.2 / 11.4	*sizzly*
11	Sa.	☾ at peri. • ☌☿♀ • Year's highest P.M. tide • 9.5 / 11.6	*for*
12	D	**5th S. af. ℙ.** • Cornscateous air. •	*your*
13	M.	114° F, Wis. Dells, Wisconsin, 1936 • Year's highest A.M. tide 11.7 / 10.0	*cookout:*
14	Tu.	*Knowledge is power, if you know it about the right person.* • Tides 11.4 / 10.2	*Look*
15	W.	**St. Swithin** • ☾ on Eq. • ☿ stat. • Tides 11.0 / 10.2	*out!*
16	Th.	☾ at ♌ • 100° F., Seattle, Wash., 1941 • Ginger Rogers born, 1911 •	*Squirts*
17	Fr.	*The richer a relative is, the less he bothers you.* • Tides 9.7 / 10.0 •	*in*
18	Sa.	☌♃☾ • 39° C., Fort Smith, N.W.T., 1941 • Tides 9.1 / 9.8	*spurts*
19	D	**6th S. af. ℙ.** • Edgar Degas born, 1834 • Tides 8.6 / 9.6	*ruin*
20	M.	**St. Margaret** • St. Margaret's Day brings rain. •	*shirts.*
21	Tu.	*Misfortunes and twins never come singly.* • Don Knotts born, 1924 • Tides 8.0 / 9.4	*You*
22	W.	**St. Mary Magdalene** • Stephen Vincent Benet born, 1898 •	*call*
23	Th.	☾ runs high • ☌☿☾ • ♇ stat. • Kay Kyser died, 1985 •	*this*
24	Fr.	Now state of the crops is known. • Tides 8.2 / 9.7 •	*summer?*
25	Sa.	**St. James** • ☾ at apo. • ☿ Gr. Elong. (20° West) • New ●	
26	D	**7th S. af. ℙ.** • **St. Anne** • Tides 8.5 / 9.8	*Ceiling*
27	M.	*If men are so wicked with religion, what would they be without it?* •	*drummer.*
28	Tu.	Jacqueline Kennedy Onassis born, 1929 • Tides 9.8 / 8.8 •	*Sun*
29	W.	First asphalt pavement laid, Newark, N.J., 1870 • Tides 9.6 / 8.9	*warmin' us;*
30	Th.	☾ at ♉ • ☾ on Eq. • Casey Stengel born, 1891 •	*west looks*
31	Fr.	**St. Ignatius of Loyola** • Oxygen discovered, 1774 •	*ominous.*

Farmer's Calendar

One day a couple of summers ago I came upon a troop of large black ants crawling in single file up a tall grass stem in a meadow where I walked. There must have been fifty or more ants, and they proceeded slowly in tight formation, nose to tail, along the stalk. What happened when they reached the top? I don't know because I didn't wait to see. I was walking that day, not looking, and although I noted the ant procession as a remarkable thing, I passed on without learning more about it, consoling myself with the thought that after all there is probably not much that's new on ants. No doubt antologists have long since observed and understood such processions, however strange they are to me, an amateur of ants. Let the professionals look into these unusual ants, I thought: they can figure the thing out better than I.

But what a lazy, unworthy notion it is, the idea that all the secrets of nature's everyday life have been discovered, that any purposeful investigation of nature can only be the domain of scientists, specialists, and others better trained than we. Can't science itself begin in curiosity, and isn't curiosity reborn in each of us and directed at even the humblest phenomena — until we decide that everything is known to science and give up our excitement at ordinary sights and sounds? Maybe we should begin to think of seeing nature as an art rather than a science. No one believes that the world's musicians, artists, and authors have exhausted the subject matter of art to the point where there is no further need for music, painting, or literature. Can we renew our curiosity, and so our will to learn from what we see, by imagining that we go to the trees, stars, bugs, and grass as an artist goes to his work: intent, expectant, delighting?

Although Saturn is bright in the south before midnight and Jupiter even brighter there before dawn, the other familiar planets are hiding near the Sun. A nearly full Moon spoils the Perseid meteor shower from the 11th through the 13th, although a few of these shooting stars — perhaps one a minute, if we are lucky — might still be seen after midnight on the 12th and 13th. The Milky Way is now spectacular in country skies along its stretch from northeast to southwest, passing Deneb and Altair down to Sagittarius the Archer. Between Sagittarius and Scorpius (above which Saturn shines) is an especially bright patch of glow that marks the direction of our galaxy's center. Venus is at superior conjunction with the Sun on the 23rd; Mars, on the 25th.

ASTRONOMICAL CALCULATIONS

☽	First Quarter	2nd day	14th hour	25th min.
○	Full Moon	9th day	5th hour	18th min.
☾	Last Quarter	16th day	3rd hour	26th min.
●	New Moon	24th day	7th hour	0 min.
☽	First Quarter	31st day	22nd hour	49th min.

ADD 1 hour for Daylight Saving Time.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	Rises h. m.	Key	Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	Rises h. m.	Key	Sets h. m.	Key	Declination of sun ° ′	Place	Age
213	1	Sa.	4 36	A	7 04	D	14 28	9	3¼	3½	11 AM 20	E	10 PM 03	B	18 N. 01	VIR	7
214	2	D	4 37	A	7 03	D	14 26	9	4	4¼	12 PM 31	E	10 29	B	17 46	VIR	8
215	3	M.	4 38	A	7 02	D	14 24	9	4¾	5¼	1 45	E	11 01	A	17 31	LIB	9
216	4	Tu.	4 39	A	7 00	D	14 21	9	5¾	6	3 01	E	11 PM 43	A	17 15	SCO	10
217	5	W.	4 40	A	6 59	D	14 19	9	6¾	7	4 15	E	— —	–	16 58	SCO	11
218	6	Th.	4 42	A	6 58	D	14 16	9	7¾	8	5 20	E	12 AM 40	A	16 42	SAG	12
219	7	Fr.	4 43	A	6 57	D	14 14	9	8¾	9	6 14	E	1 50	A	16 25	SAG	13
220	8	Sa.	4 44	A	6 55	D	14 11	9	9¾	10	6 56	E	3 11	B	16 08	CAP	14
221	9	D	4 45	A	6 54	D	14 09	9	10¾	11	7 29	E	4 36	B	15 51	CAP	15
222	10	M.	4 46	A	6 53	D	14 07	10	11¾	—	7 56	D	5 59	C	15 34	AQU	16
223	11	Tu.	4 47	A	6 51	D	14 04	10	12	12½	8 19	D	7 19	C	15 17	AQU	17
224	12	W.	4 48	A	6 50	D	14 02	10	12¾	1¼	8 40	C	8 35	D	14 59	PSC	18
225	13	Th.	4 49	A	6 49	D	14 00	10	1¾	2	9 02	B	9 48	E	14 41	PSC	19
226	14	Fr.	4 50	B	6 47	D	13 57	10	2½	3	9 25	B	11 AM 00	E	14 22	PSC	20
227	15	Sa.	4 51	B	6 46	D	13 55	10	3½	3¾	9 52	A	12 PM 10	E	14 04	ARI	21
228	16	D	4 52	B	6 44	D	13 52	11	4½	4¾	10 23	A	1 20	E	13 45	ARI	22
229	17	M.	4 53	B	6 43	D	13 50	11	5½	5¾	11 02	A	2 25	E	13 26	TAU	23
230	18	Tu.	4 54	B	6 41	D	13 47	11	6½	6¾	11 PM 48	A	3 26	E	13 06	TAU	24
231	19	W.	4 55	B	6 40	D	13 45	11	7½	7½	— —	–	4 18	E	12 47	AUR	25
232	20	Th.	4 56	B	6 38	D	13 42	12	8½	8½	12 AM 42	A	5 02	E	12 27	GEM	26
233	21	Fr.	4 57	B	6 37	D	13 40	12	9¼	9¼	1 42	A	5 38	E	12 07	GEM	27
234	22	Sa.	4 58	B	6 35	D	13 37	12	10	10	2 46	B	6 07	E	11 47	CAN	28
235	23	D	4 59	B	6 33	D	13 34	12	10½	10¾	3 50	B	6 31	E	11 27	CAN	29
236	24	M.	5 01	B	6 32	D	13 31	13	11¼	11¼	4 54	C	6 52	D	11 07	LEO	0
237	25	Tu.	5 02	B	6 30	D	13 28	13	11¾	—	5 58	C	7 10	D	10 46	LEO	1
238	26	W.	5 03	B	6 29	D	13 26	13	12	12½	7 02	D	7 29	C	10 26	LEO	2
239	27	Th.	5 04	B	6 27	D	13 23	13	12½	1	8 06	D	7 47	C	10 05	VIR	3
240	28	Fr.	5 05	B	6 25	D	13 20	14	1¼	1½	9 12	E	8 07	B	9 44	VIR	4
241	29	Sa.	5 06	B	6 24	D	13 18	14	2	2¼	10 21	E	8 31	B	9 22	VIR	5
242	30	D	5 07	B	6 22	D	13 15	14	2¾	3	11 AM 33	E	9 00	A	9 01	LIB	6
243	31	M.	5 08	B	6 20	D	13 12	15	3½	3¾	12 PM 46	E	9 PM 38	A	8 N. 39	LIB	7

How easily the ripe grain
Leaves the husk
At the simple turning of the planet.
— *W. S. Merwin*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather ↓
1	Sa.	**Lammas Day** • Herman Melville born, 1819 • {8.9 9.3 •	*Donder*
2	**D**	**8th S. af. P.** • Warren Harding died, 1923 • Tides {8.7 9.4	*and*
3	M.	First *Viking I* images of Mars beamed back to Earth, 1976 • Tides {8.4 9.6	*Blitzen!*
4	Tu.	**St. Dominic** • 108° F., Spokane, Wash., 1961 •	*Showers*
5	W.	☌♄☾ • ☌♁☾ • Sir Humphrey Gilbert claimed Nfld., 1583 •	*spitzen*
6	Th.	**Transfiguration** • ☾ runs low • ☌♆☾ • {8.5 10.6	*on*
7	Fr.	**Name of Jesus** • Revolving door patented, 1888 • Tides {8.8 11.0	*the*
8	Sa.	☾ at peri. • Snow showers over Lake Michigan, 1882 • Tides {9.3 11.4	*coasts;*
9	**D**	**9th S. af. P.** • Full Sturgeon ○ • {9.8 11.6	*inland*
10	M.	**St. Lawrence** • Shooting stars now called St. Lawrence's tears. •	*roasts.*
11	Tu.	Dog Days end. • +42° C., Northwest River, Newfoundland, 1914 Tides {11.5 10.5	*A*
12	W.	**St. Clare** • ☾at♋ • ☾ on Eq. • Tides {11.3 10.6	*storm*
13	Th.	Fog in August means severe winter. • Annie Oakley born, 1860 •	*would*
14	Fr.	☌♃☾ • 113° F., Kansas City, 1936 • Tides {10.1 10.3 •	*break*
15	Sa.	*People who aren't afraid to roll up their sleeves seldom lose their shirts.* • Tides {9.4 9.9 •	*the*
16	**D**	**10th S. af. P.** • Battle of Bennington, Vt., 1777	*monotony,*
17	M.	"People's Bath," public bath with showers, opened, New York City, 1891 • {8.2 9.2	*but*
18	Tu.	**St. Helena** • Iowa's hottest afternoon, 1936 • Tides {7.8 9.0 •	*we*
19	W.	☾ runs high • ♄ stat. • Willie Shoemaker born, 1931 • {7.7 9.0	*haven't*
20	Th.	☿ at sup. ☌ • ♃ stat. • Emily Brontë born, 1818 •	*gotany.*
21	Fr.	☾ at apo. • Adding machine patented, 1888 • Tides {8.0 9.3	*Thor's*
22	Sa.	Killing frosts, New England, 1816 • Tides {8.2 9.5 •	*hammer*
23	**D**	**11th S. af. P.** • ♀ at sup. ☌ • {8.5 9.7	*clamors.*
24	M.	**St. Bartholomew** • New ● • Tides {8.8 9.8	*Soak*
25	Tu.	☌♁☉ • DeGaulle liberated Paris, 1944 • *Voyager II* to Saturn, 1981 •	*it*
26	W.	☾at♉ • ☾ on Eq. • John Wilkes Booth born, 1838 • {9.8 9.3 •	*up,*
27	Th.	Confucius born, 551 B.C. • *Tarzan of the Apes* published, 1912 • {9.7 9.4	*pup —*
28	Fr.	**St. Augustine of Hippo** • Ruth Gordon died, 1985 •	*sic*
29	Sa.	John the Baptist beheaded. • Dinah Washington born, 1924 • {9.2 9.6	*transit*
30	**D**	**12th S. af. P.** • Snow, Mount Monadnock, N.H., 1907	*gloria*
31	M.	*Children have more need of models than of critics.* • Tides {8.6 9.7	*Monday!*

Farmer's Calendar

People in the retail business will tell you that the three secrets of keeping store are location, location, and location. But if you're a young entrepreneur just starting out, and if your premises are at all rural, you may have to learn the importance of location the hard way. The young entrepreneur I'm thinking of was six last August. Finding herself short of funds and wanting to celebrate summer by shining up one of the icons of American childhood, she decided to open a lemonade stand beside the road she lived on. The lemonade she made, with a little help in directing the sugar toward the pitcher. A table, paper cups, ice, a sign, a money box, and the elements of commerce seemed all to be in place. August 5 she opened for business. Nickel a cup was the price.

Location was not long in delivering its stern verdict. The road her stand served, while not entirely void of traffic, was about a four- or five-car-per-hour road on a Tuesday morning. The cars that did pass tended to be the same ones, moreover, and their drivers tended not to be thirsty. They'd wave, but they wouldn't buy. Beer crowd, I guess. In any case, business was unbrisk. I bought a cup, and I stood the house one; but although my money was good, I'm a close relative of the proprietor, so my trade was not too important.

"Bit slow," I remarked.

"I'm never going to make any money," the proprietor said.

"Cheer up," I said. "Maybe a bus will come along and you'll sell it all at once."

"Buses never come along," she said. I bought another cup.

"Can you watch for a while?" she asked.

"Me?" I said.

And so another small business became a statistic.

Autumn begins at 9:45 A.M. EDT on the 23rd. Some experts say that the Harvest Moon is the first full Moon after the autumnal equinox, others say the one nearest *the equinox; but by either criterion, this year it is not September's moon but October's that is the Harvest Moon. The Milky Way is shifting position as fall approaches, swinging around until in November it will run east and west. The star Deneb is overhead in Cygnus the Swan, which points southwest as if migrating from the onset of cold weather. Saturn is still bright in the southwest these evenings, but tremendously brighter is Jupiter, which begins rising well before midnight. On the 1st the Moon is in conjunction with Saturn; on the 2nd with Uranus and Neptune. The eclipse of the Sun by the new Moon on the 22nd will not be visible from the United States.*

ASTRONOMICAL CALCULATIONS

○	Full Moon	7th day	13th hour	14th min.
☾	Last Quarter	14th day	18th hour	45th min.
●	New Moon	22nd day	22nd hour	9th min.
☽	First Quarter	30th day	5th hour	40th min.

ADD 1 hour for Daylight Saving Time.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
244	1	Tu.	5 09	B	6 19	D	13 10	15	4½	4¾	2 P M 00	E	10 P M 27	A	8 N. 18	SCO	8
245	2	W.	5 10	B	6 17	D	13 07	15	5½	5¾	3 07	E	11 P M 29	A	7 56	OPH	9
246	3	Th.	5 11	B	6 15	D	13 04	16	6½	6¾	4 04	E	— —	–	7 34	SAG	10
247	4	Fr.	5 12	B	6 14	D	13 02	16	7½	7¾	4 49	E	12 A M 44	B	7 12	SAG	11
248	5	Sa.	5 13	B	6 12	D	12 59	16	8½	9	5 25	E	2 05	B	6 49	CAP	12
249	6	D	5 14	B	6 10	D	12 56	16	9½	9¾	5 54	D	3 29	C	6 27	CAP	13
250	7	M.	5 15	B	6 08	C	12 53	17	10½	10¾	6 18	D	4 50	C	6 05	AQU	14
251	8	Tu.	5 16	B	6 07	C	12 51	17	11¼	11½	6 41	C	6 08	D	5 42	AQU	15
252	9	W.	5 17	B	6 05	C	12 48	18	—	12	7 03	B	7 24	D	5 20	PSC	16
253	10	Th.	5 19	B	6 03	C	12 44	18	12½	12¾	7 26	B	8 38	E	4 57	PSC	17
254	11	Fr.	5 20	B	6 01	C	12 41	18	1¼	1½	7 51	B	9 52	E	4 34	ARI	18
255	12	Sa.	5 21	B	6 00	C	12 39	19	2	2¼	8 21	A	11 A M 04	E	4 11	ARI	19
256	13	D	5 22	B	5 58	C	12 36	19	3	3¼	8 58	A	12 P M 13	E	3 48	TAU	20
257	14	M.	5 23	B	5 56	C	12 33	19	4	4	9 42	A	1 17	E	3 25	TAU	21
258	15	Tu.	5 24	B	5 54	C	12 30	20	4¾	5	10 34	A	2 13	E	3 02	AUR	22
259	16	W.	5 25	B	5 53	C	12 28	20	6	6	11 P M 32	A	3 00	E	2 39	AUR	23
260	17	Th.	5 26	B	5 51	C	12 25	20	7	7	— —	–	3 38	E	2 16	GEM	24
261	18	Fr.	5 27	B	5 49	C	12 22	21	7¾	8	12 A M 35	B	4 10	E	1 53	CAN	25
262	19	Sa.	5 28	C	5 47	C	12 19	21	8¾	8¾	1 39	B	4 35	E	1 30	CAN	26
263	20	D	5 29	C	5 46	C	12 17	21	9½	9½	2 43	B	4 57	D	1 06	LEO	27
264	21	M.	5 30	C	5 44	C	12 14	22	10	10¼	3 48	C	5 16	D	0 43	LEO	28
265	22	Tu.	5 31	C	5 42	C	12 11	22	10½	10¾	4 52	D	5 35	C	0 N. 19	LEO	0
266	23	W.	5 32	B	5 40	C	12 08	22	11¼	11½	5 57	D	5 53	C	0 S. 03	VIR	1
267	24	Th.	5 33	B	5 39	C	12 06	23	11¾	—	7 03	E	6 13	B	0 26	VIR	2
268	25	Fr.	5 34	B	5 37	C	12 03	23	12¼	12¼	8 12	E	6 36	B	0 50	VIR	3
269	26	Sa.	5 36	B	5 35	C	11 59	24	12¾	1	9 23	E	7 04	A	1 13	LIB	4
270	27	D	5 37	C	5 33	B	11 56	24	1½	1¾	10 37	E	7 38	A	1 37	LIB	5
271	28	M.	5 38	C	5 31	B	11 53	24	2¼	2½	11 A M 51	E	8 23	A	2 00	SCO	6
272	29	Tu.	5 39	C	5 30	B	11 51	25	3¼	3¼	12 P M 59	E	9 20	A	2 23	OPH	7
273	30	W.	5 40	C	5 28	B	11 48	25	4¼	4¼	1 P M 58	E	10 P M 29	A	2 S. 47	SAG	8

Where long the shadows of the wind had rolled,
Green wheat was yielding to change assigned,
And as by some vast magic undivined
The world was turning slowly into gold.
— *Edwin Arlington Robinson*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	*Weather* ↓
1	Tu.	**St. Giles** • ☌ stat. • ☌♄☾ • Tides {8.3 9.7 •	*Sun*
2	W.	☌☊☾ • ☌♆☾ • Hurricane, Fla. Keys, 1935 • {8.2 9.8	*dapples*
3	Th.	☾ runs low • 4″ snow, Denver, 1961 • Tides {8.2 10.0 •	*apples;*
4	Fr.	*You will never get ahead trying to get even.* • Tides {8.5 10.4 •	*showers*
5	Sa.	☾ at peri. • Cranberry harvest, Cape Cod, Mass. • Tides {9.0 10.8	*hit*
6	D	**13th S. af. P.** • Jane Addams born, 1860 • {9.6 11.1	*and*
7	M.	**Labor Day** • Full Corn ○ • Buddy Holly born, 1936 • {10.2 11.3	*miss.*
8	Tu.	**Nativity of Mary** • ☾at☌ • ☾ on Eq. •	*What*
9	W.	*If you tell the truth, you don't have to remember anything.* • Tolstoy born, 1828 •	*could*
10	Th.	☌♃☾ • Adm. Perry: "We have met the enemy and they are ours," 1813 •	*be*
11	Fr.	Propitious day for reaping. • Robert Service died, 1958 • {10.4 10.7 •	*sweeter*
12	Sa.	A.S. Wells, L.A.P.D., first U.S. policewoman, 1913 • Tides {9.7 10.3	*than*
13	D	**14th S. af. P.** • Rhinoceros first seen in New York City, 1826 •	*days*
14	M.	**Holy Cross** • Francis Scott Key wrote "Star-Spangled Banner," 1814 •	*like*
15	Tu.	Gen. Stonewall Jackson captured Harper's Ferry, W. Va., 1862 • Tides {7.9 8.9	*this?*
16	W.	**St. Ninian** • ☾ runs high • Lauren Bacall born, 1924 •	*Warning:*
17	Th.	**St. Lambert • St. Hildegarde** • ☿ stat. • ☾ at apo.	
18	Fr.	John Diefenbaker born, 1895 • Tides {7.8 8.9 •	*hurricane*
19	Sa.	M.R. Bissell patented carpet sweeper, 1876 • Tides {8.1 9.2	*aborning!*
20	D	**15th S. af. P.** • Red Auerbach born, 1917 •	*Now that*
21	M.	**St. Matthew** • *The girl who can't dance says the band can't play.* •	*you*
22	Tu.	☾ on Eq. • Eclipse ☉ • New ● • {9.3 9.7	*mention*
23	W.	Ember Day • ☾at☌ • Equinox 9:45 A.M. EDT • {9.6 9.7 •	*it —*
24	Th.	**Rosh Hashanah** • F. Scott Fitzgerald born, 1896 •	*rain*
25	Fr.	Ember Day • ☌☿☾ • Tides {9.6 10.0 •	*drenchin'*
26	Sa.	**St. Cyprian** • Ember Day • Tides {9.5 10.1	*it!*
27	D	**16th S. af. P.** • Book matches patented, 1892 •	*Bees*
28	M.	☌♄☾ • *Talk does not cook rice.* • Tides {8.9 10.0 •	*sing*
29	Tu.	**St. Michael** • ☌☊☾ • Gene Autry born, 1907 •	*autumnal*
30	W.	**St. Jerome** • ☾ runs low • ☌♆☾ • {9.3 9.7	*numnal.*

So live that you wouldn't be ashamed to sell the family parrot to the town gossip.

Farmer's Calendar

I was sitting around out back when my neighbor on the next hill started his chain saw. It was a good, hard, blue morning — one of the first real fall mornings of that year, with cold shadows and a warm yellow sun. A good morning to get in some work on the woodpile, George probably thought. Better him than me. I was content to listen. I could tell George was cutting small stovewood. His saw idled, idled, then its engine's noise rose in pitch briefly with the cutting stroke, then it idled again. The cuts were short, the idling between cuts long — as George or somebody helping him went to set up the branch for the next cut. He was making sticks for his kitchen range.

To the south another saw started up. The man who has the woods there lives in the village, but he and his boy come up here to cut wood. They were cutting fat logs. Their saw scarcely idled, but ran for long stretches at full throttle, the pitch of the engine noise rising and falling as the sawyer rocked the saw in the cut. Farther away, in the valley, a third chain saw was now to be heard with the others. That one was either an uncommonly big saw or it had a bad muffler, I thought, for its engine sounded deep and loud.

The noises of the saws with their different tempos ran together and combined to produce a kind of symphonic effect. It wasn't sweet harmony, no, but it wasn't at all unpleasing, either — a far-flung autumnal chorus of machinery. George's little saw sounded to me like A flat, and the log cutters to the south were about F or F sharp. Then the valley saw came booming in with the bass. If you could get these fellows together, I thought, you'd have no trouble filling a hall: The Green Mountain Trio, in concert this week (and the next, and the next, and the next . . .).

Jupiter reaches opposition on the 18th and shines its brightest and closest possible for the first time in 12 years. It is a mighty beacon crossing the south all night in dim Pisces. To the upper right of Jupiter locate the Great Square of Pegasus. Far below the Great Square is a solitary bright star, Fomalhaut. On the night of the 6th-7th, all of the United States and Canada gets to see a penumbral eclipse of the Harvest Moon beginning at 9:53 P.M. EDT, reaching a maximum at 12:01 A.M. EDT, and ending at 2:10 A.M. EDT. At its greatest coverage the Earth's shadow will darken the southern edge of the Moon. The Pleiades and Aldebaran are low in the east. Before dawn on the 20th and 21st look for swift Orionid meteors from the south.

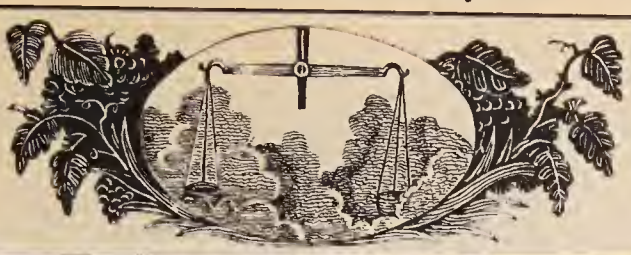
ASTRONOMICAL CALCULATIONS

○	Full Moon	6th day	23rd hour	13th min.
☾	Last Quarter	14th day	13th hour	6th min.
●	New Moon	22nd day	12th hour	29th min.
☽	First Quarter	29th day	12th hour	11th min.

ADD 1 hour for Daylight Saving Time until 2 A.M. October 25th.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	☉ Rises h. m.	Key	☉ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
274	1	Th.	5 41	C	5 26	B	11 45	25	5¼	5½	2 P M 46	E	11 P M 45	B	3S.10	SAG	9
275	2	Fr.	5 42	C	5 25	B	11 43	26	6¼	6½	3 24	E	— —	–	3 33	CAP	10
276	3	Sa.	5 43	C	5 23	B	11 40	26	7½	7¾	3 54	D	1 A M 05	B	3 56	CAP	11
277	4	D	5 44	C	5 21	B	11 37	26	8¼	8¾	4 19	D	2 25	C	4 19	AQU	12
278	5	M.	5 45	C	5 19	B	11 34	26	9¼	9½	4 42	C	3 43	D	4 43	AQU	13
279	6	Tu.	5 47	C	5 18	B	11 31	27	10	10½	5 04	C	4 59	D	5 06	PSC	14
280	7	W.	5 48	C	5 16	B	11 28	27	10¾	11¼	5 26	B	6 13	E	5 29	PSC	15
281	8	Th.	5 49	C	5 14	B	11 25	27	11½	—	5 50	B	7 28	E	5 51	PSC	16
282	9	Fr.	5 50	C	5 13	B	11 23	28	12	12¼	6 19	A	8 42	E	6 14	ARI	17
283	10	Sa.	5 51	C	5 11	B	11 20	28	1	1	6 53	A	9 54	E	6 37	TAU	18
284	11	D	5 52	C	5 09	B	11 17	28	1¾	1¾	7 34	A	11 A M 01	E	7 00	TAU	19
285	12	M.	5 53	C	5 08	B	11 15	28	2½	2½	8 23	A	12 P M 02	E	7 22	AUR	20
286	13	Tu.	5 54	D	5 06	B	11 12	29	3¼	3½	9 20	A	12 54	E	7 45	AUR	21
287	14	W.	5 56	D	5 04	B	11 08	29	4¼	4½	10 21	A	1 36	E	8 07	GEM	22
288	15	Th.	5 57	D	5 03	B	11 06	29	5¼	5½	11 P M 26	B	2 10	E	8 29	CAN	23
289	16	Fr.	5 58	D	5 01	B	11 03	29	6¼	6½	— —	–	2 37	E	8 51	CAN	24
290	17	Sa.	5 59	D	5 00	B	11 01	30	7¼	7½	12 A M 30	B	3 00	E	9 13	LEO	25
291	18	D	6 00	D	4 58	B	10 58	30	8	8¼	1 34	C	3 21	D	9 35	LEO	26
292	19	M.	6 01	D	4 56	B	10 55	30	8¾	9	2 39	C	3 39	D	9 57	LEO	27
293	20	Tu.	6 03	D	4 55	B	10 52	30	9¼	9¾	3 43	D	3 58	C	10 19	VIR	28
294	21	W.	6 04	D	4 53	B	10 49	30	10	10¼	4 49	D	4 18	B	10 40	VIR	29
295	22	Th.	6 05	D	4 52	B	10 47	30	10½	11	5 58	E	4 40	B	11 01	VIR	0
296	23	Fr.	6 06	D	4 50	B	10 44	31	11¼	11¾	7 10	E	5 06	B	11 22	VIR	1
297	24	Sa.	6 07	D	4 49	B	10 42	31	11¾	—	8 24	E	5 38	A	11 43	LIB	2
298	25	D	6 09	D	4 48	B	10 39	31	12½	12½	9 39	E	6 20	A	12 04	SCO	3
299	26	M.	6 10	D	4 46	B	10 36	31	1¼	1¼	10 51	E	7 14	A	12 25	OPH	4
300	27	Tu.	6 11	D	4 45	B	10 34	31	2	2	11 A M 54	E	8 20	A	12 46	SAG	5
301	28	W.	6 12	D	4 43	B	10 31	31	3	3	12 P M 44	E	9 34	B	13 06	SAG	6
302	29	Th.	6 14	D	4 42	B	10 28	31	4	4	1 25	E	10 P M 53	B	13 26	CAP	7
303	30	Fr.	6 15	D	4 41	B	10 26	31	5	5¼	1 57	E	— —	–	13 46	CAP	8
304	31	Sa.	6 16	D	4 39	B	10 23	31	6	6½	2 P M 23	D	12 A M 11	C	14S.05	AQU	9



Lovers will hold the chestnut bur in hand
Will speak at last of death, will understand,
Foot-deep amid the ruinage of the year,
What smell it is that stings the gathering air.
— Adrienne Cecile Rich

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather ↓
1	Th.	**St. Remigius** • First World Series began, 1903 • Tides {8.2 9.7	*Squall —*
2	Fr.	African camel arrived in Boston, 1721 • Tides {8.4 9.9 •	*leaves*
3	Sa.	**Yom Kippur** • ☾ at peri. • 96°F., San Francisco, 1917 •	*fall.*
4	D	**17th S. af. P.** • ☿ Gr. Elong. (26° East) • St. Francis d'Assisi	*Days*
5	M.	October always has 19 fine days. • Tides {10.1 10.6 •	*are*
6	Tu.	**St. Faith** • ☾ at ♌ • ☾ on Eq. • Eclipse ☾ • Full Harvest ○	
7	W.	*History is the record of the follies of the majority.* • Tides {11.0 10.6	*solar,*
8	Th.	**Succoth** • ♂ ♃ ☾ • Jesse Jackson born, 1941	*nights turn*
9	Fr.	**St. Denys** • 11″ rain in 24 hrs., New York City, 1903 • {10.2 10.9 •	*polar.*
10	Sa.	*The hardest task of a girl's life is to prove to a man that his intentions are honorable.*	*Puddles*
11	D	**18th S. af. P.** • Tides {9.2 10.1	*deeper*
12	M.	**Columbus Day** • Spring lambs, New Zealand •	*for*
13	Tu.	☾ runs high • Boston Red Sox won first World Series, 1903 • {8.2 9.1	*foliage-*
14	W.	Pilot Chuck Yeager broke sound barrier, 1947 • Tides {7.8 8.7 •	*peepers.*
15	Th.	**St. Theresa** • ☾ at apo. • John L. Sullivan born, 1858	*Couldn't*
16	Fr.	☿ stat. • If dry today, a dry Spring. • Tides {7.7 8.6	*be*
17	Sa.	**St. Ethelred** • George Liberace, violinist, died, 1983 • {8.0 8.7 •	*better!*
18	D	**19th S. af. P.** • **St. Luke** • ♃ at ♂ •	*Colder*
19	M.	☌ ☿ ♀ • Barometer 28.86″ at Toronto during storm, 1844 • Tides {8.8 9.2	*and*
20	Tu.	☾ at ♉ • ☾ on Eq. • ☌ ☊ ☾ • Art Buchwald born, 1925	*wetter.*
21	W.	*These days the greater part of whitewashing is done with ink.* • Tides {9.7 9.5 •	*Cover*
22	Th.	New ● • "Pretty Boy Floyd" killed by FBI, 1934 • Tides {10.1 9.6 •	*your*
23	Fr.	☌ ♀ ☾ • Swallows leave Capistrano, Calif. • Tides {10.4 9.5 •	*keister;*
24	Sa.	*No matter how hard times get, the wages of sin are always liberal.* •	*another*
25	D	**20th S. af. P.** • **St. Crispin** • Tides {9.4 10.6	*Nor'*
26	M.	☌ ♄ ☾ • ☌ ☊ ☾ • Mahalia Jackson born, 1911 •	*easter!*
27	Tu.	☾ runs low • ☌ ♆ ☾ • Snowstorm, Miss., 1843 • {8.9 10.4 •	*Treat*
28	W.	**Sts. Simon and Jude** • ☿ at inf. ☌ • {8.7 10.1 •	*first,*
29	Th.	☾ at peri. • *Where there's a will, there's a lawsuit.* •	*then*
30	Fr.	U.S.S. *Reuben James* torpedoed, North Atlantic, 1941 • Tides {8.6 9.7	*tricky:*
31	Sa.	**All Hallows Eve** • Dale Evans born, 1912 • Tides {8.9 9.7 •	*icky!*

Farmer's Calendar

Seeing is learning, and learning is putting the question to nature. For the past four years, in the first couple of weeks of October, I have kept notes of half a dozen sugar maples in my neighborhood, returning to the same trees year after year. I wanted to see whether the leaves on each of these trees turned the same particular color in different years. I had set myself to examine, in specific terms, the small, individual effects that go to make up the immense spectacle of the autumn leaves in their colors.

Some of the maples I have kept track of are saplings, most are mature trees, and one is a giant of probably 200 years. Some grow in the woods, some in the open. The four autumns in which I have watched the trees have been various, too; some were dry, some wet; some early, some late; some warm, some cold. My methods have not been rigorous. I have made sure I was comparing the same trees from one year to another, but to judge the colors of the trees' leaves I've relied on notes and memory and not, for example, on photographs.

The colors I have seen on the maples have ranged from a deep russet-orange to pale lemon-yellow. In general I have found each tree turning the same color year after year. In some cases a tree has turned a darker shade of its characteristic color one year than it has the next; but I have never seen a tree that turned orange one year turn yellow another. It's my impression that the trees are apt to turn darker shades in dry years when leaves have turned a little early — but I haven't kept notes of weather and so can't be sure. From such casual, simple-minded experiments no large results will come. But small results — such as the discovery that each maple tree has as a rule its own fall color — were all I aimed to get.

NOVEMBER, The Eleventh Month

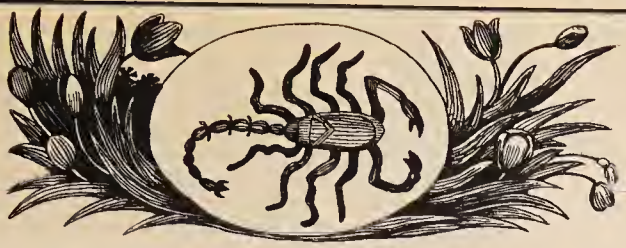
The Milky Way runs from east to west now, and the Big Dipper is scudding down the northern horizon. Almost due north of blazing Jupiter, the Great Galaxy of Andromeda is visible overhead as a dim elongated glow. On the 12th, for the only time in its 248½-year orbit, dim Pluto crosses into the southern hemisphere of the heavens. Low in the east before dawn, Mercury is clearly visible at the time of greatest elongation (19°) on the 13th. Though low in the west after sunset, the pairing of brilliant Venus and far less bright Saturn is very pretty for several evenings around the 20th. With a telescope Uranus can also be found nearby, with Venus passing within a degree of that blue-green outer world on the 24th. The Leonid meteor shower is slightly hampered by the waning Moon before dawn on the 17th. Between the 18th and the 24th there is a grand total of eight conjunctions plus one occultation (of Spica) to keep the observer busy.

ASTRONOMICAL CALCULATIONS

○	Full Moon	5th day	11th hour	47th min.
☾	Last Quarter	13th day	9th hour	39th min.
●	New Moon	21st day	1st hour	34th min.
☽	First Quarter	27th day	19th hour	38th min.

FOR POINTS OUTSIDE BOSTON SEE KEY LETTER CORRECTIONS — PAGES 49-53

Day of Year	Day of Month	Day of Week	⊙ Rises h. m.	Key	⊙ Sets h. m.	Key	Length of Days h. m.	Sun Fast m.	Full Sea Boston A.M.	Full Sea Boston P.M.	☽ Rises h. m.	Key	☽ Sets h. m.	Key	Declination of sun ° ′	☽ Place	☽ Age
305	1	D	6 17	D	4 38	B	10 21	31	7	7½	2 P M 45	D	1 A M 27	C	14S.24	AQU	10
306	2	M.	6 19	D	4 37	B	10 18	31	8	8½	3 07	C	2 41	D	14 44	PSC	11
307	3	Tu.	6 20	D	4 35	B	10 15	31	9	9¼	3 28	C	3 54	D	15 02	PSC	12
308	4	W.	6 21	D	4 34	B	10 13	31	9¾	10¼	3 51	B	5 06	E	15 21	PSC	13
309	5	Th.	6 22	D	4 33	B	10 11	31	10½	11	4 17	B	6 20	E	15 39	ARI	14
310	6	Fr.	6 24	D	4 32	A	10 08	31	11¼	11¾	4 49	A	7 33	E	15 57	ARI	15
311	7	Sa.	6 25	D	4 31	A	10 06	31	11¾	—	5 27	A	8 43	E	16 15	TAU	16
312	8	D	6 26	D	4 30	A	10 04	31	12½	12½	6 13	A	9 48	E	16 33	TAU	17
313	9	M.	6 27	D	4 28	A	10 01	31	1¼	1¼	7 08	A	10 44	E	16 50	AUR	18
314	10	Tu.	6 29	D	4 27	B	9 58	31	2	2	8 08	A	11 A M 31	E	17 08	GEM	19
315	11	W.	6 30	D	4 26	B	9 56	31	2¾	3	9 12	B	12 P M 08	E	17 24	GEM	20
316	12	Th.	6 31	D	4 25	B	9 54	31	3¾	3¾	10 16	B	12 38	E	17 41	CAN	21
317	13	Fr.	6 32	D	4 24	B	9 52	31	4½	4¾	11 P M 20	B	1 03	E	17 57	LEO	22
318	14	Sa.	6 34	D	4 23	A	9 49	31	5½	5¾	— —	–	1 24	D	18 12	LEO	23
319	15	D	6 35	D	4 23	A	9 48	30	6½	6¾	12 A M 23	C	1 43	D	18 28	LEO	24
320	16	M.	6 36	D	4 22	A	9 46	30	7½	7½	1 27	D	2 01	C	18 43	VIR	25
321	17	Tu.	6 37	D	4 21	A	9 44	30	8	8¼	2 32	D	2 20	C	18 58	VIR	26
322	18	W.	6 38	D	4 20	A	9 42	30	8½	9	3 38	E	2 41	B	19 12	VIR	27
323	19	Th.	6 40	D	4 19	A	9 39	30	9¼	9¾	4 49	E	3 05	B	19 26	VIR	28
324	20	Fr.	6 41	D	4 19	A	9 38	29	10	10½	6 04	E	3 36	B	19 40	LIB	29
325	21	Sa.	6 42	D	4 18	A	9 36	29	10¾	11¼	7 20	E	4 14	A	19 54	LIB	0
326	22	D	6 43	D	4 17	A	9 34	29	11¼	—	8 36	E	5 05	A	20 07	SCO	1
327	23	M.	6 45	D	4 17	A	9 32	29	12	12¼	9 44	E	6 09	A	20 20	SAG	2
328	24	Tu.	6 46	D	4 16	A	9 30	28	1	1	10 40	E	7 22	A	20 32	SAG	3
329	25	W.	6 47	D	4 15	A	9 28	28	1¼	2	11 25	E	8 42	B	20 44	SAG	4
330	26	Th.	6 48	E	4 15	A	9 27	28	2¾	2¾	11 A M 59	E	10 01	B	20 55	CAP	5
331	27	Fr.	6 49	E	4 14	A	9 25	28	3¾	4	12 P M 27	D	11 P M 17	C	21 06	CAP	6
332	28	Sa.	6 50	E	4 14	A	9 24	27	4¾	5	12 50	D	— —	–	21 17	AQU	7
333	29	D	6 51	E	4 14	A	9 23	27	5¾	6¼	1 12	C	12 A M 30	D	21 28	PSC	8
334	30	M.	6 52	E	4 13	A	9 21	26	6¾	7¼	1 P M 32	C	1 A M 42	D	21S.38	PSC	9



The autumn frosts will lie upon the grass
Like bloom on grapes of purple-brown and gold.
The misted early mornings will be cold;
The little puddles will be roofed with glass.
— *Elinor Wylie*

D.M.	D.W.	Dates, Feasts, Fasts, Aspects, Tide Heights	Weather ↓
1	D	**21st S. af. P.** • **All Saints** • {9.3 9.8} •	*Icy*
2	M.	**All Souls** • ☾at ♌ • ☾ on Eq. • ♂☌☉ •	*days,*
3	Tu.	Election Day • Commercial yeast patented, 1863 • Tides {10.4 10.0} •	*then*
4	W.	♂△☾ • 84 killed in Winooski River, Vt., flood, 1927 • {10.7 9.9} •	*Indian*
5	Th.	**St. Elisabeth** • Full Beaver ○ • ☿ stat. •	*summer*
6	Fr.	**St. Leonard** • Bolshevik Rev. began, 1917 • Tides {10.9 9.5} •	*haze.*
7	Sa.	*Don't marry for money; you can borrow it cheaper.* • Al Hirt born, 1922 •	*Is*
8	D	**22nd S. af. P.** • Remembrance Sunday, U.K. • {9.2 10.3}	*that*
9	M.	☾ runs high • Auspicious day for travel. • Tides {8.8 9.9} •	*a*
10	Tu.	*Common sense in an uncommon degree is what the world calls wisdom.* • {8.4 9.5}	*flake?*
11	W.	**St. Martin • Veterans Day** • Indian summer begins.	*Better*
12	Th.	☾ at apo. • First flying trapeze act performed in circus, 1859 • {7.9 8.7}	*make*
13	Fr.	☿ Gr. Elong. (19° West) • Hudson River frozen at Albany, 1820 • Tides {7.8 8.5}	*a*
14	Sa.	Birthday of the Prince of Wales • Sadie Hawkins Day • Tides {7.9 8.4}	*levee:*
15	D	**23rd S. af. P.** • *The greatest prayer is patience.* •	*rain's*
16	M.	☾at ♉ • ☾ on Eq. • 6″ snow, Tucson, Ariz., 1958 • {8.6 8.6}	*heavy.*
17	Tu.	**St. Hugh of Lincoln** • Rock Hudson born, 1925 •	*Bright*
18	W.	Occult. Spica by ☾ • ♂☌☾ • Tides {9.5 8.9} •	*respite:*
19	Th.	♂☿☾ • Prune grape-vines now. • Tides {10.0 9.1} •	*sopping*
20	Fr.	**St. Edmund** • ♂☿♄ • Indian summer ends. •	*without*
21	Sa.	New ● • Mayflower Compact, 1620 • Tides {10.8 9.4}	*stopping.*
22	D	**24th S. af. P.** • ♂♄☾ • ♂☿☾ • ♂☌☾	
23	M.	**St. Clement** • ☾ runs low • ♂♆☾ • Tides {9.3 11.1}	*You'll*
24	Tu.	♂☿☌ • ☾ at peri. • Scott Joplin born, 1868 • Tides {9.3 11.0}	*need*
25	W.	**St. Catherine** • *Rotten wood cannot be carved.* •	{9.1 10.7} *a*
26	Th.	**Thanksgiving Day** • Blizzard, N.D., 1896 • {9.0 10.3} •	*sleigh*
27	Fr.	Wash. Redskins and N.Y. Giants scored total 113 points, 1966 • Tides {9.0 9.9} •	*for*
28	Sa.	*If there is ice in November that bears a duck, There'll be nothing thereafter but sleet and muck.*	*Turkey*
29	D	**1st S. in Advent** • ☾at ♌ • ☾ on Eq. •	*Day!*
30	M.	**St. Andrew** • Shirley Chisholm born, 1924 • {9.7 9.2} •	*Hooray!*

Wise men talk because they have something to say; fools, because they have to say something.

Farmer's Calendar

"O for a beaker full of the warm South!" the poet cried. It wasn't South Hiram, Maine, he yearned after, or South Kent, Connecticut. The poet was talking about an easy, casual place, a place, in particular, where the snow never ever comes in quantities which are such that you have to outguess it every fall so as not to put things you need in spots that the snow will bury, or into which it will be blown or shoved. In a place where snow in significant amounts can cover the ground for half the year, by contrast, trying to figure out how to accommodate it takes considerable pondering. It's a bit like estate planning: you have to take the correct steps *now,* before your plan actually goes into effect; and therefore you can't wait to see what conditions your plan will in fact have to meet.

For example: outdoor woodpiles. Where do you put them? If you put them near the house, they'll be easy to get at, but if you put them too near, the snow sliding off the roof will engulf them and you'll have to dig the frozen wood out piece by piece. If you put the woodpiles away from the roof-slide zone, you'll have to shovel a path to them when the snow gets deep. If the piles are on the weather side of the house, the snow will bank up on them; if they're in the lee, they may drift up. And in any case you must take into account snow clearing. If the wood is too near your drive or walks, it will be in the way. If it's in the way of a plow, it will be buried or scattered. The solution is a woodshed, but it's November. Too late, alas, too late. Maybe next year. For now, stop worrying and do as they do in the warm South: put your wood where your best guess says it will be handy and then go indoors and pop a beaker of the true, the pure, the blissful Hippocrene.

TIDE CORRECTIONS

Many factors affect the time and height of the tides: the coastal configuration, the time of the moon's southing (crossing the meridian) at the place, and the phase of the moon. This table of tidal corrections is a sufficiently accurate guide to the times and heights of the high water at the places shown. (Low tides occur approximately 6 hours before and after high tides.) No figures are shown for most places on the Gulf of Mexico, since the method used in compiling this table does not apply there. For such places and elsewhere where precise accuracy is required, consult the Tide Tables published annually by the Distribution Div. C44, National Ocean Survey, Dept. of Commerce, Riverdale, MD 20840.

The figures for Full Sea on the left-hand Calendar pages 18-42 are the times of high tide at Commonwealth Pier in Boston harbor. The heights of these tides are given on the right-hand Calendar pages 19-43. The heights are reckoned from Mean Low Water, and each day listed has a set of figures — upper for the morning, lower for the evening. To obtain the time and height of high water at any of the following places, apply the time difference to the daily times of high water at Boston (pages 18-42), and the height difference to the heights at Boston (pages 19-43).

	Time Difference Hr. Min.	*Height Difference Feet*
MAINE		
Bar Harbor	−0 34	+0.9
Belfast	−0 20	+0.4
Boothbay Harbor	−0 18	−0.8
Chebeague Island	−0 16	−0.6
Eastport	−0 28	+8.4
Kennebunkport	+0 04	−1.0
Machias	−0 28	+2.8
Monhegan Island	−0 25	−0.8
Old Orchard	0 00	−0.8
Portland	−0 12	−0.6
Rockland	−0 28	+0.1
Stonington	−0 30	+0.1
York	−0 09	−1.0
NEW HAMPSHIRE		
Hampton	+0 02	−1.3
Portsmouth	+0 11	−1.5
Rye Beach	−0 09	−0.9
MASSACHUSETTS		
Annisquam	−0 02	−1.1
Beverly Farms	0 00	−0.5
Boston	0 00	0.0
Cape Cod Canal		
East Entrance	−0 01	−0.8
West Entrance	−2 16	−5.9
Chatham		
Outer Coast	+0 30	−2.8
Inside	+1 54	*0.4
Cohasset	+0 02	−0.07
Cotuit Highlands	+1 15	*0.3
Dennisport	+1 01	*0.4
Duxbury (Gurnet Pt.)	+0 02	−0.3
Fall River	−3 03	−5.0
Gloucester	−0 03	−0.8
Hingham	+0 07	0.0
Hull	+0 03	−0.2
Hyannis Port	+1 01	*0.3
Magnolia (Manchester)	−0 02	−0.7
Marblehead	−0 02	−0.4
Marion	−3 22	−5.4
Monument Beach	−3 08	−5.4
Nahant	−0 01	−0.5
Nantasket	+0 04	−0.1
Nantucket	−0 56	*0.3
Nauset Beach	+0 30	*0.6
New Bedford	−3 24	−5.7
Newburyport	+0 19	−1.8
Oak Bluffs	+0 30	*0.2
Onset (R.R. Bridge)	−2 16	−5.9
Plymouth	+0 05	0.0
Provincetown	+0 14	−0.4
Revere Beach	−0 01	−0.3
Rockport	−0 08	−1.0
Salem	0 00	−0.5
Scituate	−0 05	−0.7
Wareham	−3 09	−5.3
Wellfleet	+0 12	+0.5
West Falmouth	−3 10	−5.4
Westport Harbor	−3 22	−6.4
Woods Hole		
Little Harbor	−2 50	*0.2
Oceanographic Inst.	−3 07	*0.2
RHODE ISLAND		
Bristol	−3 24	−5.3
Sakonnet	−3 44	−5.6
Narragansett Pier	−3 42	−6.2
Newport	−3 34	−5.9
Pt. Judith	−3 41	−6.3
Providence	−3 20	−4.8
Watch Hill	−2 50	−6.8
CONNECTICUT		
Bridgeport	+0 01	−2.6
Madison	−0 22	−2.3
New Haven	−0 11	−3.2
New London	−1 54	−6.7
Norwalk	+0 01	−2.2
Old Lyme (Highway Bridge)	−0 30	−6.2
Stamford	+0 01	−2.2
Stonington	−2 27	−6.6
NEW YORK		
Coney Island	−3 33	−4.9
Fire Island Lt.	−2 43	*0.1
Long Beach	−3 11	−5.7
Montauk Harbor	−2 19	−7.4
New York City (Battery)	−2 43	−5.0
Oyster Bay	+0 04	−1.8
Port Chester	−0 09	−2.2
Port Washington	−0 01	−2.1
Sag Harbor	−0 55	−6.8
Southampton (Shinnecock Inlet)	−4 20	*0.2
Willets Point	0 00	−2.3

	Time Difference Hr. Min.	Height Difference Feet
NEW JERSEY		
Asbury Park	−4 04	−5.3
Atlantic City	−3 56	−5.5
Bay Head (Sea Girt)	−4 04	−5.3
Beach Haven	−1 43	*0.24
Cape May	−3 28	−5.3
Ocean City	−3 06	−5.9
Sandy Hook	−3 30	−5.0
Seaside Park	−4 03	−5.4
PENNSYLVANIA		
Philadelphia	+2 40	−3.5
DELAWARE		
Cape Henlopen	−2 48	−5.3
Rehoboth Beach	−3 37	−5.7
Wilmington	+1 56	−3.8
MARYLAND		
Annapolis	+6 23	−8.5
Baltimore	+7 59	−8.3
Cambridge	+5 05	−7.8
Havre de Grace	+11 21	−7.7
Point No Point	+2 28	−8.1
Prince Frederick (Plum Point)	+4 25	−8.5
VIRGINIA		
Cape Charles	−2 20	−7.0
Hampton Roads	−2 02	−6.9
Norfolk	−2 06	−6.6
Virginia Beach	−4 00	−6.0
Yorktown	−2 13	−7.0
NORTH CAROLINA		
Cape Fear	−3 55	−5.0
Cape Lookout	−4 28	−5.7
Currituck	−4 10	−5.8
Hatteras		
Ocean	−4 26	−6.0
Inlet	−4 03	−7.4
Kitty Hawk	−4 14	−6.2
SOUTH CAROLINA		
Charleston	−3 22	−4.3
Georgetown	−1 48	*0.36
Hilton Head	−3 22	−2.9
Myrtle Beach	−3 49	−4.4
St. Helena Harbor Entrance	−3 15	−3.4
GEORGIA		
Jekyll Island	−3 46	−2.9
Saint Simon's Island	−2 50	−2.9
Savannah Beach River Entrance	−3 14	−5.5
Tybee Light	−3 22	−2.7
FLORIDA		
Apalachicola	−7 53	*0.18
Cape Kennedy	−3 59	−6.0
Clearwater	−9 01	−6.4
Daytona Beach	−3 28	−5.3
Everglades City	+16 12	−7.3
Fort Lauderdale	−2 50	−7.2
Fort Myers	−7 45	*0.12
Fort Pierce Inlet	−3 32	−6.9
Jacksonville Railroad Bridge	−6 55	*0.10
Key West	+11 24	−9.1
Miami Harbor Entrance	−3 18	−7.0
St. Augustine	−2 55	−4.9
St. Petersburg	−9 53	−7.6
Sarasota	−11 31	*0.22
Suwannee River Entrance	−9 01	−6.4
CALIFORNIA		
Carmel	−0 22	*0.5
Catalina Island	−1 23	*0.5
Crescent City	−2 05	−4.1
Eureka	+1 35	−3.4
Laguna Beach	−1 38	*0.5
Long Beach	−1 30	*0.5
Los Angeles	−1 33	−4.7
Mendocino	+0 03	−4.4
Monterey	−0 31	−4.9
San Diego	−1 41	−4.3
San Francisco	+0 45	−4.4
Santa Barbara	−1 10	*0.5
Santa Cruz	−0 34	−4.9
Santa Rosa Is.	−0 03	−4.5
OREGON		
Astoria	+2 21	−1.5
Empire-North Bend	+1 48	−3.4
Gold Beach (Rogue R. Entrance)	+1 45	−3.4
Tillamook	+2 28	*0.6
WASHINGTON		
Aberdeen	+2 09	−0.1
Bellingham	−6 18	−1.4
Cape Flaherty	+1 26	*0.8
Columbia River Entrance (Ilwaco)	+1 35	−2.2
Everett	−6 30	+1.1
Long Beach	+1 07	*0.8
Pacific Beach	+1 10	*0.9
Port Townsend	−7 04	−1.6
Seattle	−6 21	+1.3
South Bend	+2 08	−0.2
Tacoma	−6 14	+1.8
ALASKA		
Anchorage	−4 58	+17.5
Juneau	+3 08	+6.1
Kodiak	+1 53	−1.7
CANADA		
Alberton, P.E.I.	−5 45**	−7.5
Charlottetown, P.E.I.	−0 45**	−3.5
Halifax, N.S.	−3 23	−4.5
North Sydney, N.S.	−3 15	−6.5
St. John, N.B.	+0 30	−8.0
St. John's, Nfld.	−4 00	−6.5
Vancouver, B.C.	−5 25	+4.2
Yarmouth, N.S.	−0 40	+3.0

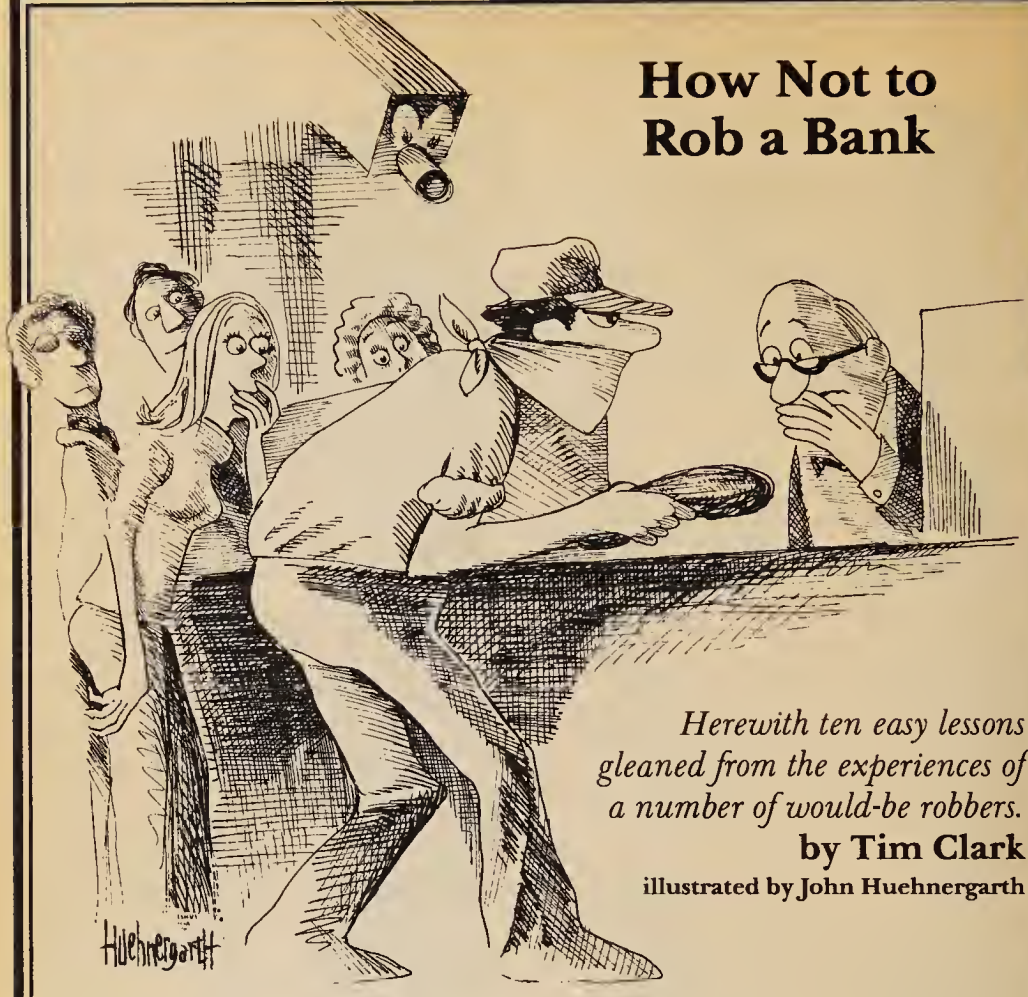
* Where the value in the "height difference" column is so marked, height at Boston should be multiplied by this ratio.

** Varies widely; accurate only within 1½ hours. Consult local tide tables for precise times and heights.

Example: The conversion of the times and heights of the tides at Boston to those of Norfolk, Virginia, is given below:

Sample tide calculation	**High tide Boston (p. 32)**	**7:15 A.M.**	**Tide height Boston (p. 33)**	**8.7 ft.**
June 21st, 1987:	**Correction for Norfolk**	**−2:06 hrs.**	**Correction for Norfolk**	**−6.6 ft.**
	High tide Norfolk	**5:09 A.M.**	**Tide height Norfolk**	**2.1 ft.**

How Not to Rob a Bank



Herewith ten easy lessons gleaned from the experiences of a number of would-be robbers.

by Tim Clark

illustrated by John Huehnergarth

☐ WILLIE SUTTON MUST BE TURNING in his grave.

In recent years there has been a shocking decline in the quality of American bank robberies. According to the FBI, most modern-day heists are "unsophisticated and unprofessional crimes," committed by young male repeat offenders who apparently don't know the first thing about their business. In spite of the widespread use of surveillance cameras, 76 percent of bank robbers use no disguise, 86 percent never study the bank before robbing it, and 95 percent make no long-range plans for concealing the loot. So it's hardly surprising that in 1978 and 1979, for example, federal and state officers made arrests in 69 percent of the bank jobs reported, while making arrests in only 17 percent of all robberies.

Here, in the interest of better workmanship, are ten easy rules to follow when robbing a bank along with instructive examples of what can go wrong if you don't:

1. PICK THE RIGHT BANK. You don't want to make the same mistake as the fellow in Anaheim, California, who tried to hold up a bank that was no longer in business and had no money.

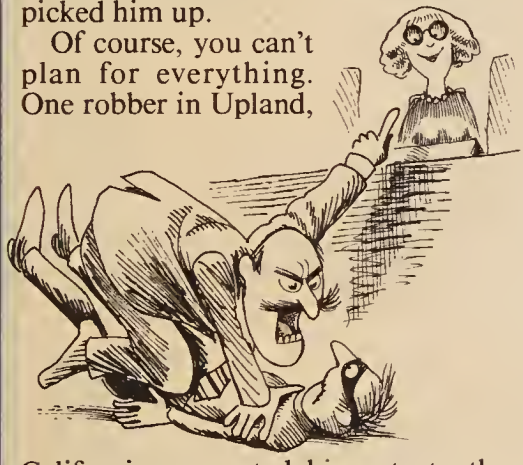
Study your history. Don't try to stick up the First National Bank of Northfield, Minnesota. Jesse James tried it 111 years ago, and the townsfolk took just seven minutes to kill two and capture three of his gang. Nobody tried again until 1984, and the customers chased the guy down. They're tight with a dollar, those Minnesotans.

On the other hand, you don't want to be *too* familiar with the bank. A fellow in Tulsa got away with $10,000 from the same bank at which he made daily deliveries for the company that employed him. He didn't keep the money long. And a California robber ran into his mother while making his getaway. She turned him in.

2. SPEAK TO THE RIGHT TELLER. Granted, this is harder to plan. You never know when a teller will just yell, "Get lost!" One did in Brockton, Massachusetts, and it so unnerved the robber that he left the bank, got into a car, drove across the street, and went into an apartment, all in full view of the feisty teller, who called the cops.

Another teller, this one in Springfield, Massachusetts, followed the robber out of the bank and down the street until she saw him go into a restaurant. She hailed a passing police car, and they picked him up.

Of course, you can't plan for everything. One robber in Upland,



California, presented his note to the teller, and her father, who was next in line, got all bent out of shape about it. He wrestled the guy to the ground and sat on him until the authorities arrived.

3. DON'T SIGN YOUR DEMAND NOTE. Demand notes have been written on the back of a subpoena issued in the name of a bank robber in Pittsburgh, on an envelope bearing the name and address of another in Detroit, and in East Hartford, Connecticut, on the back of a withdrawal slip giving the robber's signature and account number.

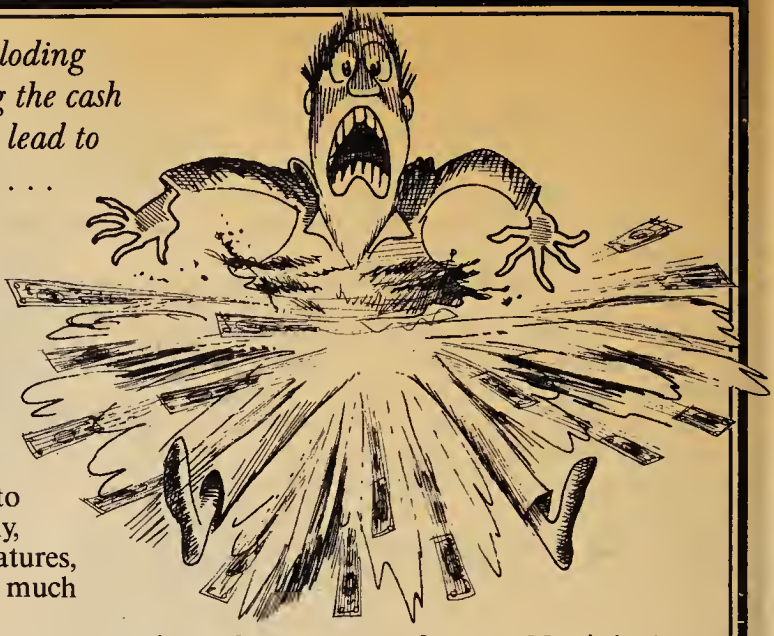
4. BEWARE OF DANGEROUS VEGETABLES. A man in White Plains, New York, tried to hold up a bank with a zucchini. It worked, too, but the police caught him at his house, and he showed it to them — the smoking vegetable, so to speak. Another man in Newport,

Rhode Island, threatened an arresting officer with a reptile, a boa constrictor to be precise. Turned out the policeman knew that boa constrictors don't bite.

5. AVOID BEING FUSSY. You've got to think on your feet. A robber in Panorama City, California, gave a teller a note saying: "I have a gun. Give me all your twenties in this envelope." The teller said, "All I've got is two twenties." The robber took them and left.

6. DON'T ADVERTISE. A teenage girl in Los Angeles tried to distract attention from her face by wearing a see-through

In these days of exploding dye packets, stuffing the cash into your pants can lead to embarrassing stains . . .



blouse with no bra while holding up banks. The surveillance camera was not impressed. Another man thought that if he smeared a mercury ointment on his face, it would make him invisible to the cameras. Actually, it accentuated his features, giving authorities a much clearer picture.

One robber went in the other direction, dressing as a woman with very heavy make-up. It was a good idea, but in his haste to leave, he ran face-first into a glass door. He was the first criminal ever positively identified by lip-print.

The same rule applies to the getaway. Bank robbers in Minnesota and California tried to create a diversion by throwing stolen money out the windows of their cars. They succeeded only in drawing attention to themselves. Then there was the one-legged bank robber who hopped down the street, his crutches in one hand, the loot in the other. The FBI followed a chain of incredulous witnesses right to the robber's front door.

7. TAKE RIGHT TURNS ONLY. Avoid the sad fate of the thieves in Florida who took a wrong turn into Homestead Air Force Base, drove up to a military police guardhouse and, thinking it was a tollbooth, offered the security men money. Or the chagrin of the bank robber in Cheshire, Massachusetts, who hit the bank at 4:30 P.M., then tried to escape through downtown North Adams, where he was trapped in rush-hour traffic until the police arrived.

8. PROVIDE YOUR OWN TRANSPORTATION. Let's face it: a taxi is not the preferred means of escape. Nor is it clever to borrow the teller's car, a vehicle which she carefully described to police, resulting in the most quickly solved bank robbery in the history of Pittsfield, Massachusetts.

9. DON'T BE TOO SENSITIVE. In these days of exploding dye packets, stuffing the cash into your pants can lead to embarrassing stains, not to mention severe burns in sensitive places. Or so bandits in San Diego and Boston painfully discovered.

10. CONSIDER ANOTHER LINE OF WORK. Bank robbery is not for everyone. One nervous Newport, Rhode Island, robber, while trying to stuff his ill-gotten gains into his shirt pocket, shot himself in the head and died instantly. Another desperado in Newton, Massachusetts, had second thoughts in mid-perpetration, hailed a cab, and told the driver to take him to the nearest police station, where he turned himself in. Then there was the case of the hopeful criminal in Swansea, Massachusetts, who, when the teller told him she had no money, fainted. He was still unconscious when the police arrived. His getaway car, parked nearby, had the keys locked inside it. □□

TIME CORRECTION TABLES

The times of sunrise, sunset, moonrise, moonset, and the rising and setting of the planets are given for Boston only on pages 18-42 and 10-11. Use the Key Letter shown there and this table to find the number of minutes that should be added to or subtracted from Boston time to give the correct time of your city. The answer will not be as precise as that for Boston, but will be within approximately 5 minutes. If your city is not listed, find the city closest to you in both latitude and longitude and use those figures. Canadian cities appear at the end of the list. For a more complete explanation see pages 4-5.

Time Zone Code: -1 — Atlantic Std.; 0 — Eastern Std.; 1 — Central Std.; 2 — Mountain Std.; 3 — Pacific Std.; 4 — Alaska Std.; 5 — Hawaii-Aleutian Std.

City	North Latitude ° ′	West Longitude ° ′	Time Zone Code	Key Letters A min.	B min.	C min.	D min.	E min.
Aberdeen, SD	45 28	98 29	1	+37	+43	+49	+55	+61
Akron, OH	41 5	81 31	0	+47	+44	+42	+39	+37
Albany, NY	42 39	73 45	0	+ 9	+10	+11	+11	+12
Albert Lea, MN	43 39	93 22	1	+24	+26	+29	+31	+34
Albuquerque, NM	35 5	106 39	2	+51	+37	+23	+10	− 4
Alexandria, LA	31 18	92 27	1	+68	+48	+27	+ 6	−14
Allentown-Bethlehem, PA	40 3	75 28	0	+26	+22	+18	+13	+ 9
Amarillo, TX	35 12	101 50	1	+91	+77	+64	+51	+37
Anchorage, AK	61 10	149 59	4	+ 2	+37	+73	+108	+143
Ardmore, OK	34 10	97 8	1	+76	+61	+45	+30	+15
Asheville, NC	35 36	82 33	0	+72	+59	+47	+34	+22
Atlanta, GA	33 45	84 24	0	+87	+71	+54	+38	+22
Atlantic City, NJ	39 22	74 26	0	+25	+19	+14	+ 8	+ 3
Augusta, GA	33 28	81 58	0	+78	+61	+45	+28	+11
Augusta, ME	44 19	69 46	0	−13	− 9	− 6	− 2	+ 2
Austin, TX	30 16	97 45	1	+94	+71	+48	+26	+ 3
Bakersfield, CA	35 23	119 1	3	+39	+26	+13	0	−13
Baltimore, MD	39 17	76 37	0	+34	+28	+23	+17	+11
Bangor, ME	44 48	68 46	0	−19	−14	−10	− 5	− 1
Barstow, CA	34 54	117 1	3	+33	+19	+ 5	− 9	−23
Baton Rouge, LA	30 27	91 11	1	+67	+44	+22	0	−23
Beaumont, TX	30 5	94 6	1	+80	+57	+34	+11	−12
Bellingham, WA	48 45	122 29	3	+ 1	+13	+25	+37	+49
Bemidji, MN	47 28	94 53	1	+15	+25	+34	+44	+54
Berlin, NH	44 28	71 11	0	− 8	− 4	0	+ 4	+ 8
Billings, MT	45 47	108 30	2	+16	+23	+29	+36	+42
Biloxi, MS	30 24	88 53	1	+58	+35	+13	− 9	−32
Binghamton, NY	42 6	75 55	0	+20	+20	+19	+19	+18
Birmingham, AL	33 31	86 49	1	+37	+21	+ 4	−12	−29
Bismarck, ND	46 48	100 47	1	+41	+50	+58	+66	+75
Boise, ID	43 37	116 12	2	+55	+58	+60	+63	+65
Brattleboro, VT	42 51	72 34	0	+ 4	+ 5	+ 6	+ 7	+ 8
Bridgeport, CT	41 11	73 11	0	+13	+11	+ 9	+ 6	+ 4
Brockton, MA	42 5	71 1	0	+ 1	0	0	− 1	− 1
Buffalo, NY	42 53	78 52	0	+29	+30	+31	+32	+33
Burlington, VT	44 29	73 13	0	0	+ 4	+ 8	+12	+16
Butte, MT	46 1	112 32	2	+31	+38	+45	+52	+59
Cairo, IL	37 0	89 11	1	+33	+23	+13	+ 3	− 7
Camden, NJ	39 57	75 7	0	+25	+21	+16	+12	+ 7
Canton, OH	40 48	81 23	0	+47	+44	+41	+38	+36
Cape May, NJ	38 56	74 56	0	+29	+22	+16	+ 9	+ 3
Carson City-Reno, NV	39 10	119 46	3	+27	+21	+15	+ 9	+ 3
Casper, WY	42 51	106 19	2	+19	+20	+21	+22	+23
Chadron, NE	42 50	103 0	2	+ 6	+ 7	+ 8	+ 8	+ 9
Charleston, SC	32 47	79 56	0	+73	+55	+37	+19	+ 1
Charleston, WV	38 21	81 38	0	+58	+50	+43	+35	+28
Charlotte, NC	35 14	80 51	0	+67	+53	+40	+27	+13
Charlottesville, VA	38 2	78 30	0	+46	+38	+30	+22	+14
Chattanooga, TN	35 3	85 19	0	+85	+72	+58	+44	+31
Cheboygan, MI	45 39	84 29	0	+41	+47	+53	+59	+65
Cheyenne, WY	41 8	104 49	2	+20	+17	+15	+13	+10
Chicago-Oak Park, IL	41 52	87 38	1	+ 8	+ 7	+ 6	+ 5	+ 4

City	North Latitude ° ′	West Longitude ° ′	Time Zone Code	Key Letters A min.	B min.	C min.	D min.	E min.
Cincinnati-Hamilton, OH	39 6	84 31	0	+66	+60	+54	+48	+42
Cleveland-Lakewood, OH	41 30	81 42	0	+46	+44	+43	+41	+39
Columbia, SC	34 0	81 2	0	+72	+57	+41	+25	+10
Columbus, OH	39 57	83 1	0	+57	+53	+48	+44	+39
Cordova, AK	60 33	145 45	4	−12	+22	+56	+90	+124
Corpus Christi, TX	27 48	97 24	1	+102	+75	+47	+20	− 7
Craig, CO	40 31	107 33	2	+33	+30	+26	+23	+19
Dallas-Fort Worth, TX	32 47	96 48	1	+80	+62	+44	+26	+ 8
Danville, IL	40 8	87 37	1	+15	+11	+ 6	+ 2	− 2
Danville, VA	36 36	79 23	0	+56	+45	+34	+23	+12
Davenport, IA	41 32	90 35	1	+21	+20	+18	+17	+15
Dayton, OH	39 45	84 10	0	+62	+58	+53	+48	+43
Decatur, AL	34 36	86 59	1	+34	+19	+ 5	−10	−24
Decatur, IL	39 51	88 57	1	+21	+16	+12	+ 7	+ 2
Denver-Boulder, CO	39 44	104 59	2	+26	+21	+16	+11	+ 6
Des Moines, IA	41 35	93 37	1	+33	+32	+30	+29	+27
Detroit-Dearborn, MI	42 20	83 3	0	+48	+48	+48	+48	+48
Dubuque, IA	42 30	90 41	1	+18	+18	+18	+19	+19
Duluth, MN	46 47	92 6	1	+ 7	+15	+23	+32	+40
Durham, NC	36 0	78 55	0	+56	+44	+32	+20	+ 8
Eastport, ME	44 54	67 0	0	−26	−22	−17	−12	− 7
Eau Claire, WI	44 49	91 30	1	+12	+17	+21	+26	+30
El Paso, TX	31 45	106 29	2	+63	+43	+23	+ 3	−17
Elko, NV	40 50	115 46	3	+ 5	+ 2	− 1	− 4	− 7
Ellsworth, ME	44 33	68 25	0	−19	−15	−11	− 7	− 3
Erie, PA	42 7	80 5	0	+37	+36	+36	+36	+35
Eugene, OR	44 3	123 6	3	+21	+25	+28	+31	+34
Fairbanks, AK	64 48	147 51	4	−21	+22	+64	+106	+148
Fall River-New Bedford, MA	41 42	71 9	0	+ 3	+ 2	0	− 1	− 2
Fargo, ND	46 53	96 47	1	+25	+34	+42	+51	+59
Flagstaff, AZ	35 12	111 39	2	+70	+57	+43	+30	+16
Flint, MI	43 1	83 41	0	+48	+49	+50	+51	+53
Fort Randall, AK	55 10	162 47	4	+77	+101	+125	+149	+173
Fort Scott, KS	37 50	94 42	1	+52	+44	+35	+27	+18
Fort Smith, AR	35 23	94 25	1	+60	+47	+34	+21	+ 8
Fort Wayne, IN	41 4	85 9	0	+61	+59	+56	+54	+52
Fort Yukon, AK	66 34	145 16	4	−38	+ 8	+53	+98	+144
Fresno, Ca	36 44	119 47	3	+37	+26	+16	+ 5	− 5
Gallup, NM	35 32	108 45	2	+57	+44	+32	+19	+ 6
Galveston, TX	29 18	94 48	1	+86	+61	+37	+12	−12
Gary, IN	41 36	87 20	1	+ 8	+ 6	+ 5	+ 4	+ 2
Glasgow, MT	48 12	106 38	2	− 1	+10	+21	+32	+43
Grand Forks, ND	47 55	97 3	1	+22	+33	+43	+53	+64
Grand Island, NE	40 55	98 21	1	+55	+52	+49	+47	+44
Grand Junction, CO	39 4	108 33	2	+43	+36	+30	+24	+18
Great Falls, MT	47 30	111 17	2	+21	+30	+40	+50	+59
Green Bay, WI	44 31	88 0	1	− 1	+ 3	+ 7	+11	+15
Greensboro, NC	36 4	79 47	0	+59	+47	+36	+24	+12
Hagerstown, MD	39 39	77 43	0	+37	+32	+27	+22	+17
Harrisburg, PA	40 16	76 53	0	+31	+27	+23	+20	+16
Hartford-New Britain, CT	41 46	72 41	0	+ 9	+ 8	+ 6	+ 5	+ 4
Helena, MT	46 36	112 2	2	+27	+35	+43	+51	+59
Hilo, HI	19 44	155 5	5	+124	+82	+39	− 3	−45
Honolulu, HI	21 18	157 52	5	+129	+90	+50	+11	−29
Houston, TX	29 45	95 22	1	+86	+63	+39	+15	− 8
Indianapolis, IN	39 46	86 10	0	+70	+65	+61	+56	+51
Ironwood, MI	46 27	90 9	1	0	+ 8	+16	+23	+31
Jackson, MI	42 15	84 24	0	+54	+53	+53	+53	+53
Jackson, MS	32 18	90 11	1	+56	+37	+18	− 1	−20
Jacksonville, FL	30 20	81 40	0	+89	+67	+44	+22	− 1
Jefferson City, MO	38 34	92 10	1	+39	+32	+25	+18	+11
Joplin, MO	37 6	94 30	1	+54	+44	+34	+25	+15
Juneau, AK	58 18	134 25	4	−49	−19	+11	+41	+71
Kalamazoo, MI	42 17	85 35	0	+58	+58	+58	+58	+58
Kanab, UT	37 3	112 32	2	+66	+56	+47	+37	+27

City	North Latitude ° ′		West Longitude ° ′		Time Zone Code	Key Letters A min.	B min.	C min.	D min.	E min.
Kansas City, MO	39	1	94	20	1	+46	+40	+34	+27	+21
Keene, NH	42	56	72	17	0	+ 2	+ 4	+ 5	+ 6	+ 7
Ketchikan, AK	55	21	131	39	4	−49	−24	0	+25	+49
Knoxville, TN	35	58	83	55	0	+76	+64	+52	+40	+28
Kodiak, AK	57	47	152	24	4	+25	+54	+83	+112	+141
LaCrosse, WI	43	48	91	15	1	+15	+18	+20	+23	+26
Lake Charles, LA	30	14	93	13	1	+76	+53	+30	+ 8	−15
Lanai City, HI	20	50	156	55	5	+127	+87	+46	+ 6	−34
Lancaster, PA	40	2	76	18	0	+30	+25	+21	+17	+12
Lansing, MI	42	44	84	33	0	+52	+53	+54	+54	+55
Las Cruces, NM	32	19	106	47	2	+62	+43	+24	+ 5	−13
Las Vegas, NV	36	10	115	9	3	+20	+ 9	− 3	−14	−26
Lawrence-Lowell, MA	42	42	71	10	0	− 1	0	0	+ 1	+ 2
Lewiston, ID	46	25	117	1	3	−12	− 5	+ 3	+11	+18
Lexington-Frankfort, KY	38	3	84	30	0	+70	+62	+54	+46	+38
Liberal, KS	37	3	100	55	1	+80	+70	+60	+50	+40
Lihue, HI	21	59	159	23	5	+133	+94	+56	+18	−20
Lincoln, NE	40	49	96	41	1	+48	+45	+43	+40	+37
Little Rock, AR	34	45	92	17	1	+54	+40	+26	+12	− 3
Los Angeles incl. Pasadena and Santa Monica, CA	34	3	118	14	3	+41	+25	+10	− 6	−21
Louisville, KY	38	15	85	46	0	+75	+67	+59	+52	+44
Macon, GA	32	50	83	38	0	+87	+69	+52	+34	+16
Madison, WI	43	4	89	23	1	+10	+12	+13	+14	+16
Manchester-Concord, NH	42	59	71	28	0	− 1	0	+ 1	+ 3	+ 4
McGrath, AK	62	58	155	36	4	+18	+56	+95	+134	+172
Memphis, TN	35	9	90	3	1	+44	+30	+17	+ 3	−10
Meridian, MS	32	22	88	42	1	+49	+31	+12	− 7	−26
Miami, FL	25	47	80	12	0	+101	+70	+39	+ 8	−23
Miles City, MT	46	25	105	51	2	+ 3	+11	+18	+26	+34
Milwaukee, WI	43	2	87	54	1	+ 5	+ 6	+ 7	+ 8	+10
Minneapolis-St. Paul, MN	44	59	93	16	1	+18	+23	+28	+33	+38
Minot, ND	48	14	101	18	1	+38	+49	+60	+71	+82
Moab, UT	38	35	109	33	2	+48	+41	+34	+27	+20
Mobile, AL	30	42	88	3	1	+53	+31	+10	−12	−34
Monroe, LA	32	30	92	7	1	+62	+44	+26	+ 7	−11
Montgomery, AL	32	23	86	19	1	+40	+21	+ 2	−16	−35
Muncie, IN	40	12	85	23	0	+66	+61	+57	+53	+49
Murdo, SD	43	53	100	43	1	+52	+55	+58	+61	+64
Nashville, TN	36	10	86	47	1	+27	+15	+ 4	− 8	−20
New Haven, CT	41	18	72	56	0	+11	+ 9	+ 7	+ 6	+ 4
New London, CT	41	22	72	6	0	+ 8	+ 6	+ 4	+ 2	0
New Orleans, LA	29	57	90	4	1	+64	+41	+18	− 6	−29
New York, NY	40	45	74	0	0	+18	+15	+12	+ 9	+ 6
Newark-Irvington-East Orange, NJ	40	44	74	10	0	+19	+16	+13	+ 9	+ 6
Nome, AK	64	30	165	25	4	+51	+92	+134	+175	+217
Norfolk, VA	36	51	76	17	0	+42	+32	+22	+11	+ 1
North Platte, NE	41	8	100	46	1	+63	+61	+59	+57	+54
Norwalk-Stamford, CT	41	7	73	22	0	+14	+12	+ 9	+ 7	+ 5
Oakley, KS	39	8	100	51	1	+72	+66	+59	+53	+47
Ogden, UT	41	13	111	58	2	+48	+46	+44	+42	+39
Ogdensburg, NY	44	42	75	30	0	+ 8	+13	+17	+22	+26
Oklahoma City, OK	35	28	97	31	1	+73	+60	+47	+34	+21
Omaha, NE	41	16	95	56	1	+44	+42	+39	+37	+35
Orlando, FL	28	32	81	22	0	+95	+69	+43	+17	− 9
Ortonville, MN	45	19	96	27	1	+30	+35	+41	+47	+52
Oshkosh, WI	44	1	88	33	1	+ 3	+ 6	+10	+13	+16
Parkersburg, WV	39	16	81	34	0	+54	+48	+42	+37	+31
Paterson, NJ	40	55	74	10	0	+18	+15	+12	+10	+ 7
Pendleton, OR	45	40	118	47	3	− 2	+ 4	+10	+16	+23
Pensacola, FL	30	25	87	13	1	+51	+29	+ 6	−16	−38
Peoria, IL	40	42	89	36	1	+20	+17	+14	+11	+ 8
Philadelphia-Chester, PA	39	57	75	9	0	+26	+21	+17	+12	+ 8
Phoenix, AZ	33	27	112	4	2	+79	+62	+45	+29	+12
Pierre, SD	44	22	100	21	1	+49	+53	+57	+60	+64
Pittsburgh-McKeesport, PA	40	26	80	0	0	+43	+39	+36	+32	+29

City	North Latitude ° ′	West Longitude ° ′	Time Zone Code	Key Letters A min.	B min.	C min.	D min.	E min.
Pittsfield, MA	42 27	73 15	0	+ 8	+ 8	+ 9	+ 9	+ 9
Pocatello, ID	42 52	112 27	2	+43	+44	+45	+46	+47
Poplar Bluff, MO	36 46	90 24	1	+39	+29	+18	+ 8	− 3
Portland, ME	43 40	70 15	0	− 9	− 6	− 4	− 1	+ 1
Portland, OR	45 31	122 41	3	+14	+20	+26	+32	+38
Portsmouth, NH	43 5	70 45	0	− 4	− 3	− 2	0	+ 1
Presque Isle, ME	46 41	68 1	0	−29	−21	−13	− 5	+ 3
Providence, RI	41 50	71 25	0	+ 3	+ 2	+ 1	0	− 1
Pueblo, CO	38 16	104 37	2	+30	+22	+15	+ 7	− 1
Raleigh, NC	35 47	78 38	0	+56	+43	+31	+19	+ 6
Rapid City, SD	44 5	103 14	2	+ 2	+ 5	+ 8	+12	+15
Reading, PA	40 20	75 56	0	+27	+23	+20	+16	+12
Redding, CA	40 35	122 24	3	+32	+29	+25	+22	+19
Richmond, VA	37 32	77 26	0	+44	+35	+26	+17	+ 8
Roanoke, VA	37 16	79 57	0	+55	+46	+36	+27	+17
Roswell, NM	33 24	104 32	2	+49	+32	+15	− 2	−18
Rutland, VT	43 37	72 58	0	+ 3	+ 5	+ 7	+10	+12
Sacramento, CA	38 35	121 30	3	+36	+29	+22	+15	+ 8
Salem, OR	44 57	123 1	3	+17	+22	+27	+32	+37
Salina, KS	38 50	97 37	1	+60	+53	+47	+40	+33
Salisbury, MD	38 22	75 36	0	+34	+26	+19	+11	+ 4
Salt Lake City, UT	40 45	111 53	2	+49	+46	+43	+40	+37
San Antonio, TX	29 25	98 30	1	+100	+76	+52	+27	+ 3
San Diego, CA	32 43	117 9	3	+42	+24	+ 6	−12	−30
San Francisco incl. Oakland and San Jose, CA	37 47	122 25	3	+43	+35	+26	+17	+ 9
Santa Fe, NM	35 41	105 56	2	+45	+33	+20	+ 8	− 5
Savannah, GA	32 5	81 6	0	+80	+61	+42	+22	+ 3
Scranton-Wilkes Barre, PA.	41 25	75 40	0	+22	+20	+18	+17	+15
Seattle-Tacoma-Olympia, WA	47 37	122 20	3	+ 4	+14	+24	+34	+44
Sheridan, WY	44 48	106 58	2	+14	+19	+23	+28	+32
Shreveport, LA	32 31	93 45	1	+69	+51	+32	+14	− 5
Sioux Falls, SD	43 33	96 44	1	+38	+40	+42	+45	+47
South Bend, IN	41 41	86 15	0	+63	+62	+61	+59	+58
Spartanburg, SC	34 56	81 57	0	+72	+58	+45	+31	+17
Spokane, WA	47 40	117 24	3	−16	− 6	+ 4	+14	+24
Springfield, IL	39 48	89 39	1	+24	+19	+15	+10	+ 5
Springfield-Holyoke, MA	42 6	72 36	0	+ 7	+ 7	+ 6	+ 6	+ 5
Springfield, MO	37 13	93 18	1	+49	+39	+30	+20	+10
St. Johnsbury, VT	44 25	72 1	0	− 4	− 1	+ 3	+ 7	+11
St. Joseph, MO	39 46	94 50	1	+45	+40	+35	+30	+26
St. Louis, MO	38 37	90 12	1	+31	+24	+17	+10	+ 3
St. Petersburg, FL	27 46	82 39	0	+103	+76	+48	+21	− 6
Syracuse, NY	43 3	76 9	0	+17	+19	+20	+21	+23
Tallahassee, FL	30 27	84 17	0	+99	+77	+55	+32	+10
Tampa, FL	27 57	82 27	0	+102	+75	+48	+21	− 6
Terre Haute, IN	39 28	87 24	0	+76	+71	+66	+60	−55
Texarkana, AR	33 26	94 3	1	+67	+50	+33	+16	0
Toledo, OH	41 39	83 33	0	+53	+51	+50	+49	+47
Topeka, KS	39 3	95 40	1	+51	+45	+39	+33	+26
Traverse City, MI	44 46	85 38	0	+49	+53	+58	+62	+67
Trenton, NJ	40 13	74 46	0	+23	+19	+15	+11	+ 7
Trinidad, CO	37 10	104 31	2	+34	+24	+14	+ 5	− 5
Tucson, AZ	32 13	110 58	2	+79	+60	+41	+22	+ 3
Tulsa, OK	36 9	95 60	1	+64	+52	+41	+29	+17
Tupelo, MS	34 16	88 34	1	+41	+26	+11	− 4	−19
Vernal, UT	40 27	109 32	2	+41	+38	+34	+30	+27
Walla Walla, WA	46 4	118 20	3	− 6	+ 1	+ 8	+15	+22
Washington, DC	38 54	77 1	0	+37	+31	+24	+18	+11
Waterbury-Meriden, CT	41 33	73 3	0	+11	+ 9	+ 8	+ 6	+ 5
Waterloo, IA	42 30	92 20	1	+24	+25	+25	+25	+25
Wausau, WI	44 58	89 38	1	+ 4	+ 9	+14	+19	+24
West Palm Beach, FL	26 43	80 3	0	+97	+67	+38	+ 9	−20
Wichita, KS	37 42	97 20	1	+63	+54	+46	+37	+28
Williston, ND	48 9	103 37	1	+47	+58	+69	+80	+91
Wilmington, DE	39 45	75 33	0	+28	+23	+18	+13	+ 8

City	North Latitude ° ′	West Longitude ° ′	Time Zone Code	Key Letters A min.	B min.	C min.	D min.	E min.
Wilmington, NC	34 14	77 55	0	+59	+44	+28	+13	− 2
Winchester, VA	39 11	78 10	0	+41	+35	+29	+23	+17
Worcester, MA	42 16	71 48	0	+ 3	+ 3	+ 3	+ 3	+ 3
York, PA	39 58	76 43	0	+32	+27	+23	+18	+14
Youngstown, OH	41 6	80 39	0	+43	+41	+38	+36	+34
Yuma, AZ	32 43	114 37	2	+92	+74	+56	+37	+19
CANADA								
Calgary, AB	51 5	114 5	2	+18	+34	+51	+67	+83
Edmonton, AB	53 34	113 25	2	+ 6	+27	+48	+69	+90
Halifax, NS	44 38	63 35	−1	+21	+25	+30	+34	+38
Montreal, QC	45 28	73 39	0	− 2	+ 4	+10	+16	+21
Ottawa, ON	45 25	75 43	0	+ 7	+12	+18	+24	+30
St. John, NB	45 16	66 3	−1	+28	+34	+39	+45	+50
Saskatoon, SK	52 10	106 40	1	−16	+ 2	+21	+39	+58
Sydney, NS	46 10	60 10	−1	+ 1	+ 9	+16	+23	+30
Thunder Bay, ON	48 27	89 12	0	+49	+60	+71	+83	+94
Toronto, ON	43 39	79 23	0	+28	+31	+33	+35	+38
Vancouver, BC	49 13	123 6	3	+ 1	+14	+27	+40	+53
Winnipeg, MB	49 53	97 10	1	+15	+29	+43	+57	+71

KILLING FROSTS AND GROWING SEASONS

Courtesy of National Climatic Center

Dates given are averages; local weather and topography may cause considerable variation.

City	Growing Season (Days)	Last Frost Spring	First Frost Fall	City	Growing Season (Days)	Last Frost Spring	First Frost Fall
Montgomery, AL	279	Feb. 27	Dec. 3	St. Louis, MO	220	Apr. 2	Nov. 8
Little Rock, AR	244	Mar. 16	Nov. 15	Helena, MT	134	May 12	Sept. 23
Phoenix, AZ	318	Jan. 27	Dec. 11	Omaha, NE	189	Apr. 14	Oct. 20
Tucson, AZ	262	Mar. 6	Nov. 23	Reno, NV	141	May 14	Oct. 2
Eureka, CA	335	Jan. 24	Dec. 25	Concord, NH	142	May 11	Sept. 30
Los Angeles, CA	*	*	*	Trenton, NJ	211	Apr. 8	Nov. 5
Sacramento, CA	321	Jan. 24	Dec. 11	Albuquerque, NM	196	Apr. 16	Oct. 29
San Diego, CA	*	*	*	Albany, NY	169	Apr. 27	Oct. 13
San Francisco, CA	*	*	*	Raleigh, NC	237	Mar. 24	Nov. 16
Denver CO	165	May 2	Oct. 14	Bismarck, ND	136	May 11	Sept. 24
Hartford, CT	180	Apr. 22	Oct. 19	Cincinnati, OH	203	Apr. 5	Oct. 25
Washington, DC	201	Apr. 10	Oct. 28	Toledo, OH	184	Apr. 24	Oct. 25
Miami, FL	*	*	*	Oklahoma City, OK	224	Mar. 28	Nov. 7
Macon, GA	252	Mar. 12	Nov. 19	Medford, OR	178	Apr. 25	Oct. 20
Pocatello, ID	145	May 8	Sept. 30	Portland, OR	279	Feb. 25	Dec. 1
Chicago, IL	192	Apr. 19	Oct. 28	Harrisburg, PA	201	Apr. 10	Oct. 28
Evansville, IN	217	Apr. 2	Nov. 4	Scranton, PA	173	Apr. 24	Oct. 14
Fort Wayne, IN	179	Apr. 24	Oct. 20	Columbia, SC	252	Mar. 14	Nov. 21
Des Moines, IA	182	Apr. 20	Oct. 19	Huron, SD	149	May 4	Sept. 30
Wichita, KS	210	Apr. 5	Nov. 1	Chattanooga, TN	229	Mar. 26	Nov. 10
Shreveport, LA	271	Mar. 1	Nov. 27	Del Rio, TX	300	Feb. 12	Dec. 9
New Orleans, LA	302	Feb. 13	Dec. 12	Midland, TX	217	Apr. 3	Nov. 6
Portland, ME	169	Apr. 29	Oct. 15	Salt Lake City, UT	203	Apr. 12	Nov. 1
Boston, MA	192	Apr. 16	Oct. 25	Burlington, VT	148	May 8	Oct. 3
Alpena, MI	156	May 6	Oct. 9	Richmond, VA	220	Apr. 2	Nov. 8
Detroit, MI	181	Apr. 25	Oct. 23	Spokane, WA	175	Apr. 20	Oct. 12
Marquette, MI	156	May 14	Oct. 17	Parkersburg, WV	188	Apr. 16	Oct. 21
Duluth, MN	125	May 22	Sept. 24	Green Bay, WI	160	May 6	Oct. 13
Minneapolis, MN	166	Apr. 30	Oct. 13	Madison, WI	176	Apr. 26	Oct. 19
Jackson, MS	248	Mar. 10	Nov. 13	Lander, WY	128	May 15	Sept. 20
Columbia, MO	198	Apr. 9	Oct. 24				

*Frosts do not occur every year.

Sardines: The Ultimate Smelly Little Delectable

There is evidence now that these tiny fish can make you look and feel years younger!

by Leslie Land

☐ IN MAINE A HALF CENTURY AGO, Yankees ate sardines with crackers and milk for a pick-up supper on hot nights rather than light a fire in the cookstove. They simply eased the little fish out of the can onto a plate and squeezed fresh lemon juice over them, or to be fancy, surrounded them with slices of hard-boiled egg, cucumber, or Bermuda onion. No skeptical Yankee would ever have believed that an action as simple as rolling back the little tin flap on the end of a sardine can with a key could provide them with a substance that today heads the "Fountain of Youth" list of foods that contain that miracle ingredient nucleic acid, which is purported to make us look and feel years younger. Mostly people ate sardines because they were both cheap and plentiful.

Canned Maine sardines are a piscatorial treat that has been misunderstood and misused ever since 1873, when the first American cannery was opened in the town of Eastport. Even this earliest factory was a latecomer in one important sense. The industry had already been underway for almost half a century in Nantes, France. This head start for the French meant that by the time Maine sardines appeared on the market, there was already in the sardine buyer's mind a fixed idea about what a canned sardine should taste like, and when and how it should be eaten. That preconception has caused trouble ever since because the European and American products have never been identical.

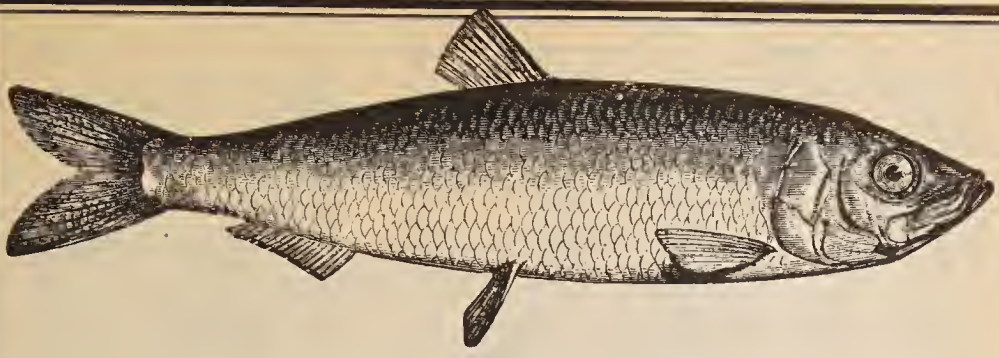
French sardines taste different. They look different, and they have a different texture. It's no wonder: they're a different fish. *Our* sardines are young herring *(Clupea harengus). Their* sardines are young pilchards *(Sardina pilchardus)*. Just to complicate matters further, Scandinavian "brisling" sardines are young sprats *(Clupea sprattus)*.

European sardines are dainty little fish. Fresh, canned, or salted, they are always best simply prepared. American sardines are robuster creatures, and although stringent modern inspection methods have made them aesthetically competitive with European sardines, you still may be buying the tail end of a pretty good-sized fish when you buy a canned Maine sardine. Thanks to their size, however, Maine sardines are much better than European sardines for any cooked dish or in anything strongly seasoned. Like the European sardine, the backbone of the Maine sardine is completely edible, although you may want to remove it to make the texture of the fish smoother. This gesture will remove some of the calcium, but these fish are still very nourishing, high in protein and rich in minerals.

THE SARDINE-BUYER'S GUIDE:

Fresh: The little (seven-inch) pilchards so often called for in French and Italian recipes are almost never seen in this country. Small fresh herring may be substituted if you can find them. Small, so-called "tinker" mackerel may also be used.

Salted: Although popular in Europe, these are somewhere between rare and nonexistent here, except in ethnic markets in large cities. They were, for instance, available at the municipal market in Edmonton, Alberta, in the 1970s, and may still be. Recipes that call for salted sardines can be made successfully with small salted herring.



Canned: French (and sometimes Spanish or Portuguese) are famous for their delicacy of flavor. Serve them plain as an hors d'oeuvre or for lunch, accompanied by slices of thin, crisp toast. Scandinavian (brisling) sardines are on a par with French sardines for delicacy of flavor and fragility of flesh. Treat them with similar deference. Maine sardines are the workhorses of the sardine world, delicious, versatile, and cheap. Though usually eaten without much embellishment, they are at their best complemented by strong seasoning, and they are the only ones to use if you plan on making a cooked dish. The following recipes all use Maine sardines.

Marinated Maine Sardines

For antipasto, stuffed-egg fillings, and other uses.

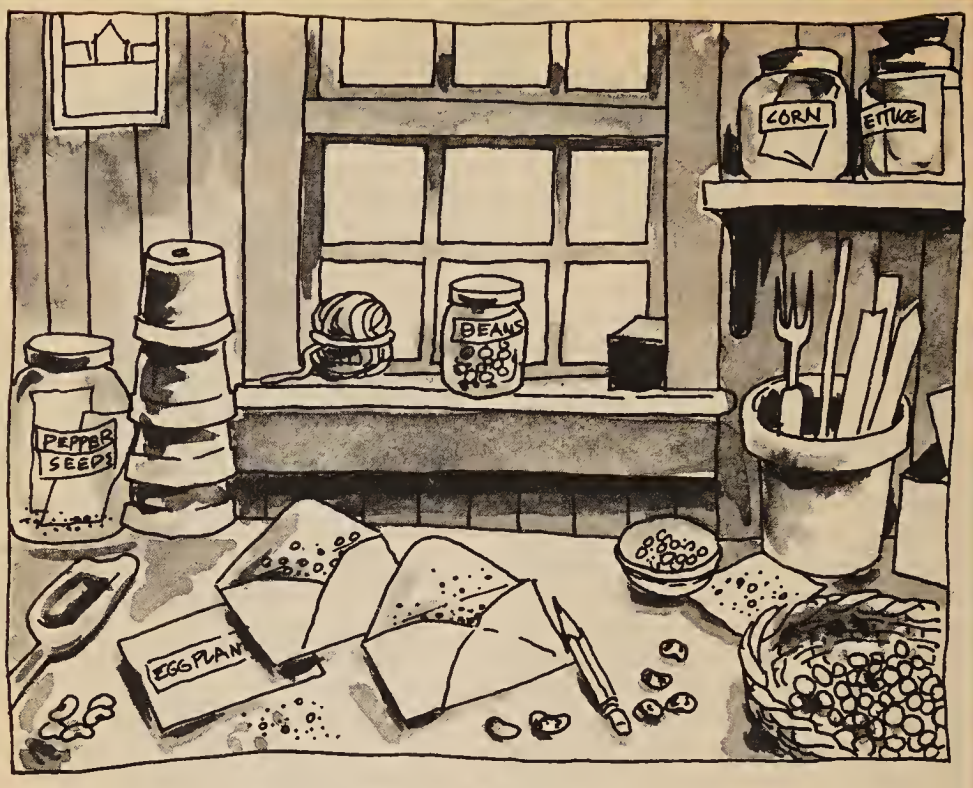
- 2 cans of small (8-pack) sardines in oil
- ½ cup olive oil
- 3 tablespoons bland vegetable oil
- ¼ cup finely minced fresh parsley
- 2 teaspoons dried tarragon
- 1 teaspoon dried oregano
- ½ teaspoon dried thyme
- 1 small bay leaf
- juice of 1 large lemon (about 2 tablespoons)
- ¼ cup dry white wine

Drain the sardines but do not bone them. In a shallow bowl, combine the oils with the herbs, beating with a wire whip. Put the lemon juice and wine in another shallow bowl. One at a time, rinse the sardines in the lemon-wine mixture, then place them carefully in the marinade. Cover tightly with plastic wrap and marinate for about 3 hours at cool room temperature or overnight in the refrigerator. Once marinated, the sardines will keep for 2 to 3 days; after that, the herbs start to taste flat. It may be necessary to rearrange the fish halfway through the marination. Perform this operation carefully, since the fish are likely to break. I just gently roll the stack over with my fingers.

Gratin of Sardines and Potatoes in Cream

- 8 medium boiled potatoes, enough to make 5 cups of peeled quarter-inch slices
- 3 cans small (8-pack) Maine sardines in oil, well drained and boned
- ½ cup minced fresh parsley
- 3 tablespoons minced chives or 4 tablespoons minced green onion tops
- salt
- 2 teaspoons Dijon mustard
- 1 garlic clove, pressed
- 1½ cups light cream
- 1 cup coarse bread crumbs
- 2 tablespoons melted butter, plus butter for pan

Arrange half the potato slices in a buttered 7″ x 11″ pan. Combine the parsley and the chives and sprinkle half of the mixture over the potatoes. Sprinkle with salt. Apply the sardines in an even layer. Sprinkle with the rest of the herbs. Layer on the rest of the potatoes and again sprinkle lightly with salt. Mix the mustard with the garlic and slowly beat in the cream. Pour the cream mixture slowly over the entire surface, then combine the melted butter with the bread crumbs and sprinkle this mixture evenly over the entire surface. Bake the casserole for 30 minutes at 375°, then put it in the upper third of the oven and raise the heat to 400°. Give it another 10 or 15 minutes, until the top is invitingly browned. Let the gratin cool for about 5 minutes before serving, so it can firm up a little. This makes six generous portions, inexpensive and memorably good. □□



The Seeds Your Grandfather Used to Grow

If (1) you feel nostalgic about the old varieties of vegetables you remember from years ago and (2) you can no longer locate the seeds for them, then read on. There's hope!

by Gordon Peery

illustrated by Linda Wielblad

☐ YOU'RE SITTING BY THE WARM FIRE some February evening, browsing through the seed catalogs, and suddenly you realize that the tomatoes you've grown for the last 20 years are no longer available.

Or perhaps you remember those tasty beets that grandfather used to grow, or the pumpkins that grandmother made into the most scrumptious of pies. Where have they gone?

In the name of progress, many of the old varieties of vegetables are simply being discontinued by seed suppliers, who for years provided faithful customers with their own favorites. In many cases large corporations have bought the seed companies which had prospered under two or three generations of family management. With more of an eye to profits, new owners have let the less popular varieties go, and have developed new varieties primarily for commercial growers. These are usually vegetables that have great shelf life and cosmetic appeal, often at the expense of flavor.

What may be of greater concern is that until recently there has been very little effort to retain the old varieties at

any level. Many of them have become extinct because no one bothered to save even a few seeds. Because of this, the genetic diversity that is fundamental to long-term successful agriculture has been significantly reduced.

* * *

It might seem self-defeating, but Rob Johnston, president of Johnny's Selected Seeds, encourages his customers to save their own seeds. While he concedes that he might have lost a few sales over the years, this approach certainly earns the respect of those who subscribe to the seed-saving philosophy but still need to make some seed purchases every year. Some of the types he sells now are old family heirloom varieties that he has rescued from obscurity and possible extinction.

Johnston may be one of the few commercial seedsmen doing this today, but seed catalogs from earlier times regularly provided advice on seed saving, assuming this to be a natural part of gardening. Garden literature from the 19th century is filled with references to the subject, so much so that when Christie White became the interpreter for horticulture at Old Sturbridge Village (Massachusetts), a "living history museum" that depicts life in New England in the 1830s, she felt compelled to reactivate a seed-saving program. The vegetable gardens are all planted in the varieties believed to have been popular then. Today at the museum, guides demonstrate early seed-saving techniques.

Under the direction of Roger Kline at Cornell University, a seed-saving program has been developed to help more than a hundred similar museums establish period gardens. The project began as an effort to create authentic gardens for the nation's bicentennial and has since expanded far beyond what had been originally anticipated.

While seed-saving projects at museums are being developed to provide greater authenticity, there is increasing

TIPS ON SAVING SEEDS

• Save the seeds from plants that display the characteristics you most want to encourage. A strong, healthy plant is as important as large, well-formed fruit, and early bearing is usually a desirable quality as well.

• Seeds should be washed clean of any vegetable matter and then dried thoroughly. If you use an artificial heat source, it should be kept at around 90° F. Setting the seeds out in the sun is usually the best method, providing you can get them in if it starts to rain.

• Allow the seeds to dry for several days (larger seeds take longer than smaller ones) and then immediately, before they can regain any moisture, put them in envelopes labeled with the seed type. Put the envelopes in tightly sealed glass jars.

• The jars should be stored in a dry location between 32° and 40° F.

• Peas and beans are treated more simply. The seeds can be taken from the dried pods and stored in bags.

• Annuals are the easiest plants from which to save seeds. They include:

Beans*	Peas*
Broccoli	Pepper*
Chinese Cabbage	Potato*
Corn	Pumpkin
Cucumber	Radish
Eggplant*	Spinach
Garlic	Squash
Lettuce*	Tomato*
Melon	Turnip
Okra*	

* These plants are self-pollinating and do not require isolation. The others cross-pollinate, and should not be grown near other varieties of the same plant.

• Biennial plants must be stored through the winter. The seed will be produced during the second year. They include:

Beets	Kale
Brussels Sprouts	Kohlrabi
Cabbage	Leeks
Carrots	Onion
Cauliflower	Parsley
Celeriac	Salsify
Celery	Swiss Chard

Many gardeners are finding that seed saving opens up a whole new aspect to gardening, and after all, how many gardeners are afraid of a little extra work?

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interest from gardeners all over the country in growing heirloom varieties, and not just for old time's sake.

A key figure in the preservation of heirloom seeds is Kent Whealy, founder and director of the Seed Savers Exchange. Kent tells the story of how it started: "My involvement with heirloom seeds began quite by chance. In the early 1970s my wife and I had just moved to the northeast corner of Iowa. It's a beautiful area of limestone bluffs and clear streams and dairy farms near the Mississippi River where Iowa and Wisconsin and Minnesota meet. We were newly married and were planting our first garden together. Diane's grandfather, an old fellow named Baptist Ott, took a liking to us and taught us some of his gardening techniques.

"That fall he gave me the seeds of three garden plants that his family had brought with them from Bavaria four generations before. He gave me the seed of a large pink German tomato, a potato-leaf type; the seed of a small, delicately beautiful morning glory, which was purple and had a red star in its throat; and the seed of a strong-climbing prolific little pole bean. Well, the old man didn't make it through the winter. I realized that if his seeds were going to survive, it was up to me."

Whealy decided to contact other gardeners who were growing vegetables passed down through the generations. After a year his efforts yielded only five names. But he kept at it, and today there are 550 members of the Seed Savers Exchange. The Exchange encourages people who are saving seeds of old varieties to trade them. When a sufficient surplus is generated, it is made available to others interested in joining the project but who have no seeds of their own to swap.

Seed Savers Exchange publishes an annual yearbook which lists members and the seeds that are available. There is also an annual Harvest Edition which contains transcripts of lectures from seed-saving seminars and a wealth of other information. The 1985 Harvest Edition was over 250 pages.

Whealy has also compiled *The Garden Seed Inventory,* a 448-page listing of the 5,785 nonhybrid varieties of seeds being offered today in the United States and Canada. The only precedent to this was a study published by the U.S. Department of Agriculture in 1903. In addition to listing the variety name, range of date to maturity, and all of the known sources, *The Garden Seed Inventory* also indicates which varieties are in the greatest danger of being dropped by commercial seed companies. This book is being heralded by gardeners and scientists as a landmark study.

SOURCES FOR SEED SAVERS

Kent Whealy
The Seed Savers Exchange
P.O. Box 70
Decorah, IA 52101

To receive information about the Seed Savers Exchange, send a 22¢ stamp.

National Seed Storage Laboratory
Colorado State University
Fort Collins, CO 80523

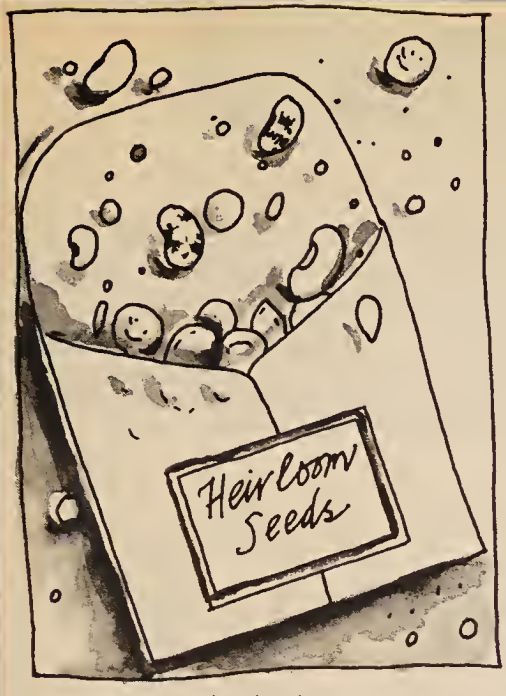
Enclose a self-addressed stamped envelope for reply.

Alex Caron
RR # 3
King City, Ontario
L0G 1K0 (Canada)

Enclose $1.00.

Canadian Organic Growers
46 Lorindale
Toronto, Ontario
M5M 3C2 (Canada)

Enclose $1.00.



* * *

Alex Caron is a gardener in Ontario who became interested in seed saving five or six years ago, sort of by accident. He had let someone use a portion of his land to grow potatoes, but when harvest time came the planter was not to be found. Caron harvested the crop himself, finding an excellent yellow-skinned potato he calls the Austrian Crescent. At about this time he became aware of the work Kent Whealy was doing with Seed Savers, and his interest was sparked. He now has about 150 potato varieties, several hundred beans, and 50 or 60 tomatoes, which he makes available, preferably through trade for other varieties. Caron is also a founding member of the Canadian Organic Growers, which has developed a Canadian equivalent of the Seed Savers Exchange called Heritage Seeds.

* * *

Perhaps part of the reason for the current popularity of seed saving is that gardeners are learning that it is not very difficult to maintain a few strains of favored vegetables. Seeds from annuals such as beans and tomatoes, which are self-pollinating, are easily saved. Slightly more complicated are such things as corn and cucumbers, which can cross-pollinate and therefore require some degree of isolation. Biennials, which include carrots, cabbage, brussels sprouts, and beets, must be wintered over to produce seeds. Many gardeners are finding that seed saving opens up a whole new aspect to gardening, and after all, how many gardeners are afraid of a little extra work?

In both the United States and Canada, the role of government in preserving old varieties of seeds has been severely limited by lack of funding. The U.S. Government operates the National Seed Storage Laboratory in Fort Collins, Colorado. The laboratory does not distribute seeds, but welcomes inquiries from people searching for a particular variety. With its extensive listing of seed suppliers, the lab can usually point someone in the right direction.

This facility came into operation in 1959, and has added at least 10,000 seeds each year to its collection. But of the varieties of commercially available food plants listed in the 1903 USDA inventory, only three percent are surviving in storage at Fort Collins. All of the storage space available in the existing building will be used up within two years, but funding for additional space has not yet been approved.

Considering how many seeds have already been lost, combined with the fact that many of the larger seed companies actually throw away the seed of discontinued vegetables, what we see is the disappearance of the old varieties, the erosion of the genetic pool on an unprecedented scale. Rob Johnston points out that this integrates the job of seed saving into the fabric of agriculture itself, rather than making it a separate function of government or large corporations. Perhaps this is as it should be.

Thomas Jefferson once said, "The greatest service which can be rendered to any country is to add a useful plant to its culture." Two hundred years later we might say that the greatest service would be to preserve those plants. □□

OUTDOOR PLANTING TABLE, 1987

The best time to plant flowers and vegetables that bear crops above the ground is during the LIGHT of the moon; that is, between the day the moon is new to the day it is full. Flowering bulbs and vegetables that bear crops below ground should be planted during the DARK of the moon; that is, from the day after it is full to the day before it is new again. These moon days for 1987 are given in the "Moon Favorable" columns below. See pages 18-42 for the exact times and days of the new and full moons.

The three columns below give planting dates for the Weather Regions listed. (See Map p. 63.) Consult page 53 for dates of killing frosts and length of growing season. Weather regions 5 and the southern half of 16 are practically frost free.

Above Ground Crops Marked(*)	Weather Regions 1, 6, 9, 10, North 13		Weather Regions 2, 3, 7, 11, South 13, 15		Weather Regions 4, 8, 12, 14, 16	
E means Early L means Late	Planting Dates	Moon Favorable	Planting Dates	Moon Favorable	Planting Dates	Moon Favorable
*Barley	5/15-6/21	5/27-6/11	3/15-4/7	3/15, 3/29-4/7	2/15-3/7	2/27-3/7
*Beans (E)	5/7-6/21	5/7-13, 5/27-6/11	4/15-30	4/27-30	3/15-4/7	3/29-4/7
(L)	6/15-7/15	6/26-7/10	7/1-21	7/1-10	8/7-31	8/7-9, 24-31
Beets (E)	5/1-15	5/14-15	3/15-4/3	3/16-28	2/7-28	2/14-26
(L)	7/15-8/15	7/15-24, 8/10-15	8/15-31	8/15-23	9/1-30	9/8-21
*Broccoli (E)	5/15-31	5/27-31	3/7-31	3/7-15, 29-31	2/15-3/15	2/27-3/15
(L)	6/15-7/7	6/26-7/7	8/1-20	8/1-9	9/7-30	9/7, 22-30
*Brussels Spr.	5/15-31	5/27-31	3/7-4/15	3/7-15, 3/29-4/13	2/11-3/20	2/11-13, 2/27-3/15
*Cabbage Pl.	5/15-31	5/27-31	3/7-4/15	3/7-15, 3/29-4/13	2/11-3/20	2/11-13, 2/27-3/15
Carrots (E)	5/15-31	5/15-26	3/7-31	3/16-28	2/15-3/7	2/15-26
(L)	6/15-7/21	6/15-25, 7/11-21	7/7-31	7/11-24	8/1-9/7	8/10-23
*Cauliflower (E)	5/15-31	5/27-31	3/15-4/7	3/15, 3/29-4/7	2/15-3/7	2/27-3/7
Pl. (L)	6/15-7/21	6/26-7/10	7/1-8/7	7/1-10, 7/25-8/7	8/7-31	8/7-9, 24-31
*Celery (E)	5/15-6/30	5/27-6/11, 6/26-30	3/7-31	3/7-15, 29-31	2/15-28	2/27-28
(L)	7/15-8/15	7/25-8/9	8/15-9/7	8/24-9/7	9/15-30	9/22-30
*Corn, Sw. (E)	5/10-6/15	5/10-13, 5/27-6/11	4/1-15	4/1-13	3/15-31	3/15, 29-31
(L)	6/15-30	6/26-30	7/7-21	7/7-10	8/7-31	8/7-9, 24-31
*Cucumber	5/7-6/20	5/7-13, 5/27-6/11	4/7-5/15	4/7-13, 4/27-5/13	3/7-4/15	3/7-15, 3/29-4/13
*Eggplant Pl.	6/1-30	6/1-11, 26-30	4/7-5/15	4/7-13, 4/27-5/13	3/7-4/15	3/7-15, 3/29-4/13
*Endive (E)	5/15-31	5/27-31	4/7-5/15	4/7-13, 4/27-5/13	2/15-3/20	2/27-3/15
(L)	6/7-30	6/7-11, 26-30	7/15-8/15	7/25-8/9	8/15-9/7	8/24-9/7
*Flowers	5/7-6/21	5/7-13, 5/27-6/11	4/15-30	4/27-30	3/15-4/7	3/15, 3/29-4/7
*Kale (E)	5/15-31	5/27-31	3/7-4/7	3/7-15, 3/29-4/7	2/11-3/20	2/11-13, 2/27-3/15
(L)	7/1-8/7	7/1-10, 7/25-8/7	8/15-31	8/24-31	9/7-30	9/7, 22-30
Leek Pl.	5/15-31	5/15-26	3/7-4/7	3/16-28	2/15-4/15	2/15-26, 3/16-28, 4/14-15
*Lettuce	5/15-6/30	5/27-6/11, 6/26-30	3/1-31	3/1-15, 29-31	2/15-3/7	2/27-3/7
*Muskmelon	5/15-6/30	5/27-6/11, 6/26-30	4/15-5/7	4/27-5/7	3/15-4/7	3/15, 3/29-4/7
Onion Pl.	5/15-6/7	5/15-26	3/1-31	3/16-28	2/1-28	2/14-26
*Parsley	5/15-31	5/27-31	3/1-31	3/1-15, 29-31	2/20-3/15	2/27-3/15
Parsnips	4/1-30	4/14-26	3/7-31	3/16-28	1/15-2/4	1/15-28
*Peas (E)	4/15-5/7	4/27-5/7	3/7-31	3/7-15, 29-31	1/15-2/7	1/29-2/7
(L)	7/15-31	7/25-31	8/7-31	8/7-9, 24-31	9/15-30	9/22-30
*Pepper Pl.	5/15-6/30	5/27-6/11, 6/26-30	4/1-30	4/1-13, 27-30	3/1-20	3/1-15
Potato	5/1-31	5/14-26	4/1-30	4/14-26	2/10-28	2/14-26
*Pumpkin	5/15-31	5/27-31	4/23-5/15	4/27-5/13	3/7-20	3/7-15
Radish (E)	4/15-30	4/15-26	3/7-31	3/16-28	1/21-3/1	1/21-28, 2/14-26
(L)	8/15-31	8/15-23	9/7-30	9/8-21	10/1-21	10/7-21
*Spinach (E)	5/15-31	5/27-31	3/15-4/20	3/15, 3/29-4/13	2/7-3/15	2/7-13, 2/27-3/15
(L)	7/15-9/7	7/25-8/9, 8/24-9/7	8/1-9/15	8/1-9, 8/24-9/7	10/1-21	10/1-6
*Squash	5/15-6/15	5/27-6/11	4/15-30	4/27-30	3/15-4/15	3/15, 3/29-4/13
*Swiss Chard	5/1-31	5/1-13, 27-31	3/15-4/15	3/15, 3/29-4/13	2/7-3/15	2/7-13, 2/27-3/15
*Tomato Pl.	5/15-31	5/27-31	4/7-30	4/7-13, 27-30	3/7-20	3/7-15
Turnips (E)	4/7-30	4/14-26	3/15-31	3/16-28	1/20-2/15	1/20-28, 2/14-15
(L)	7/1-8/15	7/11-24, 8/10-15	8/1-20	8/10-20	9/1-10/15	9/8-21, 10/7-15
*Wheat, Winter	8/11-9/15	8/24-9/7	9/15-10/20	9/22-10/6	10/15-12/7	10/22-11/5, 11/21-12/5
Spring	4/7-30	4/7-13, 27-30	3/1-20	3/1-15	2/15-28	2/27-28

GARDENING BY THE MOON'S SIGN

The Outdoor Planting Table (opposite) shows how the phases of the moon can be used as a guide. Gardeners who use the moon's *astrological* sign (listed below) follow these rules: 1) When the moon is between New and First Quarter (see left-hand calendar pages 18-42 for moon phases), plant above-ground crops that produce seeds on the outside, and cucumbers, when the moon is in Taurus, Cancer, Virgo, Scorpio, Capricorn, or Pisces. 2) When the moon is between First Quarter and Full, plant above-ground crops bearing seeds inside the fruit when the moon is in Taurus, Cancer, Virgo, Scorpio, Capricorn, or Pisces. 3) When the moon is between Full and Last Quarter, plant below-ground crops when the moon is in Taurus, Cancer, Virgo, Scorpio, Capricorn, or Pisces. 4) When the moon is between Last Quarter and New, do not plant; use for destroying weeds, brush, pests, and for cultivating and plowing when the moon is in Aries, Gemini, Leo, Virgo, Libra, Sagittarius, or Aquarius.

Certain activities are best performed when the moon is in a certain sign: Prune to encourage growth when the moon is in Cancer, Scorpio, or Capricorn. Prune to discourage growth when the moon is in Aries or Sagittarius. Wean animals when the moon is in Taurus, Cancer, or Pisces.

MOON'S PLACE IN THE ZODIAC

	Nov 86	Dec 86	Jan 87	Feb 87	Mar 87	Apr 87	May 87	June 87	July 87	Aug 87	Sept 87	Oct 87	Nov 87	Dec 87
1	LIB	SAG	AQU	PSC	PSC	TAU	GEM	LEO	VIR	LIB	SAG	CAP	PSC	ARI
2	SCO	SAG	AQU	ARI	ARI	TAU	CAN	LEO	VIR	SCO	SAG	AQU	PSC	TAU
3	SCO	CAP	AQU	ARI	ARI	GEM	CAN	LEO	LIB	SCO	CAP	AQU	ARI	TAU
4	SAG	CAP	PSC	TAU	TAU	GEM	CAN	VIR	LIB	SAG	CAP	PSC	ARI	GEM
5	SAG	AQU	PSC	TAU	TAU	CAN	LEO	VIR	LIB	SAG	AQU	PSC	TAU	GEM
6	CAP	AQU	ARI	TAU	GEM	CAN	LEO	LIB	SCO	CAP	AQU	ARI	TAU	GEM
7	CAP	PSC	ARI	GEM	GEM	CAN	VIR	LIB	SCO	CAP	PSC	ARI	GEM	CAN
8	AQU	PSC	TAU	GEM	GEM	LEO	VIR	SCO	SAG	AQU	PSC	TAU	GEM	CAN
9	AQU	ARI	TAU	CAN	CAN	LEO	VIR	SCO	SAG	AQU	ARI	TAU	CAN	LEO
10	PSC	ARI	TAU	CAN	CAN	VIR	LIB	SAG	CAP	PSC	ARI	TAU	CAN	LEO
11	PSC	ARI	GEM	LEO	CAN	VIR	LIB	SAG	CAP	PSC	TAU	GEM	CAN	LEO
12	ARI	TAU	GEM	LEO	LEO	LIB	SCO	SAG	AQU	ARI	TAU	GEM	LEO	VIR
13	ARI	TAU	CAN	LEO	LEO	LIB	SCO	CAP	AQU	ARI	GEM	CAN	LEO	VIR
14	ARI	GEM	CAN	VIR	VIR	LIB	SAG	AQU	PSC	ARI	GEM	CAN	VIR	LIB
15	TAU	GEM	CAN	VIR	VIR	SCO	SAG	AQU	PSC	TAU	GEM	CAN	VIR	LIB
16	TAU	GEM	LEO	VIR	LIB	SCO	CAP	AQU	ARI	TAU	CAN	LEO	VIR	LIB
17	GEM	CAN	LEO	LIB	LIB	SAG	CAP	PSC	ARI	GEM	CAN	LEO	LIB	SCO
18	GEM	CAN	VIR	LIB	SCO	SAG	AQU	PSC	TAU	GEM	LEO	VIR	LIB	SCO
19	GEM	LEO	VIR	SCO	SCO	CAP	AQU	ARI	TAU	CAN	LEO	VIR	SCO	SAG
20	CAN	LEO	LIB	SCO	SAG	CAP	PSC	ARI	TAU	CAN	LEO	LIB	SCO	SAG
21	CAN	LEO	LIB	SAG	SAG	AQU	PSC	TAU	GEM	CAN	VIR	LIB	SAG	CAP
22	LEO	VIR	LIB	SAG	SAG	AQU	ARI	TAU	GEM	LEO	VIR	LIB	SAG	CAP
23	LEO	VIR	SCO	CAP	CAP	PSC	ARI	GEM	CAN	LEO	LIB	SCO	CAP	AQU
24	LEO	LIB	SCO	CAP	CAP	PSC	ARI	GEM	CAN	VIR	LIB	SCO	CAP	AQU
25	VIR	LIB	SAG	AQU	AQU	ARI	TAU	GEM	CAN	VIR	LIB	SAG	CAP	PSC
26	VIR	SCO	SAG	AQU	AQU	ARI	TAU	CAN	LEO	VIR	SCO	SAG	AQU	PSC
27	LIB	SCO	CAP	PSC	PSC	ARI	GEM	CAN	LEO	LIB	SCO	CAP	AQU	ARI
28	LIB	SCO	CAP	PSC	PSC	TAU	GEM	LEO	VIR	LIB	SAG	CAP	PSC	ARI
29	SCO	SAG	AQU	—	ARI	TAU	GEM	LEO	VIR	SCO	SAG	AQU	PSC	ARI
30	SCO	SAG	AQU	—	ARI	GEM	CAN	LEO	VIR	SCO	CAP	AQU	ARI	TAU
31	—	CAP	PSC	—	TAU	—	CAN	—	LIB	SCO	—	PSC	—	TAU

GENERAL WEATHER FORECAST 1986-1987

(For details see regional forecasts beginning on page 64.)

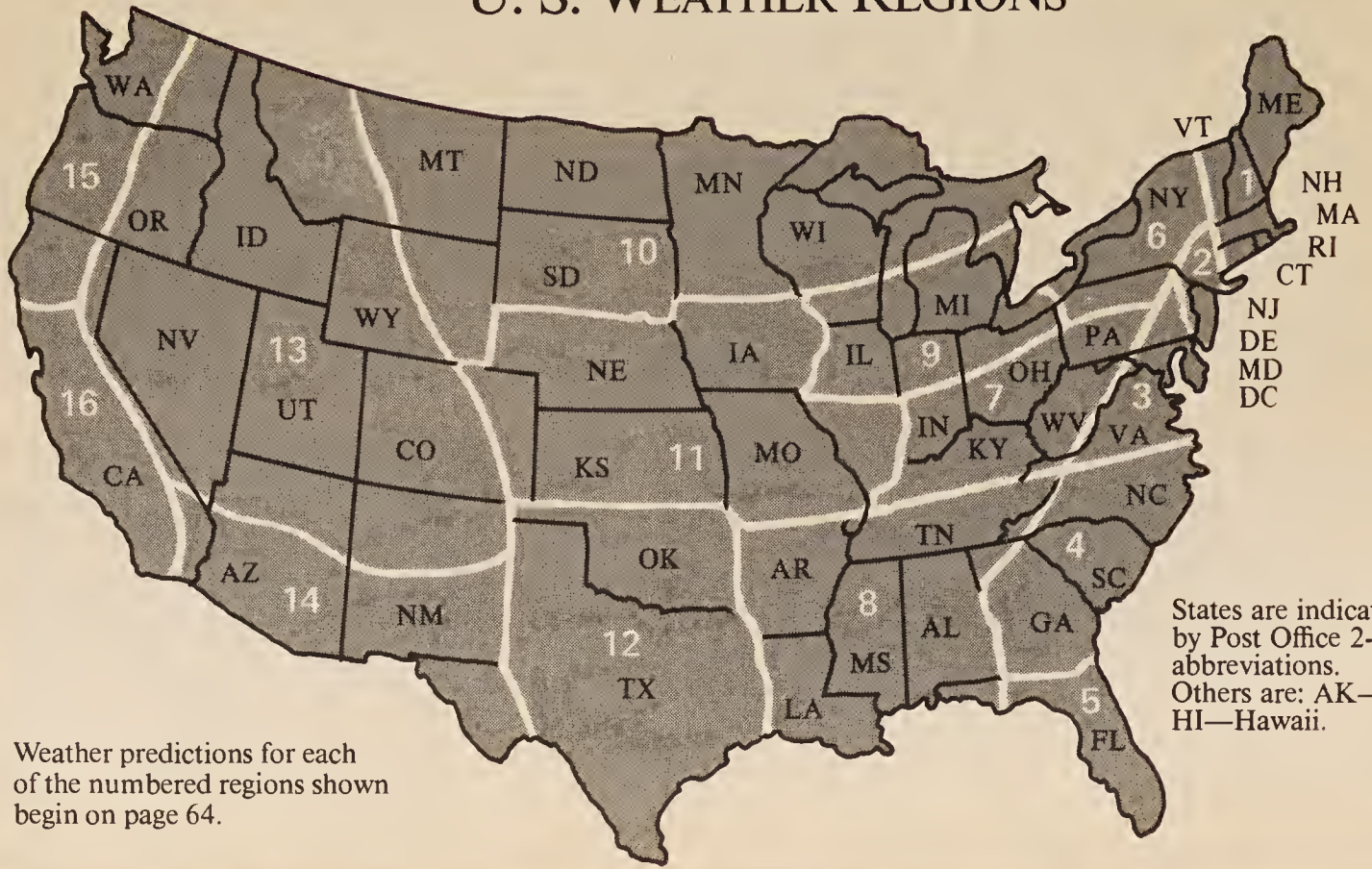
NOVEMBER THROUGH MARCH will average colder than normal in the Northeast, along the Atlantic seaboard, in lower Florida, central Texas, the desert Southwest, and particularly the Great Basin, while the rest of the country will be warmer than normal with the Mississippi River Valley, sections of the south Atlantic states, and the Gulf having significantly above-normal temperatures. The northern half of the country will have considerably below-normal precipitation except for portions of the Great Plains. Snowfall will also be considerably below normal over this region except for the mountains in the Northeast, where above-average amounts are expected. Drier-than-normal conditions will extend into the lower Mississippi River Valley, southern Florida, and the Central Valley of California, but wetter-than-normal weather will prevail elsewhere, particularly in the southern Great Plains, Texas, the Great Basin, and the Southwest. Heavy snowfall is expected from the mountains of central and southern California across to the central and lower Rockies.

APRIL THROUGH OCTOBER: Spring will be warmer than normal east of the Mississippi River (except for northern New England and the southern tip of Florida), across the extreme northern part of the country to the Pacific coast, and along the Gulf; and particularly warm from the middle Atlantic states over to the Ohio River Valley. The region between the Mississippi River and the Rockies and extending across to the Pacific Northwest will be cooler than normal and the Great Basin and Southwest considerably colder than normal. Precipitation will be above normal except for the Pacific Coast, the middle Atlantic states into southern New England, the southern tip of Florida, and the lower Great Plains to the southern Ohio Valley. Heavy precipitation in the central and upper Great Plains, as well as in the South, will cause flooding, and heavy precipitation in the southern Great Basin may result in further increases in the level of the Great Salt Lake.

Summer will be warmer than normal over most of the region east and north of the Mississippi and Ohio Rivers, along the Gulf coast, the southern Great Basin, and the Northwest; the rest of the country will be cooler than normal. Heavy precipitation is expected in the middle and southern Atlantic states and in the western Great Plains, and above-normal amounts in eastern New England, but otherwise the rest of the country will receive below-normal amounts, with the Great Basin and Pacific Northwest being quite dry, as well as the Mississippi and Ohio River valleys. Portions of the Northeast may experience drought conditions until the latter part of August.

Fall will be cooler than normal east of the Rockies and warmer west, although the central U.S. will be close to normal and even slightly above in some sections. Only northern New England, the middle and southern Atlantic states, the southern Great Plains, and southern Texas will have above-normal precipitation. The rest of the country will be drier than normal, particularly in the eastern Great Plains, the lower Ohio Valley, and the Pacific Northwest.

U. S. Weather Regions



Weather predictions for each of the numbered regions shown begin on page 64.

States are indicated by Post Office 2-letter abbreviations.
Others are: AK—Alaska; HI—Hawaii.

1. NEW ENGLAND

For regional boundaries, see map page 63.

SUMMARY: *It is expected that late fall and winter will be cold with below-normal rainfall but above-normal snowfall. A cold wave at mid month and another with a heavy snowstorm at Thanksgiving will result in a cold, snowy November. Little precipitation is expected for December, but look for severe cold after mid month and between Christmas and New Year's Day. Southern and coastal areas will be milder and drier than normal in January; inland sections should have above-normal snowfall. Watch for a cold wave and major snowstorm before mid month and another cold wave in the north a week later with a thaw near the month's end. More wintry weather is expected in February and March with cold waves and snow.*

Spring may be unusually cold, with above-normal precipitation in central sections but below elsewhere. Most of April will be cold and wet, but May and the early part of June will be warm and dry, especially in the south, with some sections suffering from drought; relief comes in the latter half of June, when heavy rains are expected.

The summer may be warmer than normal inland and in the north, but less so over the rest of the region; fewer thundershowers are predicted except for the mountains. Watch for a possible hurricane near the coast after mid September.

Variable temperatures are expected for October, while precipitation should be below normal in the south and above in the north; a northeaster may bring heavy rain near the month's end.

Nov. 1986: Temp. 43.5° (1° below ave.); Precip. 2.5″ (2″ below ave.; 1″ above inland). 1-2 Rain, seasonably cold. 3-5 Clearing. 6-10 Rain, milder. 11-13 Warm, rain. 14-17 Turning cold, rain & snow north, showers south. 18-21 Cold, snow north, sleet south. 22-25 Sunny & mild. 26-28 Snowstorm, cold. 29-30 Clear, warm.

Dec. 1986: Temp. 29.5 °(4° below ave.); Precip. 1.5″ (3″ below ave.; 2″ below north). 1-2 Turning cold, flurries. 3-5 Cloudy, cold. 6-9 Seasonable; sprinkles & flurries. 10-11 Snow north, sleet south. 12-16 Clear, mild; then cold, light snow. 17-20 Severe cold, flurries. 21-23 Cloudy, milder. 24-26 Sunny; snow north. 27-29 Cold. 30-31 Snow north, rain south; mild.

Jan. 1987: Temp. 30° (0.5° above ave.; 2° above inland); Precip. 2″ (2″ below ave.; 1″ below north). 1-3 Sunny, cold. 4-6 Seasonable. 7-9 Clear north, rain south. 10-13 Snowstorm, cold. 14-17 Clear; flurries north. 18-21 Turning cold, snow south. 22-26 Sunny, milder. 27-29 Cold, snow. 30-31 Mild; rain, snow north.

Feb. 1987: Temp. 29.5° (1.5° below ave.); Precip. 2.5″ (1″ below ave.; 1″ above north). 1-5 Rain changing to snow. 6-9 Clear & cold. 10-13 Mild then cold; light snow. 14-16 Snowstorm, very cold. 17-22 Milder, sleet. 23-25 Severe cold. 26-28 Milder; rain, snow mountains.

Mar. 1987: Temp. 35° (3.5° below ave.); Precip. 3″ (1″ below ave.; ave. central). 1-4 Seasonable; sunny then rain, snow north. 5-10 Cold, flurries. 11-13 Milder; rain, snow north. 14-16 Clear, cold. 17-20 Mild; rain, snow north; then cold. 21-23 Seasonable; rain, snow mountains. 24-28 Cold, snowstorm. 29-31 Clear, mild.

Apr. 1987: Temp. 44.5° (4° below ave.); Precip. 4.5″ (1″ above ave.). 1-4 Cold, rain & sleet, snow mountains. 5-6 Seasonable, sunny. 7-10 Very cold. 11-13 Milder, rain south. 14-16 Rain, turning colder. 17-21 Very cold, then rain. 22-28 Alternately clear & mild, then cloudy, cold. 29-30 Rain, unseasonably cold.

May 1987: Temp. 61.5° (3° above ave.; 5° above inland); Precip. 1.5″ (1.5″ below ave.). 1-2 Cloudy, cool. 3-5 Clear & warm. 6-10 Sprinkles, then clear & very warm. 11-13 Rain, seasonable. 14-19 Rain north, sprinkles south, warm. 20-25 Clear & warm south, rain north. 26-28 Rain, cool. 29-31 Clearing, hot.

June 1987: Temp. 67.5° (0.5° below ave.; 0.5° above north); Precip. 6″ (3″ above ave.; 0.5″ above west). 1-4 Clear, hot. 5-7 Rain, cool. 8-10 Clear, warm south, rain north. 11-13 Sprinkles, mild. 14-16 Rain, warm. 17-18 Clear, cooler. 19-22 Rain, hot. 23-27 Thunderstorms, cool; then clearing. 28-30 Showers, cool.

July 1987: Temp. 75.5° (2° above ave.); Precip. 1.5″ (1″ below ave.; ave. north). 1-3 Clear & hot. 4-7 Seasonable. 8-10 Showers, warmer. 11-13 Sunny & hot. 14-17 Thunderstorms, warm. 18-20 Showers. 21-23 Cooler. 24-26 Rain. 27-28 Sunny, warm. 29-31 Rain, heavy west.

Aug. 1987: Temp. 74° (2° above ave.; 4° above inland); Precip. 2″ (1.5″ below ave.). 1-4 Thunderstorms, cool. 5-9 Showers coast, sunny & hot inland. 10-12 Partly cloudy, seasonable. 13-15 Clearing, turning hot. 16-20 Clear, very hot. 21-23 Thunderstorms, cooler. 24-26 Sunny & warm. 27-31 Mild, showers.

Sept. 1987: Temp. 65.5° (1° above ave.; 3° above west); Precip. 5″ (2″ above ave.; ave. west). 1-2 Clear, seasonable. 3-7 Showers; seasonable. 8-11 Partly cloudy, showers. 12-16 Sunny & pleasant. 17-19 Possible hurricane near coast. 20-23 Clear & warm, then showers, cooler. 24-26 Rain, warm. 27-30 Cloudy, cool.

Oct. 1987: Temp. 54.5° (Ave.); Precip. 2.5″ (1″ below ave.; ave. inland). 1-3 Rain, seasonably cool. 4-9 Sunny & cool, cold nights. 10-14 Mild, showers south, rain north. 15-17 Clear & pleasant. 18-20 Cold, rain, snow mountains. 21-23 Clear, mild. 24-26 Northeaster, cold. 27-31 Sunny & mild, then rain & cold.

2. GREATER NEW YORK-NEW JERSEY

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter will be slightly colder than normal with below-normal precipitation and snowfall. Fairly severe cold spells at mid November through December should make this a cold period, but with below-average precipitation because of few heavy storms. A milder than usual January and February may be created by warm spells at the beginning and end of both months. A major storm, however, may develop the second week of January, bringing precipitation well above normal. Little snowfall and rainfall are expected in February despite snowstorms after mid month. March is expected to be cold and stormy, with several severe cold waves and snowstorms.*

Spring may be slightly cooler and drier than normal overall, despite a cold, wet, and snowy April, because of unseasonably warm, dry spells during May and early June. Thereafter, cooler and wetter weather should set in for the balance of the season.

A warmer than normal summer is anticipated, with alternating warm and mild periods, until the arrival of a hot spell in mid August. Below-normal rainfall is expected through July, and this condition will persist in northern sections through August and into September, resulting in drought conditions. Watch for an offshore hurricane just after mid September to bring copious rains to the whole region.

Moderately heavy showers should bring near-normal rainfall during the early fall, with alternating cool spells through October.

Nov. 1986: Temp. 45°(2° below ave.); Precip. 3″(1″ below ave.). 1-2 Rain, cold. 3-5 Sunny, mild. 6-7 Rain, colder. 8-11 Sunny, warming, then showers. 12-13 Rain, mild. 14-17 Cold, flurries inland. 18-20 Clearing, seasonable. 21-22 Cold, sleet. 23-25 Sunny, mild. 26-27 Cold, freezing rain, snow. 28-30 Clearing, mild.

Dec. 1986: Temp. 33°(3° below ave.); Precip. 1.5″(2″ below ave.). 1-4 Cloudy, unseasonably cold. 5-9 Sunny & mild. 10-11 Light rain. 12-14 Sunny, warm. 15-17 Cold, light snow. 18-21 Cloudy, very cold. 22-24 Sunny, seasonable. 25-29 Very cold wave, cloudy. 30-31 Heavy rain, snow inland; mild.

Jan. 1987: Temp. 32.5°(1° above ave.); Precip. 5″(2″ above ave.). 1-3 Sunny, very cold. 4-6 Seasonable. 7-10 Freezing rain, snow west. 11-14 Cold, sunny. 15-18 Sunny, seasonably cold. 19-20 Light snow. 21-26 Cloudy, milder. 27-29 Light rain. 30-31 Sunny, quite warm.

Feb. 1987: Temp. 33°(Ave.); Precip. 2″(1″ below ave.). 1-2 Warm, light rain. 3-5 Cloudy, colder; then flurries. 6-8 Gradual clearing, seasonable. 9-11 Sunny, mild. 12-14 Cloudy & cold. 15-18 Snowstorm, cold then milder. 19-23 Heavy snowstorm, seasonable. 24-26 Cloudy, cold. 27-28 Clearing & mild.

Mar. 1987: Temp. 37.5°(3.5° below ave.); Precip. 6″(2″ above ave.). 1-3 Rain, seasonably cold. 4-8 Sunny, very cold. 9-11 Cold, light snow. 12-13 Heavy rain changing to snow; mild then cold. 14-16 Cloudy, very cold. 17-18 Heavy rain, snow mountains, seasonable. 19-23 Cloudy, then light rain. 24-26 Snowstorm, cold. 27-29 Milder, rain. 30-31 Sunny & mild.

Apr. 1987: Temp. 48°(4° below ave.); Precip. 5″(1.5″ above ave.). 1-4 Cold, intermittent rain. 5-7 Seasonable, showers. 8-10 Cold wave, then snowstorm. 11-15 Sunny & warm, scattered showers. 16-18 Seasonable, rain. 19-21 Heavy rain, cold. 22-25 Sunny & warmer. 26-28 Cold, light rain. 29-30 Heavy rain, milder.

May 1987: Temp. 64°(2.5° above ave.); Precip. 1.5″(2″ below ave.). 1-3 Heavy rain, cold. 4-6 Clear, unseasonably warm. 7-10 Partly cloudy, very warm. 11-13 Showers, seasonable. 14-17 Sunny, very warm 18-22 Intermittent showers, warm. 23-25 Mild, few showers. 26-27 Clear, very warm. 28-31 Light rain, very cool.

June 1987: Temp. 71°(Ave.); Precip. 3″(0.5″ below ave.). 1-5 Clear, very warm. 6-9 Sprinkles, turning cool. 10-13 Sunny, seasonable. 14-16 Thundershowers. 17-18 Clearing. 19-20 Showers, cool. 21-23 Sunny, hot. 24-26 Thunderstorms, cooler. 27-30 Sunny, then rain & cool.

July 1987: Temp. 77.5°(1° above ave.); Precip. 1.5″(2″ below ave.). 1-3 Clear & hot. 4-5 Scattered showers, seasonable. 6-8 Clear, hot. 9-11 Light showers, continuing hot. 12-15 Sunny, very warm. 16-18 Light rain, seasonable. 19-23 Showers, slightly cool. 24-26 Light rain, warming. 27-31 Sunny, very warm, few showers.

Aug. 1987: Temp. 76.5°(1° above ave.); Precip. 2.5″(1.5″ below ave.; 1″ above south). 1-3 Rain, very warm. 4-6 Partly cloudy, milder. 7-8 Rain, heavy south; warming. 9-12 Light showers, seasonable. 13-20 Clearing, turning hot. 21-23 Rain, cool. 24-27 Partly cloudy, seasonable, then light rain. 28-31 Sunny & mild.

Sept. 1987: Temp. 68°(Ave.); Precip. 6″(3″ above ave.). 1-2 Cloudy & mild. 3-5 Sunny, quite warm, sprinkles. 6-7 Showers, hot. 8-11 Intermittent sun & showers, seasonable. 12-16 Partly cloudy, mild. 17-19 Possible hurricane. 20-23 Cloudy, seasonable. 24-26 Light rain. 27-30 Sunny, quite cool.

Oct. 1987: Temp. 57°(0.5° below ave.); Precip. 3″(Ave.). 1-2 Clear & pleasant. 3-5 Light rain, cool. 6-10 Sunny, seasonable, then cool. 11-13 Scattered showers, warm. 14-16 Clear & mild. 17-19 Rain, turning cold. 20-23 Clear & warm. 24-26 Heavy rain, cold. 27-31 Clear, slightly warm, then light rain.

3. MIDDLE ATLANTIC COAST

For regional boundaries, see map page 63.

SUMMARY: *The late fall and winter are expected to be unusually cold and dry with below-normal snowfall, except in the north where it will be above normal. Cold snaps are anticipated around mid November and mid December; however, drier than usual conditions will persist until the arrival of a storm in late December. A thaw at the end of January will bring an otherwise cold month up to normal while warm spells will predominate in February. Following a storm early in January, light precipitation is anticipated until late February, when a cold, stormy period, lasting through March, will bring above-normal snowfall to northern sections.*

Spring is expected to start out late with a cold, wet April extending into early May. However, unseasonably warm periods should dominate the remainder of May's weather and continue during the first two-thirds of June. Heavy thundershowers and milder weather are then anticipated in northern and western sections, but drought conditions may develop in the southeast.

The summer is expected to have close to average temperatures overall. With the prospect of below-normal precipitation for July and August, drought conditions may extend into central and western sections. However, possible tropical storms in August and September may bring ample rain to the east.

Early fall is expected to have frequent cool, rainy periods interspersed with a few warm and sunny spells. Heavy rains associated with a weakening hurricane may occur in late October.

Nov. 1986: Temp. 47.5° (1° below ave.); Precip. 4.5″ (1.5″ above ave.; 1″ below south). 1-2 Cold, rain. 3-5 Sunny, mild; sprinkles north. 6-8 Rain, cool. 9-11 Clear & warm. 12-14 Rain, turning cold. 15-18 Cold, showers. 19-21 Sunny, seasonable. 22-24 Clear, warm. 25-27 Rain, cold; snow mountains. 28-30 Clearing, mild.

Dec. 1986: Temp. 37° (2° below ave.); Precip. 1.5″ (1.5″ below ave.). 1-5 Cloudy, cold; showers south. 6-8 Sunny & mild, sprinkles south. 9-11 Cloudy, seasonable; light rain. 12-14 Mild. 15-18 Rain & snow, seasonable. 19-21 Severe cold. 22-26 Sunny, turning mild. 27-31 Cold, freezing rain, then clearing.

Jan. 1987: Temp. 35° (Ave.); Precip. 3″ (Ave.). 1-3 Sunny, mild; then cold, snow. 4-6 Seasonable. 7-8 Storm, heavy snow mountains. 9-13 Cloudy, cold, intermittent snow. 14-18 Partial clearing, milder. 19-21 Rain, snow mountains. 22-25 Cloudy, seasonable. 26-28 Sunny, mild; light rain north. 29-31 Clear, very warm.

Feb. 1987: Temp. 39.5° (2° above ave.); Precip. 1.5″ (1″ below ave.). 1-2 Clear, very warm; showers west. 3-8 Cloudy, cold. 9-11 Sunny, warm. 12-14 Cloudy, cold; showers. 15-19 Cold snap, intermittent rain & snow. 20-23 Seasonable, rain south. 24-28 Intermittent rain, milder; then clear & warm.

Mar. 1987: Temp. 44° (2° below ave.); Precip. 3.5″ (Ave.). 1-4 Showers, heavy south. 5-7 Cold snap; heavy rain & snow south. 8-12 Sunny, then rain, sleet & snow. 13-15 Very cold, flurries. 16-18 Milder, heavy rain. 19-21 Clear, very warm. 22-25 Rain, then snow; cold. 26-27 Sunny, milder. 28-31 Rain, then sunny & warm.

Apr. 1987: Temp. 54° (2° below ave.); Precip. 3.5″ (0.5″ above ave.; 1.5″ above north). 1-4 Rain, cold. 5-7 Sunny, milder; rain north. 8-10 Snow, cold wave. 11-14 Sunny & warm, rain north. 15-17 Rain, mild. 18-21 Showers, seasonable. 22-25 Cloudy, cold; then clearing. 26-28 Cold, showers. 29-30 Thundershowers, warm.

May 1987: Temp. 70° (4° above ave.); Precip. 1.5″ (2″ below ave.). 1-3 Showers, cold. 4-9 Clear, unseasonably warm. 10-12 Heavy thunderstorms, light east; cool. 13-18 Sunny, very warm. 19-21 Scattered showers, hot. 22-25 Cloudy, cool; showers west. 26-27 Sunny, hot. 28-31 Thundershowers, mild; then clearing.

June 1987: Temp. 75° (Ave.); Precip. 3″ (0.5″ below ave.). 1-5 Clear & hot. 6-8 Rain west & north, scattered southeast; milder. 9-13 Sunny, showers. 14-16 Rain, mild. 17-19 Sunny & hot, then showers. 20-22 Clear, hot; showers west. 23-25 Rain, mild. 26-30 Cloudy, then showers.

July 1987: Temp. 79.5° (0.5° above ave.); Precip. 2.5″ (1.5″ below ave.). 1-3 Clear & hot. 4-7 Seasonable, showers south. 8-11 Clear, hot. 12-16 Partly cloudy, warm; showers west. 17-19 Heavy thunderstorms, milder. 20-22 Seasonable, sprinkles north. 23-25 Rain, mild. 26-31 Sunny, turning hot; scattered showers.

Aug. 1987: Temp. 77° (0.5° below ave.); Precip. 3″ (0.5″ below ave.; 2″ above southeast). 1-3 Showers, heavy north; hot. 4-5 Partly cloudy, seasonable. 6-8 Cloudy, mild; tropical storm east. 9-10 Clear, hot. 11-13 Thunderstorms, warm. 14-19 Variable clouds, hot. 20-23 Showers, scattered east; seasonable. 24-26 Sunny, mild. 27-31 Showers, then clear & mild.

Sept. 1987: Temp. 70° (1° below ave.); Precip. 5″ (2″ above ave.; 4″ above east). 1-2 Mild, light rain. 3-5 Sunny & warm. 6-12 Showers, very warm. 13-15 Sunny, mild. 16-18 Heavy rain; possible offshore hurricane. 19-21 Sunny, seasonable. 22-25 Rain, heavy west. 26-30 Partly cloudy, cool; scattered showers.

Oct. 1987: Temp. 56.5° (2.5° below ave.); Precip. 4″ (1″ above ave.). 1-2 Sunny & warm. 3-5 Rain, cool. 6-7 Clearing. 8-10 Showers, cool. 11-13 Sunny & warm; rain west. 14-16 Seasonable. 17-19 Rain. 20-23 Clearing. 24-26 Heavy rain, decaying hurricane; cold. 27-29 Clear, warm. 30-31 Cool, cloudy; showers west.

4. PIEDMONT & SOUTHEAST COAST

For regional boundaries, see map page 63.

SUMMARY: *Temperatures through the late fall and winter are expected to average warmer than normal overall, with above-normal precipitation and snowfall, except in the south. Alternating warm and cold spells are anticipated through November and early December; a cold period may then extend into late January. Frequent and prolonged warm spells should occur through February and March. Though minimal precipitation is anticipated through mid December, a sequence of storms from Christmas past mid January will bring above-normal precipitation to the Piedmont and eastern sections. Starting mid February, frequent and heavy precipitation is in the offing through March.*

Early spring through April is expected to be cool, with heavy rains bringing flooding to some sections, particularly in the Piedmont and east. May and June should be warm and quite dry, with prolonged hot spells bringing drought to central and eastern sections.

The summer should be cooler than normal in the Piedmont and the west, but near normal in the east. Through July and August, alternating mild and hot spells will occur before cool periods ensue late in the summer. Rainfall should be below normal in July, though central sections should experience heavy shower activity. Possible offshore tropical storms may cause heavy rains in early August and after mid September.

October should be cool and pleasant but watch for a possible tropical storm or hurricane moving inland toward the month's end.

Nov. 1986: Temp. 51° (Ave.; 2° below south); Precip. 1″ (2″ below ave.; 0.5″ below south). 1-2 Cloudy, cool; showers west. 3-5 Sunny, warm. 6-8 Seasonable, showers north. 9-11 Sunny, warm, showers east. 12-13 Heavy rain. 14-16 Cloudy, cold snap. 17-22 Partly cloudy, quite cool. 23-26 Clear, very warm. 27-28 Cold snap. 29-30 Clear, seasonable.

Dec. 1986: Temp. 44° (1° above ave.; 1.5° below east); Precip. 3″ (0.5″ below ave.). 1-4 Turning cold, rain east. 5-7 Sunny & mild. 8-11 Intermittent rain. 12-13 Sunny & warm. 14-16 Colder, showers central & north. 17-20 Very cold, snow. 21-25 Clear, mild. 26-28 Cold, cloudy. 29-31 Rain and sleet, snow mountains.

Jan. 1987: Temp. 40.5° (Ave.; 0.5° below south); Precip. 4.5″ (0.5″ above ave.; 1″ below west and south). 1-2 Rain. 3-5 Cloudy, cold. 6-7 Heavy rain, snow mountains. 8-11 Cloudy, seasonable. 12-14 Cold, snowstorm; rain southeast. 15-17 Sunny, seasonable. 18-20 Rain, cold. 21-24 Sunny, seasonable. 25-29 Clear, warming. 30-31 Warm; showers west.

Feb. 1987: Temp. 47° (4° above ave.); Precip. 5.5″ (1.5″ above ave.; 1″ below south). 1-5 Sunny, mild; showers northwest. 6-8 Cool; rain. 9-11 Sunny, mild; showers. 12-15 Rain, colder. 16-17 Cloudy, cold. 18-19 Rain & sleet, cold. 20-24 Rain, milder. 25-28 Sunny, mild; rain east.

Mar. 1987: Temp. 53° (2.5° above ave.); Precip. 8″ (3″ above ave.). 1-4 Rain, lighter southeast; mild. 5-7 Sunny, cold. 8-9 Clear & mild. 10-12 Heavy rain, turning cold. 13-15 Clearing, very cold. 16-18 Heavy rain, milder. 19-23 Sunny, very warm. 24-25 Heavy rain. 26-29 Turning cold, heavy rain. 30-31 Sunny, very warm.

Apr. 1987: Temp. 60° (0.5° below ave.; 2° below south); Precip. 6″ (3″ above ave.). 1-4 Rain, turning cold. 5-7 Sunny & warm. 8-10 Rain, light west; cold. 11-14 Clearing, warm. 15-17 Heavy rain, flooding. 18-19 Clearing, warm. 20-22 Rain, cool, then milder. 23-26 Showers. 27-28 Cloudy, seasonable. 29-30 Rain, cool.

May 1987: Temp. 72° (4° above ave.; 1° above south); Precip. 2.5″ (1″ below ave.). 1-2 Rain, heavy central; mild. 3-9 Sunny, quite warm north, milder south. 10-12 Heavy rain, cool. 13-19 Sunny, turning very hot. 20-26 Intermittent showers, continuing hot. 27-29 Sprinkles. 30-31 Showers, heavy west; warm.

June 1987: Temp. 80° (5° above ave.); Precip. 2.5″ (1″ below ave.). 1-3 Partly cloudy, few showers; hot. 4-6 Sunny, hot. 7-11 Showers west, scattered east; milder. 12-13 Clear & warm. 14-16 Sunny, hot; showers west. 17-23 Showers, very hot. 24-26 Showers, seasonable. 27-30 Sunny, very hot; showers east.

July 1987: Temp. 78° (0.5° below ave.; 2° below west); Precip. 8″ (4″ above ave.; 0.5″ below west). 1-2 Sunny, hot. 3-7 Mild, thundershowers. 8-12 Sunny & mild; showers southeast. 13-15 Heavy showers central & east, sprinkles west. 16-18 Showers, seasonable. 19-26 Thundershowers; mild. 27-31 Sunny, hot.

Aug. 1987: Temp. 77° (1° below ave.); Precip. 3″ (0.5″ below ave.). 1-5 Heavy showers central & west, light east; milder. 6-7 Possible tropical storm. 8-10 Sunny, seasonable. 11-13 Showers. 14-18 Sunny, warm; showers south. 19-23 Showers. 24-27 Cloudy, warming. 28-31 Showers central & east, turning cool.

Sept. 1987: Temp. 72° (Ave.); Precip. 4.5″ (1″ above ave.). 1-3 Cool, showers central & west. 4-11 Sunny, turning hot; few showers north. 12-15 Cool, showers east. 16-19 Heavy rain, tropical storm; warm. 20-22 Clear, warm. 23-25 Rain. 26-30 Partly cloudy, mild.

Oct. 1987: Temp. 62° (1° above ave.); Precip. 5.5″ (3″ above ave.; 0.5″ below west). 1-3 Sunny, warm. 4-5 Rain north & west, milder. 6-10 Clear, hot. 11-13 Showers, mild. 14-16 Sunny, cool. 17-18 Rain. 19-23 Clearing. 24-25 Possible tropical storm; cool. 26-31 Clear, warm.

5. FLORIDA

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter are expected to be variable statewide with northern sections warmer and wetter, and central and southern sections colder and drier than normal. Cold waves may occur mid November and before Christmas, the latter bringing frost to central sections. Below-normal precipitation is predicted, except in the south where heavy rains are expected in November. Cold and rainy periods are anticipated through most of January, but then a warm, dry period should extend from February through early March, bringing drought to some southern sections. Heavy rains may occur mid March in the north.*

Spring may begin warm and wet through April in central and northern sections except for a cold snap before mid month; less than normal rainfall is expected in the south. May should see heavy rains in the south but below-normal amounts in central and northern sections, with subnormal temperatures for the first half and above normal for the latter half of the month. The warm conditions should persist over the region in June.

Summer temperatures should be seasonable with alternating mild and hot spells. July may be a wet month statewide, but August may see a large variation in rainfall from very wet in the north to quite dry in the south. Drier than normal conditions are anticipated overall for September.

October should be warm overall, but watch for a possible tropical storm at the end of the month that may bring heavy rains to central and northern sections.

Nov. 1986: Temp. 63.5° (4° below ave.; 2° below north); Precip. 0.5″ (1″ below ave.; 2″ above south). 1-6 Clear, seasonably warm. 7-10 Partly cloudy; sprinkles. 11-13 Cold wave; showers, heavy north. 14-16 Clearing, cold. 17-19 Clear & mild. 20-23 Partly cloudy north, rain south. 24-26 Sunny & warm; showers south. 27-30 Cloudy, then clearing.

Dec. 1986: Temp. 59° (3° below ave.; 2° above north); Precip. 2″ (0.5″ below ave.). 1-3 Cooler, cloudier, rain. 4-6 Clear & cold. 7-14 Sunny, warm north; cloudy, showers south. 15-17 Cloudy, cooler. 18-20 Rain. 21-23 Cold, frost; clear. 24-28 Cloudy, mild. 29-31 Rain.

Jan. 1987: Temp. 56° (4° below ave.; ave. north); Precip. 3″ (1″ above ave.). 1-3 Light rain; turning cold. 4-6 Sunny, warming. 7-10 Rain, then clearing & cool. 11-13 Rain, turning cold. 14-16 Sunny, cold. 17-19 Rain, heavy north; mild. 20-22 Clearing, cold. 23-25 Sunny north; showers & cold south. 26-31 Cloudy south; sunny & warm central & north.

Feb. 1987: Temp. 64.5° (3° above ave.; 5° above north); Precip. 0.5″ (2″ below ave.). 1-3 Sunny, warm; cloudy south. 4-6 Clear & pleasant. 7-9 Rain, light south. 10-12 Sunny & warm. 13-15 Unseasonably warm; showers north. 16-19 Cold, then rain. 20-28 Clear, very warm central; cloudy, scattered showers north & south.

Mar. 1987: Temp. 70° (3° above ave.; 1° above south); Precip. 2.5″ (0.5″ below ave.; 3″ above north). 1-4 Clear, warm. 5-7 Cold, rain north. 8-10 Clear, very warm. 11-13 Cold, rain. 14-17 Clearing, then rain. 18-20 Sunny. 21-24 Showers, then sunny & warm. 25-31 Intermittent rain, heavy north.

Apr. 1987: Temp. 73° (1° above ave.); Precip. 5″ (3″ above ave.; 2″ below south). 1-2 Sunny, very warm. 3-5 Rain, milder. 6-10 Rain, light south; then cold. 11-13 Clear, warm. 14-17 Intermittent rain. 18-22 Sunny, warm; showers north. 23-25 Heavy rain north, scattered south. 26-30 Continued warm, showers; drought south.

May 1987: Temp. 75° (2° below ave.; 1° above north); Precip. 3″ (1″ below ave.; 1″ above south). 1-2 Showers, cool. 3-9 Cloudy, mild. 10-11 Rain, cool. 12-14 Partly cloudy, showers south. 15-17 Showers, heavy south; mild. 18-21 Showers, seasonable; sunny north. 22-27 Sunny, warm. 28-31 Showers, seasonable.

June 1987: Temp. 83° (2° above ave.; ave. south); Precip. 6″ (1.5″ below ave.; 5″ below south). 1-5 Sunny & seasonable south, showers north. 6-9 Clear & hot. 10-13 Showers. 14-18 Rain central & north, light south. 19-24 Hot, showers. 25-30 Sunny, few showers.

July 1987: Temp. 82° (0.5° below ave.); Precip. 11″ (3″ above ave.; 5″ above north). 1-5 Hot; rain. 6-10 Thundershowers, heavy north; milder. 11-14 Partly cloudy, hot; showers north. 15-18 Thundershowers. 19-24 Hot, thundershowers. 25-28 Cloudy, milder, showers. 29-31 Sunny north, showers south.

Aug. 1987: Temp. 83° (0.5° above ave.; 1° below south); Precip. 5″ (1″ below ave.; 3″ above north, 3″ below south). 1-3 Seasonable; showers. 4-9 Thundershowers, milder. 10-14 Rain north, cloudy south. 15-17 Showers, hot. 18-23 Intermittent showers. 24-28 Seasonably hot, light showers. 29-31 Showers, heavy north.

Sept. 1987: Temp. 82° (1° above ave.; 1° below south); Precip. 5″ (1″ below ave.). 1-3 Cloudy, milder, showers. 4-7 Turning hot, showers. 8-11 Clear, very hot. 12-16 Showers, heavy north; hot. 17-20 Sunny, seasonably hot. 21-24 Rain. 25-30 Intermittent showers; seasonable.

Oct. 1987: Temp. 74° (1° below ave.; 1° above north); Precip. 3″ (Ave.; 5″ above north). 1-3 Sunny & hot. 4-6 Showers. 7-11 Partly cloudy, warm. 12-14 Showers, heavy south, warm. 15-18 Cooler, showers. 19-22 Showers, mild. 23-25 Tropical storm offshore, heavy rain north. 26-31 Sunny, warm; showers south.

6. UPSTATE N.Y.-TORONTO AND MONTREAL

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter are expected to be colder and drier than normal, with above-average snowfall early and late in the season. Temperatures in November and December should be below average due to cold waves at the middle and ends of those months; snowstorms are anticipated at Thanksgiving and Christmas. A major snowstorm is expected early in January; thereafter, above-normal temperatures will alternate with cold snaps through to mid February. Frequent snowstorms after mid February will result in above-normal snowfall for central and western sections. Several cold snaps are expected in March, with above-normal snowfall and rainfall in central and southeastern sections.*

A cold and wet April will result in a late spring, but very warm spells are anticipated in May, extending into June. Ample rainfall is expected for the southwest in May, but the rest of the region may have below-normal precipitation until early June. Thereafter, above-average amounts are anticipated, particularly in eastern sections.

A much warmer, drier summer than usual is expected, especially during the first half of July and two thirds of August. Mild temperatures and heavy thundershowers are in the offing for the last third of August, particularly in western sections. These conditions should extend on through September but with warm spells early and late in the month.

Several cold spells are anticipated in October. Shower activity will be well distributed through the month though possibly on the light side in western sections.

Nov. 1986: Temp. 37.5° (2° below ave.); Precip. 3.5″ (0.5″ above ave.; 0.5″ below west). 1-3 Heavy rain, cold. 4-6 Clear, seasonable; mild west. 7-9 Cold & rainy. 10-11 Sunny, milder. 12-14 Heavy rain, mild. 15-17 Cold, showers & flurries. 18-21 Cold, snow. 22-24 Sunny, seasonable. 25-27 Cold, snow. 28-30 Clear, milder.

Dec. 1986: Temp. 23.5° (3° below ave.); Precip. 0.5″ (2.5″ below ave.). 1-4 Turning cold, flurries. 5-9 Cloudy, cold. 10-11 Rain, sleet & snow. 12-14 Seasonable. 15-18 Snow, heavier north; turning very cold. 19-23 Cold wave, flurries, then seasonable. 24-26 Snowstorm. 27-29 Cold wave. 30-31 Milder, sleet & snow.

Jan. 1987: Temp. 23° (2° above ave.); Precip. 1″ (1.5″ below ave.). 1-3 Cold, sunny. 4-6 Seasonable, flurries. 7-9 Cloudy, mild. 10-11 Snowstorm. 12-14 Cold, light snow. 15-19 Cold, flurries. 20-23 Clear, cold east, milder west. 24-28 Mild; cloudy, then rain & snow. 29-31 Sunny, cold; then mild, rain, snow mountains.

Feb. 1987: Temp. 23.5° (0.5° above ave.); Precip. 1.5″ (1″ below ave.; 0.5″ above west). 1-2 Rain & snow. 3-9 Cold; light snow west & north, clearing east. 10-13 Mild; sunny east, rain & snow west. 14-16 Snow, cold. 17-18 Seasonable. 19-22 Intermittent snow. 23-25 Cold. 26-28 Cloudy & mild, rain & snow west.

Mar. 1987: Temp. 30.5° (3° below ave.); Precip. 2.5″ (0.5″ below ave.). 1-4 Seasonable, mild west; rain & snow. 5-7 Turning cold, flurries. 8-11 Very cold; snowstorm, then clearing. 12-14 Cold wave, snowstorm. 15-17 Clearing, mild. 18-22 Cold, intermittent rain & snowstorm. 23-25 Severe cold, then snow. 26-27 Clearing, milder. 28-31 Rain, then clear & mild.

Apr. 1987: Temp. 42° (4.5° below ave.); Precip. 3.5″ (0.5″ above ave.; 1.5″ above west). 1-3 Seasonable, showers. 4-6 Rain & snow. 7-10 Cold, flurries. 11-12 Sunny, milder. 13-21 Turning cold; rain & snow. 22-24 Clearing, mild. 25-28 Cold, heavy rain. 29-30 Cloudy & cold.

May 1987: Temp. 62.5° (5° above ave.); Precip. 1.5″ (2″ below ave.; ave. west). 1-2 Cold, cloudy; sprinkles. 3-5 Sunny, mild. 6-9 Heat wave. 10-11 Very cold, rain west. 12-15 Milder, rain. 16-18 Sunny, warm. 19-21 Seasonable, showers. 22-25 Clearing, cold. 26-28 Rain, milder. 29-31 Warm, showers.

June 1987: Temp. 67.5° (1° above ave.); Precip. 6″ (3″ above ave.; 1″ above west). 1-5 Very warm, sunny. 6-8 Cloudy, cooler; rain west. 9-13 Very cool, showers. 14-16 Thundershowers. 17-19 Sunny. 20-23 Showers. 24-28 Thundershowers, cool. 29-30 Clearing, warm.

July 1987: Temp. 74° (2.5° above ave.); Precip. 1.5″ (1.5″ below ave.). 1-2 Clear & hot. 3-5 Seasonable, showers east. 6-8 Clear, warm. 9-11 Sunny, warm; showers east. 12-14 Sunny, hot. 15-18 Warm, thundershowers. 19-23 Cloudy, milder; showers east.. 24-26 Thunderstorms, cool. 27-31 Seasonable, scattered showers.

Aug. 1987: Temp. 73° (3° above ave.); Precip. 3″ (0.5″ below ave.; 1″ above west). 1-3 Thunderstorms. 4-8 Hot, clear. 9-12 Warm, showers. 13-16 Clear, hot. 17-19 Cloudy, showers north. 20-22 Thundershowers, cooler. 23-25 Sunny. 26-29 Showers, cool. 30-31 Sunny, warm.

Sept. 1987: Temp. 63° (2° above ave.); Precip. 4″ (0.5″ above ave.). 1-2 Seasonable east, heavy showers west. 3-5 Sunny, warm. 6-8 Showers, milder. 9-12 Very cool; showers, heavy west. 13-16 Clear & pleasant. 17-20 Heavy rain, warming. 21-23 Sunny, very warm. 24-27 Colder, rain, heavy north. 28-30 Sunny, cool.

Oct. 1987: Temp. 49.5° (1° below ave.); Precip. 3″ (Ave.; 1″ below west). 1-3 Cool; showers. 4-7 Clear, then cloudy & colder. 8-10 Sunny & warm. 11-13 Showers, cool. 14-16 Sunny, showers. 17-20 Turning cold, rain. 21-23 Clear & mild, showers north. 24-26 Cold, heavy rain. 27-28 Sunny, mild. 29-31 Showers, cold.

7. GREATER OHIO VALLEY

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter are expected to be milder and drier than usual, with above-normal snowfall early and late in the season, but below normal at other times. Temperatures should be variable through November and December but averaging colder than normal overall due to extended cold spells in the second half of each month. Mild periods are anticipated in late January and early and late in February, with a severe cold wave mid February. Storms are expected in early November, early January, and after mid February before the arrival of a cold, stormy March which may bring above-normal precipitation.*

Despite a cold, wet start to April, spring should be warmer than average, with above-normal precipitation in the east, but becoming drier than usual toward the west. Moderately heavy storms during April and the first half of May should bring ample precipitation to the region, but thereafter only light amounts are expected in central and western sections. Mid May could see a prolonged heat wave, but then mild and warm spells should alternate for the rest of the season.

Summer may be warmer and drier than normal with drought developing in central and western sections in July and early August. Relief is expected from thunderstorms the latter part of August and early September. Frequent heat waves are in the offing through early August, followed by a more prolonged one before cool spells arrive extending through September into early fall.

Below-normal precipitation may continue through September and October excepting eastern sections, where frequent rains may bring above-normal amounts.

Nov. 1986: Temp. 43.5° (1° below ave.); Precip. 1.5″ (1.5″ below ave.). 1-3 Showers, seasonable. 4-6 Rain, very warm. 7-9 Cold snap, clearing. 10-12 Rain, quite warm. 13-15 Cold wave, light freezing rain & snow. 16-18 Partly cloudy, cold. 19-20 Rain, seasonable; snow east. 21-26 Sunny, mild. 27-30 Cold, then warm.

Dec. 1986: Temp. 32.5° (2.5° below ave.); Precip. 1.5″ (1.5″ below ave.). 1-4 Turning cold, flurries east. 5-9 Cloudy, mild. 10-13 Rain, then showers. 14-16 Freezing rain & snow, seasonable. 17-20 Cold wave, flurries. 21-25 Sunny, seasonable; snow east. 26-29 Very cold, sunny. 30-31 Storm, freezing rain, snow.

Jan. 1987: Temp. 34° (3° above ave.); Precip. 2″ (1″ below ave.). 1-2 Storm ending, colder. 3-5 Some sun, cold. 6-11 Storm, rain & snow; then milder. 12-14 Cold. 15-18 Sunny, seasonable; flurries east. 19-22 Partly cloudy. 23-28 Intermittent rain, mild. 29-31 Sunny, warm.

Feb. 1987: Temp. 38° (4° above ave.); Precip. 3″ (0.5″ above ave.; 1″ below east). 1-2 Warm, rain. 3-5 Partly cloudy, mild. 6-8 Seasonable, light rain & snow. 9-11 Sunny & warm. 12-14 Seasonable. 15-17 Snowstorm, cold. 18-22 Milder, then light rain. 23-25 Clear & warm. 26-28 Heavy rain, warm.

Mar. 1987: Temp. 42° (1° below ave.); Precip. 6″ (2″ above ave.). 1-3 Rain, mild. 4-6 Cold, snow. 7-8 Clear, warm. 9-13 Heavy rain, snow east; seasonably cold. 14-16 Cold snap. 17-20 Mild, rain, then clearing. 21-25 Storm, freezing rain & snow, turning cold. 26-27 Clearing, warming. 28-31 Rain, then clear & warm.

Apr. 1987: Temp. 53° (2° below ave.); Precip. 5″ (1.5″ above ave.). 1-4 Heavy rain, cold. 5-10 Clear, seasonable; then severe cold wave, snow. 11-17 Mild, intermittent heavy rain. 18-21 Cloudy, colder, light rain. 22-25 Sunny & warm. 26-30 Heavy rain, turning colder.

May 1987: Temp. 69° (5° above ave.); Precip. 3.5″ (0.5″ below ave.). 1-2 Rainy & cold. 3-5 Clear, very warm. 6-8 Showers, turning cold west; warm east. 9-11 Rainstorm, cold snap. 12-15 Warming, then showers. 16-20 Sunny & hot, showers east. 21-23 Rain, showers west. 24-26 Hot, showers. 27-31 Thundershowers.

June 1987: Temp. 76° (4° above ave.); Precip. 1″ (3″ below ave.; 1.5″ above east). 1-4 Sunny & hot, few showers. 5-8 Thundershowers, hot. 9-12 Cold, showers east. 13-15 Rain east, showers west; seasonable. 16-23 Showers, hot. 24-30 Showers, heavy east; seasonable.

July 1987: Temp. 79° (3° above ave.); Precip. 2.5″ (1.5″ below ave.). 1-3 Clear, very hot. 4-8 Partly cloudy, seasonable. 9-16 Sunny, very hot; few sprinkles. 17-19 Heavy thundershowers, seasonably warm. 20-22 Sunny, hot west, warm east. 23-26 Heavy showers & mild east; sunny, hot west. 27-31 Clear, hot; then showers.

Aug. 1987: Temp. 77° (2° above ave.); Precip. 2″ (1″ below ave.). 1-3 Rain, seasonably warm. 4-8 Sunny & hot. 9-11 Thundershowers east, light west; milder. 12-18 Clearing, turning very hot. 19-23 Intermittent showers, locally heavy; milder. 24-25 Clear, hot. 26-28 Thundershowers, cool. 29-31 Clearing, then thundershowers.

Sept. 1987: Temp. 67.5° (1° below ave.); Precip. 1.5″ (1.5″ below ave.). 1-2 Heavy rain, cool. 3-6 Sunny & warm, then rain. 7-8 Sunny, hot. 9-11 Turning cool, locally heavy showers. 12-14 Sunny, seasonable. 15-18 Increasing clouds, rain; mild. 19-23 Clear, very warm. 24-27 Rain east, showers west; cool. 28-30 Clear & warm.

Oct. 1987: Temp. 57° (Ave.); Precip. 1.5″ (1″ below ave.; 1″ above east). 1-4 Sunny, warm; then heavy rain, cool. 5-7 Sunny, cool. 8-11 Rain, quite warm. 12-14 Cold wave, then rain. 15-17 Sunny, seasonably cool. 18-19 Showers, cold. 20-23 Clear & warm. 24-26 Cloudy, rain east; cold. 27-30 Sunny, turning warm.

8. DEEP SOUTH

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter should be milder and considerably drier than normal, with below-normal snowfall during the first half of the season and above the second half. Cold spells will alternate with warm ones through mid December, but from then through mid January cold weather should predominate until the arrival of an unseasonably warm period that may last through mid February. Alternating cold and warm spells should then be the pattern through the end of March. Watch for a severe cold wave after mid December and again at mid month in January, February, and March. Snowstorms are possible near mid January and in the north at mid February.*

Spring should be warm and quite wet in the southern section and near average in the north. April through early May is expected to be cool and wet, with heavy rains in the northwest and south causing serious floods. Mid May through June will be warmer, sunnier, and drier than normal.

Summer will be much drier than normal, although frequent rains through August should bring above-normal amounts to southern sections for that month. Temperatures should range from near normal in the north to above normal in the south, with few extreme departures. Following warm rains early in October and a fairly severe cold wave at mid month, generally clear and pleasant Indian summer-like weather will prevail.

Nov. 1986: Temp. 54° (1° below ave.); Precip. 2.5″ (1.5″ below ave.). 1-5 Warm, increasing clouds. 6-7 Rain, light south. 8-9 Clear, pleasant. 10-12 Rain, heavy south, cold wave. 13-15 Partly cloudy, very cold. 16-18 Sunny, mild. 19-21 Cold snap, showers. 22-25 Clear, very warm. 26-30 Sunny, seasonable.

Dec. 1986: Temp. 48.5° (Ave.; 2° below north); Precip. 4″ (1.5″ below ave.). 1-4 Cold snap; showers south. 5-8 Mild, showers. 9-11 Rain, warm. 12-15 Sunny, then rain, cool. 16-17 Clear, colder. 18-20 Severe cold wave, snow & sleet. 21-26 Clear & mild. 27-31 Cold wave, heavy rain, sleet north.

Jan. 1987: Temp. 46° (Ave.; 1° above north); Precip. 4″ (1.5″ below ave.). 1 Storm ending, cold. 2-4 Clearing, seasonable. 5-7 Heavy rain. 8-10 Sunny, cold. 11-13 Severe cold wave, snowstorm. 14-16 Clear, cold. 17-19 Cold snap, heavy snow north, rain south. 20-29 Sunny, warm. 30-31 Rain.

Feb. 1987: Temp. 53° (4° above ave.); Precip. 5.5″ (1″ above ave.; 2″ above north). 1-2 Rain south; warm. 3-5 Clear, mild. 6-7 Rain central. 8-10 Clear & warm. 11-13 Rain, heavy north. 14-16 Cloudy, cold. 17-19 Very cold, snow north, rain south. 20-22 Rain, milder. 23-28 Rain, warm.

Mar. 1987: Temp. 59° (3° above ave.); Precip. 6.5″ (0.5″ above ave.). 1-4 Heavy rain, light south; warm. 5-6 Cloudy, cool. 7-11 Showers, warm. 12-14 Cloudy & cold. 15-17 Light rain, mild. 18-20 Clear, hot. 21-23 Rain, heavy northwest; warm. 24-26 Cold wave; heavy rain. 27-28 Rain, heavy south, milder. 29-31 Clear, very warm.

Apr. 1987: Temp. 64° (1° below ave.; 2.5° below north); Precip. 9″ (3″ above ave.). 1-3 Heavy rain, seasonable. 4-6 Cold then mild. 7-8 Rain, cold. 9-12 Sunny, warm. 13-16 Heavy rain. 17-19 Cloudy, cool. 20-22 Rain south & east; mild. 23-25 Rain. 26-27 Cloudy, warm. 28-30 Rain, heavy northwest.

May 1987: Temp. 73° (0.5° above ave.); Precip. 5.5″ (0.5″ above ave.; 2″ below north). 1-2 Rain, heavy south; mild. 3-5 Seasonable. 6-9 Heavy rain, cool. 10-12 Clearing, milder. 13-15 Sunny, hot; showers north. 16-24 Clear. 25-28 Rain, heavy south; warm. 29-31 Hot; showers, moderate south.

June 1987: Temp. 82° (3° above ave.); Precip. 1.5″ (1.5″ below ave.; 0.5″ below north). 1-4 Showers, hot. 5-8 Sunny, warm. 9-11 Mild; showers north. 12-16 Rain north, then clearing; showers south. 17-19 Rain, hot. 20-23 Sunny. 24-27 Showers, then clear & hot. 28-30 Scattered rain.

July 1987: Temp. 83° (1° above ave.; ave. north); Precip. 1.5″ (3″ below ave.). 1-5 Sunny & hot, showers east. 6-9 Showers central & south; seasonable. 10-13 Turning hot, showers east. 14-16 Showers, hot. 17-23 Clear & hot, thundershowers east. 24-26 Showers, mild. 27-30 Sunny. 31. Rain northwest.

Aug. 1987: Temp. 82° (1° above ave.); Precip. 5″ (1″ above ave.; 1″ below north). 1-2 Rain, seasonable. 3-5 Sunny; showers south. 6-8 Cloudy, seasonable. 9-11 Showers, heavy south & east; hot. 12-15 Cloudy, warm. 16-19 Moderate rain. 20-23 Partly cloudy, hot. 24-27 Clear, warm. 28-31 Showers.

Sept. 1987: Temp. 77.5° (1° above ave.; 0.5° below north); Precip. 2″ (1.5″ below ave.). 1-5 Heavy rain, mild. 6-9 Sunny, hot. 10-11 Showers, cooler. 12-14 Clearing, mild. 15-17 Showers, heavy east; mild. 18-23 Sunny & hot. 24-27 Partly cloudy, showers east, clearing. 28-30 Cloudy, warm.

Oct. 1987: Temp. 66° (1° above ave.; ave. north); Precip. 1.5″ (1″ below ave.; 2″ above north). 1-3 Mild, showers north. 4-5 Heavy rain. 6-9 Sunny & warm. 10-13 Showers, cold. 14-16 Partly cloudy, cold. 17-18 Sunny, rain north. 19-24 Clear & pleasant. 25-27 Seasonable; showers north. 28-31 Indian summer-like.

9. CHICAGO & SOUTHERN GREAT LAKES

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter will be milder and drier than normal, with below-normal snowfall despite heavy late-season snowstorms. Cold waves near mid November and late December will bring colder than normal weather, but a mild January and first part of February are anticipated. Little precipitation is in the offing following an early November storm until the end of January, resulting in well-below-normal snowfall and some drought conditions. From mid February through March, however, frequent cold waves and snowstorms are expected.*

Spring will be warmer and much wetter than normal over most of the region, with the northwest being close to normal. April should continue the cold and wet weather of March, while May and June are expected to have quite warm periods alternating with cool ones, with heat waves in June. Frequent shower activity should continue.

Summer will be warmer than normal, particularly in the east, with much less rainfall than usual. Drought may exist over the region until late in August. Alternating warm and cool periods with more frequent shower activity should occur through September, although only southwestern sections may have heavy enough rainfall to bring monthly totals above normal.

Alternately warm and cool periods, with some shower activity, during the first part of October should be followed by Indian summer-like weather.

Nov. 1986: Temp. 37.5° (3° below ave.); Precip. 1.5″ (0.5″ below ave.). 1-3 Light showers, seasonable. 4-6 Rain. 7-8 Cloudy, cold. 9-12 Heavy rain, seasonably mild. 13-17 Cold wave, light snow. 18-20 Very cold, moderate snowstorm. 21-24 Sunny, mild. 25-27 Cloudy, cold, flurries. 28-30 Clear, mild.

Dec. 1986: Temp. 27° (2° below ave.); Precip. 0.5″ (2″ below ave.). 1-4 Cold wave, flurries. 5-9 Sunny, turning mild. 10-12 Freezing rain, then showers. 13-15 Sunny, cold. 16-19 Severe cold wave, light snow. 20-25 Clear, slightly mild. 26-28 Very cold wave, flurries. 29-31 Sunny, mild; then snow.

Jan. 1987: Temp. 32° (5° above ave.); Precip. 1″ (1″ below ave.). 1-2 Clearing, cold. 3-6 Seasonable. 7-10 Mild, rain & snow. 11-14 Cold snap, flurries. 15-17 Flurries; cold. 18-22 Sunny & mild. 23-26 Sprinkles, then clearing. 27-28 Light rain. 29-31 Warm spell, heavy rain.

Feb. 1987: Temp. 30° (2.5° above ave.); Precip. 1.5″ (Ave.). 1-3 Mild; sprinkles east. 4-8 Cloudy, freezing rain. 9-11 Mild, sunny; light rain east. 12-16 Cold wave, snowstorm. 17-22 Clearing, cold; then snow. 23-25 Clear, cold. 26-28 Mild; rain.

Mar. 1987: Temp. 35° (2° below ave.); Precip. 4″ (1″ above ave.) 1-2 Very warm; rain, heavy east. 3-7 Cloudy & cold, light snow. 8-11 Rain & snow, moderately heavy west. 12-14 Snow, very cold. 15-16 Clear, warm. 17-22 Heavy rain south, with snow north, cold. 23-27 Cold wave, sleet. 28-31 Rain, cold.

Apr. 1987: Temp. 43° (4.5° below ave.); Precip. 4″ (Ave.; 2″ above southwest). 1-5 Cold, light snow; then sunny, seasonable. 6-11 Very cold, light snow; then sunny, mild. 12-17 Heavy rain, very heavy southwest. 18-21 Cold, rainy. 22-25 Sunny, seasonable; showers south. 26-30 Cool; heavy rain, light east.

May 1987: Temp. 63° (2.5° above ave.); Precip. 3.5″ (0.5″ above ave.). 1-4 Clearing, turning very warm. 5-7 Rain, warm. 8-10 Cold wave; showers, heavy east. 11-14 Unseasonably cold, then rain. 15-20 Sunny, very warm, few showers. 21-25 Cold & rainy, then clearing. 26-30 Very warm; rain, locally heavy.

June 1987: Temp. 73.5° (3° above ave.); Precip. 4″ (Ave.). 1-4 Sunny & hot, light showers. 5-7 Heavy thundershowers. 8-12 Sunny, hot; then very cool, cloudy. 13-15 Thundershowers, heavy west. 16-20 Sunny, hot, scattered showers. 21-24 Showers, heavy west, milder. 25-30 Scattered thundershowers, hot.

July 1987: Temp. 75.5° (0.5° above ave.; 2° above east); Precip. 2″ (2″ below ave.). 1-2 Sunny, very hot; showers west. 3-5 Cloudy, seasonable. 6-10 Clear & hot. 11-15 Cloudy, sprinkles. 16-18 Heavy rain, warm. 19-21 Clear. 22-25 Partly cloudy, showers; milder. 26-28 Clear, hot. 29-31 Warm; showers, heavy west.

Aug. 1987: Temp. 74° (0.5° above ave.; 2.5° above east); Precip. 1.5″ (2″ below ave.). 1-3 Showers, milder. 4-8 Clear, hot. 9-11 Warm; sprinkles, moderate rain east. 12-19 Heat wave, mostly clear, some sprinkles. 20-22 Heavy thunderstorms, mild. 23-25 Sunny, warm. 26-28 Showers, cool. 29-31 Cloudy & very cool.

Sept. 1987: Temp. 66° (Ave.; 1° above east); Precip. 2″ (1″ below ave.). 1-3 Moderately heavy rain, mild. 4-6 Heavy rain, very warm. 7-9 Cloudy, turning cool. 10-12 Rain. 13-15 Clear, warm. 16-18 Heavy rain, cool west. 19-24 Clear, very warm, few showers. 25-27 Showers, cool. 28-30 Clear, warm.

Oct. 1987: Temp. 53.5° (1° below ave.); Precip. 1.5″ (1″ below ave.). 1-3 Heavy rain, hot. 4-5 Sunny, seasonable. 6-8 Heavy rain, cool. 9-11 Sunny, very warm, then rain. 12-15 Cloudy, cool, showers. 16-18 Clear, warm, then cloudy. 19-21 Clear, warm. 22-26 Partly cloudy, cool. 27-31 Sunny, warm, then rain.

10. NORTHERN GREAT PLAINS-GREAT LAKES

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter will be considerably milder and drier than normal in the eastern half of the region and milder and wetter in the western half, with below-normal amounts of snow despite heavy snowfalls late in the season. Watch for a snowstorm and prolonged cold wave in the central part near mid November, including snow in the Black Hills. Milder and drier than normal conditions, with little snow, will extend from the latter part of November until mid February, except for cold waves during the latter half of December and in mid January. Thereafter, however, cloudy, cold, and snowy weather is anticipated for the balance of the season.*

Spring should be near normal in the western part except for below-normal snowfall, while the eastern half should be slightly milder and considerably wetter than normal. After a drier-than-normal April, frequent rains are anticipated through May and June, with the danger of flooding in the eastern half of the region.

Summer temperatures should average close to normal in the eastern half, with a cool July, warm August and normal September, while the western half should have more periods of cooler-than-normal weather. Frequent and heavy rains are anticipated for the western half through July and August, but lighter amounts for the southeast. Heavy rains in early July and early September may bring above-normal amounts to the northeast.

Following several cold spells with light precipitation in the first half of October, Indian summer-like weather should prevail.

Nov. 1986: Temp. 30° (3° below ave.; 1° below west); Precip. 2″ (0.5″ above ave.). 1-2 Clear, mild. 3-7 Cold wave, rain & snow, then clearing. 8-9 Seasonable; rain, light east. 10-12 Snowstorm, heavy central; very cold. 13-21 Sunny, cold; snow east. 22-27 Clear, mild. 28-30 Seasonable, light snow.

Dec. 1986: Temp. 22° (2.5° above ave.); Precip. 0″ (1″ below ave.). 1-3 Cold snap, flurries. 4-7 Sunny, mild; then seasonable, flurries west. 8-12 Mild, light snow. 13-15 Clear, mild. 16-19 Severe cold snap; snow, heavy northeast. 20-23 Sunny, mild. 24-27 Very cold, flurries; snow northeast. 28-31 Sunny, mild, then snow.

Jan. 1987: Temp. 19° (8° above ave.); Precip. 0.3″ (0.5″ below ave.; 0.5″ above south). 1-3 Seasonable, flurries east. 4-7 Sunny, very mild. 8-10 Cold snap; snow, heavy east. 11-13 Clear, cold. 14-16 Mild, flurries; then cold. 17-21 Sunny, mild. 22-27 Partly cloudy, mild; sprinkles south. 28-31 Heavy rain, then snow north.

Feb. 1987: Temp. 20° (2.5° above ave.; 3° below south); Precip. 0.5″ (0.5″ below ave.; 0.5″ above south). 1-2 Storm ending. 3-7 Snow east, seasonable west. 8-11 Mild, rain & snow south. 12-14 Cold, snow. 15-17 Clear, very cold. 18-21 Milder, light snow. 22-24 Sunny, mild. 25-28 Snow, clearing; cold south.

Mar. 1987: Temp. 28° (1° below ave.; 3° below south); Precip. 1.5″ (Ave.). 1-2 Snowstorm, heavy southeast. 3-6 Cloudy, snow west. 7-9 Light snow, sunny west. 10-12 Cold wave, blizzard. 13-17 Very cold, flurries, then mild. 18-21 Cold, heavy snow. 22-27 Clearing, seasonable. 28-31 Cold, snow.

Apr. 1987: Temp. 42° (4° below ave.); Precip. 1.5″ (0.5″ below ave.). 1-3 Cold, snowstorm. 4-6 Cold; snow. 7-11 Clearing, warming. 12-14 Cool, rain. 15-17 Sunny, mild. 18-20 Cold, rain & snow. 21-24 Sunny, cool. 25-27 Cold, rain & snow. 28-30 Heavy snow south & east.

May 1987: Temp. 61° (2.5° above ave.); Precip. 5″ (2″ above ave.). 1-5 Sunny, warm; rain west. 6-9 Cold wave; heavy rain, light west. 10-14 Sunny, warming. 15-17 Warm, heavy rain. 18-21 Showers. 22-24 Rain, cool. 25-27 Showers, warm. 28-31 Very warm; rain, heavy west.

June 1987: Temp. 71.5° (2.5° above ave.; ave. west); Precip. 6″ (2″ above ave.; ave. west). 1-3 Sunny & hot. 4-6 Heavy showers. 7-10 Heavy rain, cold west. 11-15 Cool, showers. 16-18 Heavy rain, warm. 19-21 Scattered showers. 22-24 Heavy rain, cool. 25-27 Sunny & warm, showers west. 28-30 Hot, rain east.

July 1987: Temp. 72° (1° below ave.); Precip. 4.5″ (1″ above ave.). 1-2 Rain, heavy north & west; cool. 3-7 Sunny, warm; then rain central. 8-10 Mild, showers central. 11-14 Cool; showers, heavy central. 15-17 Rain, heavy east. 18-21 Partly cloudy, mild, showers west. 22-24 Showers, cool. 25-27 Sunny, warm. 28-31 Showers, heavy south.

Aug. 1987: Temp. 72° (1° above ave.); Precip. 2″ (1.5″ below ave.; 1.5″ above west). 1-3 Showers, mild; sunny, warm west. 4-7 Sunny, hot; showers west. 8-10 Rain, heavy central. 11-14 Heat wave, rain, heavy north. 15-18 Sunny, milder. 19-21 Rain. 22-25 Sunny, warm. 26-29 Showers. 30-31 Cool, rain central.

Sept. 1987: Temp. 61° (0.5° above ave.); Precip. 2.5″ (Ave.). 1-3 Showers, cool. 4-6 Rain, warm. 7-11 Sunny, then rain south. 12-14 Clear, warm. 15-17 Rain, cool. 18-22 Clear, warm; then showers. 23-25 Rain, mild. 26-28 Cool, rain south. 29-30 Clear, warm.

Oct. 1987: Temp. 49° (0.5° below ave.); Precip. 0.5″ (1″ below ave.). 1-4 Rain, cool; then clearing. 5-6 Cold snap, rain. 7-9 Partly cloudy, cool. 10-12 Heavy rain, cold; sunny west. 13-15 Showers, cool. 16-22 Sunny, showers. 23-27 Sunny, warm. 28-31 Warm, sprinkles.

11. CENTRAL GREAT PLAINS

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter will be milder and drier than normal over most of the region, with the southeastern part being especially dry, but the southwest considerably wetter. Following a cold wave and blizzard during the early part of November, below-normal snowfall is anticipated in the northwest through January, with a winter drought in some sections. Southern and eastern sections may see heavy storms near mid December and in early January. Mild weather is anticipated much of the time from late November through mid February, but then cloudy, cold, and wet periods are expected on through March, with above-normal snowfall.*

Spring should be colder than normal over central and western sections, but milder in the east, with above-normal precipitation. Much of April and the first half of May will be colder and wetter than normal, with some flooding. The balance of the season will be warmer than normal, except near mid June.

Summer is expected to be cooler and drier than normal over much of the region, although western sections may receive above-normal rainfall. A brief heat wave may occur about mid August. Heavy shower activity may occur in the west in early July and over the region at the end of August, with generally lighter than normal amounts the rest of the season.

October should have several cool and wet spells in the first half of the month before an Indian summer-like latter half.

Nov. 1986: Temp. 35.5° (3° below ave.; 0.5° above south); Precip. 1″ (0.5″ below ave.; 1″ below west). 1-2 Sunny, cool. 3-4 Rain; cold north. 5-9 Cloudy, cold, then milder. 10-12 Blizzard, very cold. 13-16 Clearing, milder. 17-19 Cool, sprinkles. 20-25 Sunny, mild. 26-30 Cloudy, cold; rain & snow west.

Dec. 1986: Temp. 27° (1° above ave.; 1° below south); Precip. 0.5″ (0.5″ below ave.; 1″ above southwest). 1-3 Cold, flurries; sunny south. 4-8 Sunny, mild; snowstorm west. 9-11 Rain & snow. 12-14 Rain south, snow west. 15-20 Severe cold, snow. 21-24 Sunny, mild. 25-28 Cold snap, clear. 29-31 Sunny, mild, then snow.

Jan. 1987: Temp. 27° (8° above ave.; 3° above south); Precip. 1.5″ (0.5″ above ave.; 1″ below southeast). 1-2 Cold; snowstorm south. 3-5 Sunny, seasonable. 6-9 Cold south; rain. 10-12 Cold wave, snow. 13-16 Sunny, cool. 17-20 Clear & mild. 21-28 Sunny, mild. 29-31 Snowstorm, heavy northwest.

Feb. 1987: Temp. 27.5° (3° above ave.); Precip. 0.5″ (0.5″ below ave.). 1-2 Sunny, cooler. 3-6 Seasonable; then rain southeast. 7-12 Sunny, mild; few showers. 13-15 Cold wave, snowstorm. 16-22 Cold, snow. 23-26 Sunny, then rain & snow. 27-28 Clear, mild.

Mar. 1987: Temp. 34.5° (1° below ave.); Precip. 2.5″ (Ave.; 1.5″ above south). 1-2 Mild, rain. 3-5 Cloudy, cold; rain south. 6-7 Sunny, mild. 8-14 Storm, snow west; cold. 15-16 Sunny, mild. 17-22 Colder, rain & snow. 23-27 Sunny, then snowstorm, heavy west. 28-31 Sunny & mild, then freezing rain.

Apr. 1987: Temp. 45.5° (5° below ave.); Precip. 5″ (2″ above ave.; 5″ above south). 1-3 Very cold, snow north & west, rain south. 4-7 Partly cloudy, cold. 8-13 Sunny, warm, showers north. 14-16 Cold; heavy rain, snow west. 17-18 Sunny, warm. 19-24 Very cold; rain, snow northwest. 25-30 Cold, rain.

May 1987: Temp. 64.5° (2.5° above ave.); Precip. 6″ (2″ above ave.; 1″ below south). 1-6 Rain, warm. 7-10 Severe cold wave, heavy rain. 11-12 Clearing, milder. 13-15 Warm; rain, heavy east. 16-22 Very warm; showers. 23-25 Seasonable. 26-29 Showers, light west. 30-31 Cool, rain central & west; warm east.

June 1987: Temp. 74° (2.5° above ave.); Precip. 6″ (1.5″ above ave.; 1.5″ below south). 1-2 Showers, heavy west; hot. 3-7 Sunny, hot; showers east. 8-10 Showers, cool. 11-14 Cool, showers north. 15-18 Sunny, then rain, warm. 19-21 Clear & hot. 22-25 Cool, showers east. 26-30 Showers, then clear, hot.

July 1987: Temp. 75.5° (1° below ave.; 1° above east); Precip. 2″ (1″ below ave.; 1.5″ above west). 1-3 Cloudy, mild. 4-5 Seasonable; showers. 6-13 Sunny, hot east; heavy showers west, scattered central. 14-17 Mild; heavy showers. 18-21 Sunny, seasonable. 22-27 Mild, showers. 28-31 Hot, heavy showers.

Aug. 1987: Temp. 73.5° (0.5° below ave.; 1° above west & south); Precip. 4.5″ (0.5″ above ave.). 1-4 Sunny, warm; heavy showers southeast. 5-8 Hot, showers central. 9-11 Mild; showers, heavy north. 12-17 Sunny, heat wave. 18-22 Warm; showers, heavy east. 23-24 Sunny, hot. 25-28 Mild; showers east. 29-31 Cool; scattered showers.

Sept. 1987: Temp. 65.5° (0.5° above ave.); Precip. 2″ (1″ below ave.). 1-5 Heavy rain, warm. 6-8 Clear, warm. 9-11 Cool; showers. 12-14 Sunny, warm. 15-17 Showers, heavy north, sprinkles west; cool. 18-24 Very warm, showers west. 25-28 Very cool, rain central & east. 29-30 Sunny & warm.

Oct. 1987: Temp. 54° (Ave.; 1° above west); Precip. 1″ (1″ below ave.; 1″ above southwest). 1-3 Heavy rain, light northwest. 4-6 Sunny, cold. 7-10 Cold wave, heavy rain. 11-15 Cloudy, very cool. 16-17 Showers, warm. 18-23 Warm, pleasant; showers west. 24-26 Cool, showers; sunny west. 27-31 Clear, warm.

12. TEXAS-OKLAHOMA

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter are expected to be near normal in central and northern sections, but above normal in the south and west, while precipitation should be above normal over the region and considerably above in the southeast. Cold waves are anticipated near mid November and around Christmas; otherwise, seasonable and warm periods should alternate through these months. Little rainfall is expected in November except for possibly heavy downpours in the southeast early in the month. Thereafter, frequent and heavy amounts are expected through the winter, with above-normal amounts in eastern and southern sections. Considerable snowfall is anticipated late December and through mid January in the west and in many central sections, with lighter amounts in the west in late February, and in the north at the end of March.*

Spring may be cooler and wetter than normal except for the northeast where slightly below-average precipitation is expected. Cool, rainy periods may occur over much of the region in early April, early and late May, and in mid June; otherwise, warm and dry spells should prevail.

Summer may be quite mild in central and northern sections, but warmer than normal in the south, while rainfall may be above normal in the west, and below in the east. Some eastern sections may experience drought before getting relief from heavy rains in early September.

Following heavy rains in early October, watch for a cold spell at mid month, then clear and warm weather for the remainder.

Nov. 1986: Temp. 56.5° (0.5° above ave.; 1° above west); Precip. 2.5″ (2″ below ave.; 2″ above south, 1″ above west). 1-4 Warm, few showers. 5-7 Heavy rain east & south, cold. 8-10 Sunny, warm. 11-13 Cold, showers east. 14-17 Clear & mild. 18-20 Cloudy, showers central & east. 21-26 Clear, warm. 27-30 Cloudy, turning cold; rain west & south.

Dec. 1986: Temp. 45.5° (3° below ave.; 1° below west); Precip. 3.5″ (1.5″ above ave.; 3″ above gulf). 1-2 Cold; rain central & south. 3-6 Sunny, mild. 7-9 Rain south & west, showers northeast. 10-12 Cloudy, showers. 13-15 Rain, warmer. 16-21 Severe cold. 22-26 Sunny. 27-31 Cold; rain, snow north & west.

Jan. 1987: Temp. 44° (1° below ave.; 1° above north); Precip. 2.5″ (0.5″ above ave.; 4″ above east). 1 Rain & snow ending. 2-4 Clearing, cold. 5-6 Rain. 7-10 Partly sunny, mild. 11-13 Rain, snow north; cold. 14-15 Sunny. 16-18 Cold, sleet. 19-27 Clear, warm. 28-31 Showers, then rain.

Feb. 1987: Temp. 52.5° (3° above ave.; 5° above gulf); Precip. 2.5″ (0.5″ above ave.; 1″ below gulf). 1-3 Rain central, heavy east; cold. 4-6 Milder; rain northeast. 7-10 Sunny, warm. 11-13 Rain east, scattered west. 14-16 Severe cold. 17-20 Rain & snow; then clearing. 21-24 Rain, cold. 25-28 Clearing, warm; few showers.

Mar. 1987: Temp. 57.5° (0.5° above ave.; 2.5° above gulf); Precip. 6″ (3″ above ave.; ave. west). 1-2 Showers, mild. 3-5 Rain, turning cold. 6-8 Clearing, milder. 9-11 Sunny, warm; showers east. 12-13 Cloudy, cold. 14-16 Rain central & east. 17-19 Partial clearing, warm. 20-27 Rain, snow north; cold. 28-31 Sunny, warm.

Apr. 1987: Temp. 64° (2.5° below ave.; 5° below north); Precip. 2″ (2.5″ below ave.; ave. west). 1-4 Cold snap; rain east, snow north. 5-7 Warmer, rain gulf & east. 8-11 Sunny, seasonable. 12-15 Cloudy, rain; warm. 16-23 Sunny, warm. 24-27 Rain. 28-30 Clearing, warm.

May 1987: Temp. 73° (1° below ave.); Precip. 8.5″ (4″ above ave.; 1″ above north & west). 1-2 Showers east, then clearing. 3-7 Rain, very heavy central & east; cool. 8-10 Clear & cold; rain southeast. 11-14 Partly cloudy, cool; rain east. 15-22 Sunny, hot. 23-28 Rain central & east, light west, then clearing. 29-31 Rain, cool.

June 1987: Temp. 83.5° (1.5° above ave.); Precip. 1.5″ (1.5″ below ave.; 1″ above west). 1-2 Rain, cool. 3-9 Cloudy, hot. 10-13 Showers, milder. 14-18 Partly sunny, then rain. 19-22 Partly cloudy, hot. 23-28 Sunny, very hot. 29-30 Sunny, hot east; showers west.

July 1987: Temp. 85° (1.5° below ave.; ave. south); Precip. 3″ (1″ above ave.; 1″ below east). 1-2 Sunny, hot; showers west. 3-5 Showers. 6-9 Sunny, milder; showers. 10-12 Clearing, hot. 13-16 Heavy showers central & west. 17-22 Clear, hot; few showers. 23-27 Very cool; showers. 28-31 Clearing, warming; showers north.

Aug. 1987: Temp. 87.5° (2° above ave.); Precip. 1″ (1″ below ave.; ave. west, 1″ above north). 1-4 Sunny, hot; showers west. 5-9 Clear, hot. 10-13 Seasonable; showers. 14-19 Seasonable south, hot north. 20-23 Clear & hot south, showers north & west. 24-27 Showers, milder south; sunny & hot north. 28-31 Cool; rain.

Sept. 1987: Temp. 76.5° (2° below ave.; 1° above south); Precip. 3″ (1″ below ave.; 1″ above west). 1-4 Heavy rain, unseasonably cool. 5-8 Clear & hot. 9-11 Heavy rain, cool. 12-16 Clearing, mild; then showers west. 17-22 Partly cloudy, seasonably warm; showers northwest. 23-27 Clear, very hot. 28-30 Cloudy, mild.

Oct. 1987: Temp. 68° (Ave.; 1° above south); Precip. 3.5″ (Ave.; 1.5″ above south). 1-3 Rain, very heavy south; mild. 4-6 Clear & warm. 7-9 Rain, cool. 10-13 Clear & warm, then cooling. 14-16 Cool; rain central, showers east. 17-25 Sunny, warm. 26-31 Clear, very warm.

13. ROCKY MOUNTAIN

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter will be considerably colder than normal, except for southern sections, which may be milder than usual. Precipitation should be above normal over the central part of the region, slightly below over the southern part, and much below over the northern with the latter having less than normal snowfall, but the rest of the region having an excess. It should be milder and drier than normal early in the season, become quite cold by January, with considerable snow in central and southern sections, and then be cold with near-normal snow in February. March will be cold and stormy, with near-normal snowfall in the north but considerably above elsewhere.*

Spring should be colder and wetter than normal in central sections, but close to normal in the north and south. Mild, dry periods will mark the early part of April and May, but much of the rest of the season should be quite cold. A wet latter half of April may bring well above normal snow to mountain areas, with May and June continuing to have greater than normal precipitation except for western and southern sections.

Summer is anticipated to be cooler and drier than normal except for southern sections, which should experience warm and dry weather during August and the first half of September. Few rains of significance are expected in the central and northern sections, nor many heat waves.

October may have largely Indian summer-like weather, with a few cool and wet days early and late in the month.

Nov. 1986: Temp. 39° (0.5° below ave.; 1° above south); Precip. 0.5″ (1″ below ave.). 1-4 Cold wave; rain, snow mountains. 5-6 Sunny, seasonable. 7-9 Rain, cold. 10-12 Sunny, cold. 13-16 Clear, cold. 17-21 Warm days, cold nights. 22-25 Mild, showers. 26-28 Cold; rain, snow mountains. 29-30 Cold; snow east.

Dec. 1986: Temp. 31.5° (1° above ave.); Precip. 0.8″ (0.5″ below ave.; 0.5″ above south). 1-3 Cold, snow; sunny south. 4-8 Mild, rain. 9-12 Cold, snow. 13-22 Sunny, cold nights; cold waves, snow south. 23-25 Mild, showers, rain south. 26-31 Light snow.

Jan. 1987: Temp. 22° (6° below ave.; 3° below north, 1° below south); Precip. 1.5″ (0.5″ above ave.; 1″ below north). 1-2 Sunny, cold. 3-6 Milder, light snow. 7-11 Cold; snow, light north. 12-16 Severe cold wave, sunny then flurries. 17-21 Sunny, cold; flurries north. 22-26 Clear, very cold; mild north & south. 27-31 Heavy snowstorm, light north.

Feb. 1987: Temp. 29° (5° below ave.; 2° below north, ave. south); Precip. 1.5″ (Ave.). 1-5 Cold wave, snow north. 6-9 Mild, rain & snow. 10-11 Clear & mild. 12-14 Turning cold, snow. 15-23 Very cold, light snow. 24-26 Snow south; sunny north. 27-28 Rain & snow, heavy snow south.

Mar. 1987: Temp. 38° (3° below ave.; 0.5° below south); Precip. 3″ (1.5″ above ave.; 0.5″ below north). 1-3 Cold; snowstorm. 4-7 Seasonable, showers north. 8-10 Rain & snow, colder. 11-16 Milder; rain north. 17-20 Snowstorm, cold wave. 21-26 Sunny, snow central. 27-31 Milder; rain & snow north.

Apr. 1987: Temp. 46° (3° below ave.); Precip. 4″ (1.5″ above ave.; ave. south). 1-2 Partly cloudy, very cold. 3-8 Clear, warm. 9-12 Seasonable; sunny south. 13-15 Snowstorm, light north. 16-23 Very cold, intermittent rain & snow. 24-26 Snowstorm, light north; cold. 27-30 Sunny & mild, then rain north.

May 1987: Temp. 58° (0.5° below ave.; 1° above north); Precip. 2.5″ (1″ above ave.; 1″ below north). 1-4 Storm, cold. 5-8 Cold snap, snow east. 9-13 Sunny & warm. 14-16 Showers, heavy south. 17-20 Clear, very warm. 21-23 Cold wave, rain. 24-26 Sunny, seasonable. 27-29 Cold, showers. 30-31 Warm.

June 1987: Temp. 64° (4° below ave.; 2° below south); Precip. 2.5″ (1.5″ above ave.; 0.5″ below south). 1-2 Sunny, warm. 3-5 Showers, cold. 6-8 Rain, very cold. 9-11 Sunny, mild. 12-14 Cold & rainy, cloudy south. 15-20 Cloudy, cool. 21-24 Sunny; rain north. 25-27 Cool, showers north. 28-30 Warm, then rain.

July 1987: Temp. 76° (1.5° below ave.); Precip. 0.2″ (0.5″ below ave.). 1-2 Rain, cool. 3-6 Sunny, hot. 7-9 Mild, showers. 10-13 Sunny, warm; showers north. 14-18 Cloudy, mild. 19-23 Sunny & warm. 24-28 Showers, cool south. 29-31 Sunny, scattered showers.

Aug. 1987: Temp. 74° (1° below ave.; 2° above south); Precip. 0″ (1″ below ave.). 1-3 Sunny & hot. 4-7 Partly cloudy, showers north. 8-11 Clear, hot. 12-14 Showers, milder. 15-17 Clear, warm. 18-21 Few showers, heavy north. 22-24 Sunny, warm; showers south. 25-27 Clear, hot. 28-31 Showers, cooler.

Sept. 1987: Temp. 64° (1° below ave.; 2° above south); Precip. 0.5″ (0.5″ below ave.). 1-4 Sunny, warm. 5-7 Cloudy, rain north; mild. 8-17 Clear, hot north. 18-20 Showers, cool. 21-23 Rain, cool. 24-27 Sunny & warm; showers north. 28-30 Clear & pleasant; rain south.

Oct. 1987: Temp. 55° (2° above ave.); Precip. 0.5″ (0.5″ below ave.). 1-3 Sunny, warm; rain south. 4-7 Rain, cool. 8-10 Clear, warm; rain north. 11-17 Sunny, pleasant. 18-21 Light showers, cool. 22-26 Clear & mild. 27-29 Showers, warm. 30-31 Clear, quite warm.

14. SOUTHWEST DESERT

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter will be only slightly colder than normal, with above-normal amounts of precipitation over most of the region, but slightly less than normal in the southwest. Most of November should be sunny and quite warm, but then it is expected to become progressively cooler, with December temperatures fluctuating close to normal, except possibly for a mild spell just before Christmas, and then a period of subnormal temperatures the first half of January. Frequent rains are expected through December and during the latter half of February and early March. Otherwise, below-normal precipitation is anticipated, with sunny and warm periods late in January, early February, and mid March.*

Despite a warm, dry start at the end of March and early part of April, spring should be cooler than normal, with above-average rainfall during the latter part of April and the first half of May. Mild temperatures during May and June should be broken up by brief hot spells near mid May and in early June.

Slightly milder than normal temperatures are expected to continue through the summer, except for some unusually hot periods during early and late August and near the end of September. Less than average rainfall is anticipated, although a few heavy showers during each of the summer months in south-central sections may bring the totals there close to normal.

Following a mild beginning, with little rainfall, October should be generally sunny and a little warmer than normal.

Nov. 1986: Temp. 62° (1.5° above ave.); Precip. 0″ (0.5″ below ave.; ave. east). 1-3 Scattered showers, turning cooler. 4-9 Sunny, warmer than normal. 10-13 Cloudy, cold snap. 14-19 Clearing, pleasantly warm. 20-22 Partly cloudy, warm. 23-26 Clear, quite warm. 27-30 Partly cloudy, seasonable; rain east.

Dec. 1986: Temp. 54° (1° above ave.; 1° below east); Precip. 2″ (1″ above ave.; ave. south). 1-3 Sunny west; cold wave, rain & snow east. 4-10 Mostly sunny & seasonable; cool, showers east. 11-13 Cloudy & rainy, cooler. 14-17 Milder, then showers & cold. 18-25 Mild, sunny; then showers. 26-29 Sunny, seasonable. 30-31 Cold wave; rain, snow mountains.

Jan. 1987: Temp. 51° (1.5° below ave.; 4° below east); Precip. 0.5″ (0.3″ below ave.). 1-4 Partial clearing, cold; light frost. 5-9 Sunny, colder than normal. 10-12 Cold wave; showers, snow mountains; severe cold east. 13-15 Sunny, seasonable. 16-18 Cold, frost south. 19-25 Clear, warm. 26-31 Cloudy, then cold; rain.

Feb. 1987: Temp. 54° (2° below ave.; 1.5° above east); Precip. 1″ (0.5″ above ave.). 1-4 Clearing & warming. 5-9 Sunny & pleasant. 10-12 Rain, turning cold. 13-18 Clearing, cold. 19-21 Rain, cold. 22-24 Sunny, seasonable; frost south. 25-28 Rain; cold west, seasonable east.

Mar. 1987: Temp. 58.5° (2° below ave.; ave. east); Precip. 1.5″ (0.5″ above ave.). 1-3 Cold & rainy. 4-6 Clear & warm. 7-11 Cold, rain; then partial clearing. 12-17 Clear, very warm. 18-21 Cold, rain. 22-24 Partly cloudy, then cold & rainy. 25-27 Cold. 28-31 Clear, warm.

Apr. 1987: Temp. 65° (3° below ave.); Precip. 0.5″ (0.2″ above ave; 0.2″ below east). 1-4 Cold wave, very cold east; clearing. 5-8 Sunny, very warm. 9-12 Increasing clouds, turning cold. 13-15 Rain, sprinkles east. 16-19 Slightly cool, showers. 20-23 Sunny, mild. 24-26 Sprinkles, cold. 27-30 Partly cloudy, mild.

May 1987: Temp. 75° (2° below ave; 0.5° below south); Precip. 0.5″ (0.3″ above ave.). 1-3 Increasing clouds, cooler; then showers. 4-7 Sunny, seasonably warm. 8-12 Clear & hot. 13-15 Rain west, sprinkles east; milder. 16-18 Clear, very hot. 19-22 Partly cloudy, cool. 23-29 Sunny, mild. 30-31 Partly cloudy, showers east.

June 1987: Temp. 82.5° (4° below ave.; 2° below south); Precip. 0″ (0.2″ below ave.; 1″ above east). 1-4 Sunny, hot. 5-8 Partly cloudy, milder. 9-12 Clear & hot; rain east. 13-15 Cloudy, milder; seasonable south. 16-21 Very mild; warm east. 22-24 Clear & hot. 25-28 Sunny, seasonable; rain east. 29-30 Milder, showers.

July 1987: Temp. 90° (2° below ave.; ave. south); Precip. 1″ (Ave.; 0.5″ below south). 1-3 Clear, very hot west; rain east. 4-9 Partly cloudy, showers; seasonably hot. 10-13 Few scattered showers, slight cooling. 14-19 Mostly clear & seasonably hot. 20-24 Cloudy, showers. 25-28 Rain, milder. 29-31 Clear & hot.

Aug. 1987: Temp. 91° (1° above ave.; 2° above south); Precip 0.5″ (0.5″ below ave.). 1-9 Clear, unseasonably hot. 10-11 Partly cloudy, seasonable. 12-15 Thundershowers, heavy south-central; milder. 16-20 Partly cloudy, seasonable. 21-24 Showers, milder. 25-27 Clear, very hot. 28-31 Showers, then clear & very hot.

Sept. 1987: Temp. 84° (0.5° below ave.); Precip. 0.2″ (0.5″ below ave; 0.5″ above south). 1-4 Sunny, very hot. 5-8 Seasonable. 9-11 Showers, locally heavy, cool east. 12-16 Partly cloudy, seasonably hot. 17-19 Scattered showers, cooler. 20-21 Rain, heavy south; mild. 22-27 Clearing, unseasonably hot. 28-30 Rain, cool.

Oct. 1987: Temp. 74.5° (1° above ave.); Precip. 0.7″ (Ave.; 0.5″ above east). 1-3 Showers, mild. 4-7 Partly cloudy, cold wave. 8-11 Clear & hot. 12-16 Sunny, hot. 17-19 Showers, seasonable. 20-25 Clear & pleasant. 26-27 Increasing clouds, cooler. 28-31 Rain, mild.

15. PACIFIC NORTHWEST

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter are expected to be warmer and drier than normal, with less than normal snowfall in the mountains despite greater than usual amounts late in the season. November and December should have a greater than usual number of warm and sunny days and cool nights with much less frequent precipitation, while much the same is anticipated for January except for the Olympic Range, which should receive ample rainfall. February and March are expected to be closer to normal, particularly in central and southern sections, with more frequent rain but still below-normal rainfall. Southern sections will receive above-normal snowfall during February and March; snowfall will be below-normal in the north.*

Spring will be variable, but averaging warmer and drier than normal. Sunny and unseasonably warm spells are expected periodically through the season, alternating with cold and rainy periods through April and May. April will be the only month to receive above-normal precipitation in central and southern sections.

Summer should see alternating warm and cool spells averaging out to normal through July and August, followed by a heat wave during the first half of September and a cold spell in the latter half. Little rainfall is expected from July through mid September, but closer to normal amounts may be received thereafter.

October may be quite variable the first half, but then sunnier, warmer, and drier weather is due.

Nov. 1986: Temp. 48° (2° above ave.); Precip. 2″ (3″ below ave.). 1-3 Cool, rain. 4-5 Partly cloudy, cold. 6-9 Rain, seasonable. 10-15 Sunny & mild. 16-20 Partly cloudy, seasonable. 21-24 Light rain, mild. 25-27 Cloudy, cold. 28-30 Clear & mild.

Dec. 1986: Temp. 43° (1.5° above ave.); Precip. 3″ (3.5″ below ave.). 1-3 Light rain, mild. 4-8 Heavy rain, warm. 9-10 Clear, colder. 11-12 Showers, seasonable. 13-17 Warm days & cold nights. 18-21 Scattered showers, seasonable. 22-25 Partly cloudy, mild. 26-29 Rain, mild. 30-31 Sunny & mild.

Jan. 1987: Temp. 41.5° (2.5° above ave.); Precip. 3.5″ (2″ below ave.). 1-3 Sunny & mild. 4-6 Heavy rain. 7-9 Light rain, cold. 10-14 Partly cloudy & seasonable; clearing north. 15-17 Cold; heavy rain, snow mountains. 18-21 Rain, mild. 22-26 Sunny, mild. 27-31 Cooler, heavy rain, then clearing.

Feb. 1987: Temp. 44.5° (0.5° above ave.) Precip. 3.5″ (0.5″ below ave.; 2″ below north). 1-3 Seasonable; sunny & mild north. 4-6 Rain, cold. 7-11 Rain; then mild, clear. 12-14 Rain; sunny north. 15-19 Cold, showers. 20-22 Rain, seasonably cold. 23-26 Sunny & seasonable. 27-28 Showers.

Mar. 1987: Temp. 46° (Ave.); Precip. 3″ (0.5″ below ave.; 1.5″ below north). 1-4 Rain, turning milder. 5-7 Sunny & mild. 8-11 Rain, then clearing; seasonable. 12-14 Moderately heavy rain, mild. 15-20 Cold wave, few showers. 21-25 Mild, light rain. 26-31 Brief clearing then rain, turning cold.

Apr. 1987: Temp. 52° (1.5° above ave.); Precip. 3″ (0.5″ above ave.; 0.5″ below north). 1-3 Sunny & mild. 4-8 Clear, warm; scattered showers north. 9-12 Light rain, cooler. 13-15 Rain, light north; cool. 16-21 Rain, very cold. 22-25 Rain, some clearing north; milder. 26-27 Sunny & warm. 28-30 Rain, cold.

May 1987: Temp. 59° (2° above ave.); Precip. 1″ (1″ below ave.). 1-2 Sunny & warm. 3-5 Showers, cool. 6-11 Clear, warm. 12-15 Cold wave, rain. 16-19 Showers, mild. 20-25 Rain then light showers, seasonable. 26-29 Cold & rainy. 30-31 Clear, warm.

June 1987: Temp. 62° (0.5° below ave.); Precip. 1″ (0.5″ below ave.). 1-4 Seasonable; showers north. 5-8 Rain, cool. 9-11 Clearing & warm. 12-14 Clear, very warm. 15-20 Showers, cold. 21-26 Rain, light south; seasonable. 27-30 Sunny & warm, then mild.

July 1987: Temp. 69° (1° above ave.); Precip. 0.1″ (0.5″ below ave.). 1-3 Clear, very warm. 4-6 Mild, few showers. 7-10 Sunny & warm, then cloudy. 11-13 Clear, warm. 14-17 Sunny & mild; showers & cooler north. 18-22 Clearing, turning hot. 23-28 Light showers, mild. 29-31 Clear, very warm.

Aug. 1987: Temp. 66 ° (1° below ave.); Precip. 0.1′ (1″ below ave.). 1-2 Sunny & warm. 3-5 Mild, scattered showers. 6-9 Seasonable, light rain north. 10-14 Cool, light rain. 15-16 Clear & warm. 17-20 Partly cloudy, light rain north. 21-23 Cool, cloudy, showers. 24-26 Clear, warm. 27-29 Cloudy, few showers, mild. 30-31 Sunny, very warm.

Sept. 1987: Temp. 67° (4° above ave.; 2° above north); Precip. 1.5″ (Ave.; 1″ below north). 1-3 Clear, hot. 4-6 Light rain, mild. 7-14 Clear & hot, very warm north. 15-17 Cloudier, milder. 18-22 Rain, moderately heavy north; mild. 23-26 Sunny then light rain, seasonable. 27-30 Clear, very warm.

Oct. 1987: Temp. 59° (5° above ave.; 3° above north); Precip. 2″ (1″ below ave.; 2″ below north). 1-4 Sunny, then rain, cool. 5-6 Sunny, seasonable. 7-9 Rain, cool. 10-15 Some clouds, pleasant. 16-18 Cool, scattered showers. 19-25 Clearing, warm. 26-28 Sprinkles; rain north. 29-31 Clear & warm.

16. CALIFORNIA

For regional boundaries, see map page 63.

SUMMARY: *Late fall and winter may be slightly warmer than normal except for central and northern coastal sections where temperatures could be significantly above normal. Rainfall should be considerably below average in central and northern areas, but very much above in the south, while snowfall in the southern mountains and the higher elevations elsewhere should be above normal. November and December may be drier than usual except for the northwest in November and southern areas in December, with the latter being very wet, with above-normal snowfall in the mountains. Following below-average rainfall in January, February and early March should be very wet in the south and above normal in central sections, with heavy snowfall in the mountains.*

Spring should be cooler and slightly drier than usual. After a clear, warm first week, cold, wet weather is anticipated in April and early May, with above-normal snowfall in the mountains. Rainfall should be sparse in late spring, although coastal areas may see considerable cool, drizzly weather in June.

Summer should be cooler than usual along the coast, and warmer than usual inland, with dry conditions except for the north coast. Little rainfall is anticipated for the Central Valley or the south, while central and northern coastal areas may see excessively cool, drizzly weather during July and August. Heat waves are expected in early July and mid August in the Central Valley and south, with perhaps several brief but intense ones occurring in September.

October should be sunnier and drier than normal, with quite pleasant temperatures through most of the month.

Nov. 1986: Temp. 57° (2.5° above ave.; ave. inland); Precip. 0.5″ (1.5″ below ave.). 1-2 Cloudy & cool; rain coast & north. 3-6 Sunny, warm. 7-9 Cloudy north, rain northwest; sunny south. 10-15 Clear, warm. 16-18 Cloudy, seasonable. 19-20 Sunny & warm. 21-24 Rain, heavy north; cool. 25-30 Clearing & warmer.

Dec. 1986: Temp. 53° (4° above ave.; 1° above south); Precip. 1.5″ (2″ below ave.; 2″ above south). 1-3 Sunny & warm. 4-7 Cloudy, cooler, rain north; then clearing. 8-10 Rain. 11-13 Clear, warm. 14-16 Heavy rain south, light central. 17-21 Clearing, warm. 22-25 Rain, snow mountains. 26-31 Sunny south, rain north.

Jan. 1987: Temp. 50.5° (2° above ave.; ave. south); Precip. 4″ (0.5″ below ave.). 1-5 Rain, snow mountains. 6-10 Some rain, heavy north; cool. 11-14 Seasonable; sunny south, showers central, north. 15-18 Clearing & warm south, showers north. 19-26 Clear, quite warm. 27-31 Cool, rain then showers, snow mountains.

Feb. 1987: Temp. 52° (0.5° above ave.; 2° below south); Precip. 4″ (0.5″ above ave.; 4″ above south). 1-6 Intermittent rain south, heavy north. 7-11 Rain south, showers north; then clearing & warm. 12-13 Rain, cool. 14-17 Sunny, mild. 18-23 Scattered showers, cold south. 24-28 Cold wave; rain, heavy snow mountains.

Mar. 1987: Temp. 54° (1° above ave.; 0.5° below inland); Precip. 1.5″ (1″ below ave.; 1″ above south). 1-3 Cold; light showers, rain south. 4-6 Storm, heavy rain south, snow mountains. 7-10 Rain, heavy north, cold. 11-16 Sunny, warm. 17-19 Showers inland & south, cold. 20-23 Sunny, warm. 24-27 Cloudy & cool, then clearing. 28-31 Sunny south, cloudy north.

Apr. 1987: Temp. 54° (1° below ave.; 0.5° above south); Precip. 1″ (0.5″ below ave.). 1-5 Clear, warm. 6-12 Partly cloudy, cooler; light rain north. 13-15 Rain, cool. 16-17 Rain central & north, seasonable south. 18-23 Showers north, sunny south. 24-26 Rain north, scattered south. 27-30 Cloudy, then rain north.

May 1987: Temp. 57.5° (0.5° below ave.; 1° above inland); Precip. 0.5″ (Ave.). 1-3 Rain, cold. 4-9 Clear, warm; hot inland. 10-15 Cloudy, mild. 16-18 Sunny, warm. 19-23 Rain, showers south; cool. 24-27 Clear, warm; then cloudy, cool. 28-31 Sunny, warm; hot inland.

June 1987: Temp. 58° (3° below ave.); Precip. 0.1″ (Ave.). 1-4 Turning mild; showers. 5-7 Cloudy; rain north, showers central. 8-12 Clear, very warm. 13-15 Showers, cool. 16-20 Cloudy, cool; showers north. 21-25 Seasonable; cool north. 26-30 Sunny south, showers north.

July 1987: Temp. 59° (3° below ave.; ave. inland); Precip. 0″ (Ave.). 1-10 Clear, hot inland. 11-15 Cloudy, milder; coastal drizzle. 16-20 Overcast coast; clear, hot inland. 21-25 Sunny, hot. 26-31 Warm south; cooler, showers north.

Aug. 1987: Temp. 61° (2° below ave.; 0.5° below inland); Precip. 0″ (Ave.). 1-5 Partly cloudy, mild; drizzle along coast. 6-10 Sunny & warm, hot inland. 11-14 Partly sunny, milder. 15-19 Clear & hot. 20-28 Seasonable south & inland; drizzle north coast. 29-31 Clear, hot.

Sept. 1987: Temp. 63° (1° below ave.; 1° above inland); Precip. 0″ (0.2″ below ave.). 1-3 Clear & hot. 4-7 Cloudy, cool; showers north coast. 8-10 Cloudy coast, clear inland. 11-13 Clear, hot. 14-17 Rain coast, sunny inland. 18-20 Clear, warm. 21-25 Cloudy, cool. 26-30 Clear, hot.

Oct. 1987: Temp. 60.5° (Ave.; 1° below south); Precip. 0.5″ (0.5″ below ave.). 1-3 Increasing clouds, cooler. 4-6 Sunny, warm south; showers north. 7-10 Sunny, seasonable. 11-13 Cloudy, cool; light rain north. 14-18 Partly cloudy, cool; showers north. 19-23 Clearing, warm. 24-26 Rain, scattered south. 27-31 Clear, warm.

In Praise of the Smallmouth

The Indians call it achigan, *"the one that fights." Others have said that, pound for pound, it's the gamest fish that swims . . .*

by Bud Leavitt

(Maine's most famous fisherman and member of the Fisherman's Hall of Fame in Everglades, Florida.)

illustrated by Sheila Gilligan

☐ IT WAS MANY YEARS AGO THAT I HAD the thrill of catching my first smallmouth black bass. A small green fish with reddish eyes and flaring gills hurtled several feet out of the water, angrily shaking the worm-baited hook in its mouth with all the fury of an enraged terrier. When its twisting, turning body splashed back into the small pond, the rod bent almost double as the line zinged through the water. Again the fish erupted out of the water like an exploding depth charge and tail-danced across the surface. The struggling smallmouth came alongside the boat and my father scooped it out of the water with a landing net. The fish was well hooked. So was I, at that precise moment, hooked on America's fish. (Now before millions of largemouth bass fishermen throw me overboard, I should mention that they consider the largemouth to be "America's fish" also. *Next year* we'll learn how to break the record for hooking one of these "hawgs" — 22 pounds 4 ounces from Montgomery Lake, Georgia — and share the secrets of the professional largemouth fishermen who compete for as much as $650,000 in a single tourney!)

The Algonquin Indians called the smallmouth *achigan,* "the one that fights." Over a century ago Dr. James A. Henshall, a Cincinnati, Ohio, physician and ardent angler, wrote a book on the smallmouth, referring to it as "inch for inch and pound for pound the gamest fish that swims." The record for a smallmouth taken on rod and reel, 11 pounds 15 ounces from the Dale Hollow Reservoir on the Tennessee-Kentucky border, has stood for 32 years! You can spend a lifetime fishing for smallmouth and never land one more than six pounds — about the size where largemouth *start* to get interesting.

Maybe that's why I'm so taken with the smallmouth. If ex-New York Yankee manager Billy Martin were a fish, undoubtedly he'd be the scrapping smallmouth. With all the traits of an aristocrat and the usual shortcomings of the ruffian, the smallmouth stands head and tail above any freshwater game fish of equal poundage.

With its broad powerful tail, excellent hearing, and uncanny vision (scientists say it can distinguish between 24 different shades of colored lures and identify them before they hit the water!), coupled with a savage instinct to kill its prey with a single, heavy surge, the smallmouth comes close to being the perfect predator.

So, then, how does the fisherman go about getting that strike?

The most enjoyable and exciting way to catch the smallmouth is with a "bug." It's also the most sporting method and possibly the most productive. This delightful pastime usually is played from a boat or canoe, but it's equally effective on such rivers as the Delaware, Maine's Penobscot, or other bass streams where wading is possible.

For this game, anglers prefer a powerful flyrod of 9-foot length and a tapered line to balance it, spooled on a large reel with plenty of backing. Some fishermen go to 9½-foot rods, but unless the angler is equipped with plenty of muscle, he's likely to find such a wand a bit tiring.

What makes this fishing method so much fun is that the action — or at least the most exciting part of it — all takes place on the surface. You see that

sudden, explosive strike; also, needless to say, you feel it. It's what dry fly-fishing is to the trouter.

Unless the bug tosser is wading a stream or river, a companion needs to keep the boat or canoe moving, and just any kind of lackadaisical rowing or paddling won't do. The boatman needs to concentrate on keeping the right distance from shore, not too far, and not too close. The slower the craft moves along, the better.

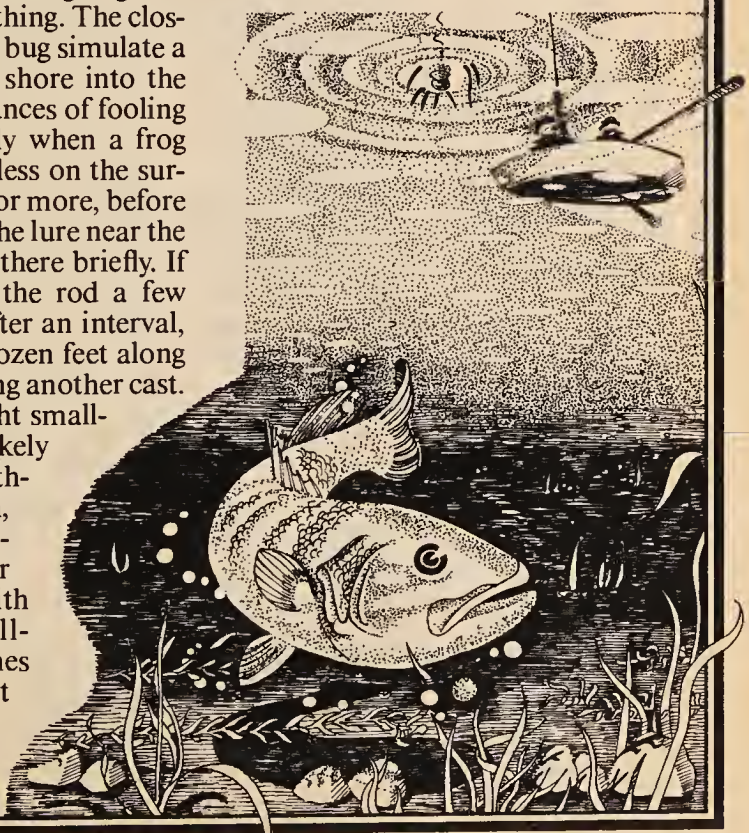
The caster plops the "bug" along every yard of shoreline, not only in bassy-looking spots, but also in places that do not look fishy at all. Remember, one can never tell where a bass is lurking. I once snaked out a whopper from beneath a small swimming float. Three pairs of feet were dangling in the water within a yard of where the bass was lurking. The three swimmers were surprised. So was I.

"America's fish" takes to a wide range of baits, top-water and deep-running. I invariably fish a hair frog. The whole strategy of fishing a frog bug is to make it act like the real thing. The closer the caster can make a bug simulate a frog jumping from the shore into the water, the better the chances of fooling a lurking fish. Normally when a frog hops in, it rests motionless on the surface, often for a minute or more, before swimming off. So plop the lure near the shoreline and let it rest there briefly. If nothing happens, give the rod a few gentle twitches, then, after an interval, "swim" the lure for a dozen feet along the surface before making another cast.

Fishermen have caught smallmouth with such unlikely baits as a corncob, toothbrush, set of false teeth, string of beads, jackknife, pliers, top of a beer can, and baits dressed with boiled egg. But smallmouth, which sometimes bite so frantically that anglers jokingly claim they have to hide their hooks while baiting them, at other times won't bite anything — not even a diamond-studded minnow.

Many experienced fishermen believe smallmouth won't bite because they aren't offered the right bait. I doubt that this is so because the smallmouth eat so many different types of food, including crawfish, minnows, frogs, worms, leeches, small lamprey eels, mice, grasshoppers, hellgrammites, crickets, beetles, grubs, bugs, young squirrels, and birds. With an appetite like that it is hard to believe that only the bait is at fault. Besides the smallmouth's fighting ability to match its edibility, the fish remains a difficult puzzle to solve. Isn't that why a fisherman fishes in the first place?

Fussin' with a fisherman about the best smallmouth fishing spot in the land is just about as productive as arguing politics and religion — the fish is found in every state except Alaska! But I know I won't get out of here alive without sharing a few of my favorite



smallmouth waters, which generally run cleaner, swifter, and cooler than those favored by the largemouth.

In the northeast I'd head to Lake Quinsigamond in western Massachusetts; to the prodigious smallmouth lakes in Grand Lake Stream country in Washington County, Maine — notably Sysladobsis and Pocomoonshine Lakes; Vermont boasts 400 lakes and ponds and 8,000 miles of smallmouth fishing water, and if I had to stop at just one spot I'd probably take my chances with a boat on Lake Champlain; the St. Lawrence River in New York State is perhaps the finest smallmouth fishery in the northeast, with the fish proliferating over the entire drainage. Go anytime from late April to freeze-up and you're likely to catch this rascal.

Heading westward I'd stop at Spirit Lake, Iowa, where some of the best fishing tackle in the country is made, and head for any of the five lakes in the immediate vicinity; Lake Michigan and Les Chêneaux Islands in Lake Huron are the pride of the Wolverine state, while Minnesotans sing the praises of Lac La Croix, and the Quetico-Superior wilderness waters.

See how hopeless this business is? I've already skipped by the Maumee River in Ohio, Pennsylvania's Lake Erie — not to mention one of my all-time favorites, the Delaware. A few years ago while driving to Florida, I'd just stop every few hours, amble to the shores of a likely looking lake, and go on the hunt for the smallmouth. It took me a long while to make my way south, so plentiful were the bass waters.

And that's another reason I love this roughneck that thrives even in the face of wave after wave of new admirers — he always seems to be just as close as memory, around another bend in the road, at early light or late, wherever cool waters flow. □□

BEST FISHING DAYS, 1987

(and other fishing lore from the files of *The Old Farmer's Almanac*)

Probably the best fishing time is when the ocean tides are restless before their turn and in the first hour of ebbing. All fish in all waters — salt or fresh — feed most heavily then.

Best temperatures for fish species vary widely, of course, and are chiefly important if you are going to have your own fish pond. Best temperatures for brook trout are 45° to 65° F. Brown trout and rainbows are more tolerant of higher temperatures. Smallmouth black bass do best in cool water. Horned pout take what they find.

Most of us go fishing when we can get off, not because it is the best time. But there are best times:

- One hour before and one hour after high tide, and one hour before and one hour after low tide. (The times of high tides are given on pages 18-42 and corrected for your locality on pages 44-45. Inland, the times for high tides would correspond with the times the moon is due south. Low tides are halfway between high tides.)
- "The morning rise" — after sunup for a spell — and "the evening rise" — just before sundown and the hour or so after. Still water or a ripple is better than a wind at both times.
- When there is a hatch of flies — caddis or mayflies, commonly. (The fisherman will have to match the hatching flies with *his* fly — or go fishless.)
- When the breeze is from a westerly quarter rather than north or east.
- When the barometer is steady or on the rise. (But, of course, even in a three-day driving northeaster the fish isn't going to give up feeding. His hunger clock keeps right on working, and the smart fisherman will find something he wants.)
- When the moon is between new and full.

MOON BETWEEN* NEW & FULL

Jan. 1-14	July 25-Aug. 9
Jan. 29-Feb. 13	Aug. 24-Sept. 7
Feb. 27-Mar. 15	Sept. 22-Oct. 6
Mar. 29-Apr. 13	Oct. 22-Nov. 5
Apr. 27-May 13	Nov. 21-Dec. 5
May 27-June 11	Dec. 20-31
June 26-July 10	

* Eastern Standard Time

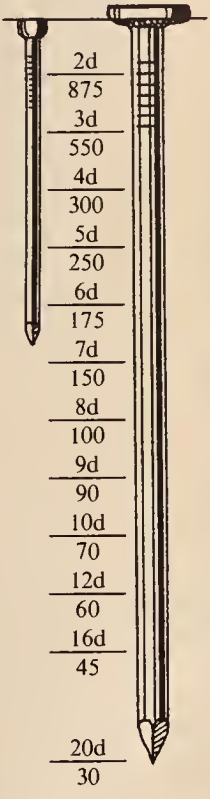
THE OLD FARMER'S ALMANAC GUIDE TO LUMBER AND NAILS

LUMBER WIDTHS & THICKNESS in Inches

NOMINAL SIZE	ACTUAL SIZE Dry or Seasoned
1 x 3	¾ x 2½
1 x 4	¾ x 3½
1 x 6	¾ x 5½
1 x 8	¾ x 7¼
1 x 10	¾ x 9¼
1 x 12	¾ x 11¼
2 x 3	1½ x 2½
2 x 4	1½ x 3½
2 x 6	1½ x 5½
2 x 8	1½ x 7¼
2 x 10	1½ x 9¼
2 x 12	1½ x 11¼

NAIL SIZES

The nail on the left is a 5d (penny) finish nail; on the right, 20d common. The numerals below the nail sizes indicate the approximate number of common nails per pound.



LUMBER MEASURE IN BOARD FEET

LENGTH Size in Inches	12 ft.	14 ft.	16 ft.	18 ft.	20 ft.
1 x 4	4	4⅔	5⅓	6	6⅔
1 x 6	6	7	8	9	10
1 x 8	8	9⅓	10⅔	12	13⅓
1 x 10	10	11⅔	13⅓	15	16⅔
1 x 12	12	14	16	18	20
2 x 3	6	7	8	9	10
2 x 4	8	9⅓	10⅔	12	13⅓
2 x 6	12	14	16	18	20
2 x 8	16	18⅔	21⅓	24	26⅔
2 x 10	20	23⅓	26⅔	30	33⅓
2 x 12	24	28	32	36	40
4 x 4	16	18⅔	21⅓	24	26⅔
6 x 6	36	42	48	54	60
8 x 8	64	74⅔	85⅓	96	106⅔
10 x 10	100	116⅔	133⅓	150	166⅔
12 x 12	144	168	192	216	240

SECRETS OF THE ZODIAC

Famous Debowelled Man of the Signs

♈ Aries, head. ARI
Mar. 21-Apr. 20

♉ Taurus, neck. TAU
Apr. 21-May 20

♊ Gemini, arms. GEM
May 21-June 20

♋ Cancer, breast. CAN
June 21-July 22

♌ Leo, heart. LEO
July 23-Aug. 22

♍ Virgo, belly. VIR
Aug. 23-Sept. 22

♎ Libra, reins. LIB
Sept. 23-Oct. 22

♏ Scorpio, secrets. SCO
Oct. 23-Nov. 22

♐ Sagittarius, thighs. SAG
Nov. 23-Dec. 21

♑ Capricorn, knees. CAP
Dec. 22-Jan. 19

♒ Aquarius, legs. AQU
Jan. 20-Feb. 19

♓ Pisces, feet. PSC
Feb. 20-Mar. 20

Ancient astrologers associated each of the signs with a part of the body over which they felt the sign held some influence. The first sign of the zodiac — Aries — was attributed to the head, with the rest of the signs moving down the body, ending with Pisces at the feet.

The science of astronomy got its start when people looked up into the sky and started asking questions, but it was the early astrologers who first made the connection between celestial movements and the physical changes that took place here on Earth. Eventually the study of astronomy became the charting of the actual placement of the planets and the constellations, and astrology became the study of how those placements affected aspects of human behavior.

Astrologers observed that the changes which took place in the sky were fairly predictable. During the year the Sun appeared to move through each of the 12 constellations (or signs) systematically, always starting out in the sign Aries. On the first day of spring (approximately March 21) the Sun crossed over the equator and began moving north, bringing with it warmer weather and the growth of new plants.

The Moon, too, had a cycle all its own (approximately every 29½ days). It would go from a new Moon to a full Moon and back again. On the nights of the full Moon people and animals appeared to be much more active than normal.

Astrology as we know it today is simply a tool we use to time events according to the placement of the two luminaries (the Sun and the Moon) and the eight known planets (Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto) in the 12 signs of the zodiac. Each one can help us learn more about our natural talents and opportunities. Only a qualified astrologer can give a complete interpretation, but Sun signs can aid us in recognizing and understanding some of our abilities and personal timetables.

The question is asked, "What is the difference between Sun signs and Moon signs?" Sun signs tell us in what sign the Sun was on the day of our birth; they are easy to find by turning to page 86. There are 12 signs; each one rules a specific time of year, certain characteristics, qualities, and abilities. The Moon sign is more complicated to find because it tells us where the Moon was at the exact time of our birth, and it changes every few days.

Astrologically speaking, the Sun represents our goals and the opportunities we will be offered. The Moon represents our instincts and reactions to the world.

Many readers have asked us which signs are best suited for various activities. Astrolo-

gers use Moon signs for this determination, and a month-by-month chart showing appropriate times for certain activities according to the Moon's sign is provided below. (To find the astrological place of the Moon in the zodiac, as well as detailed gardening information, see page 61.)

The Sun signs and Moon signs used by astrologers should not be confused with the *astronomical* position of the Moon listed on the left-hand calendar pages (18-42); because of precession and other factors the astrological and astronomical zodiacs do not agree.

A MONTH-BY-MONTH ASTROLOGICAL TIMETABLE for 1987

by Joanne H. Lemieux

Many readers have asked us which signs are best suited for various activities. Astrologers use Moon signs for this determination, and herewith we provide a yearlong chart showing appropriate times each month for certain activities according to the Moon's sign.

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Begin diet to lose weight	15-17	13-14	19, 21	25-27	22-24	19-20	16-17	12-14	9-10, 18-20	7, 16-17	12-13	9-11
Begin diet to gain weight	8-10	4-6	4-5	5-7	2-4	26-27	none	24-26	none	18-19	4-5	2-3
Buy clothes	8-10, 20-22	4-6, 17-18	4-5, 16-17	12-14, 28-29	9-11, 25-26	6-7, 21-22	3-5, 18-20	1, 15-16	11-12, 23-25	8-10, 20-22	4-5, 17-18	2-3, 14-16
Seek favors	15-17	13-14	11-13	8-9	5-6	1-3	26-27	22-23	18-20	16-17	12-13	9-11
Dental care	8-10, 29	4-6, 28	4-5, 29	1-2, 28	25-27	26	18-20, 25	15-16, 24	11-12, 23	8-10, 22	5-6, 21	2-3, 20
End old projects	15	13	15	14	13	11	11	9	7	7	5	5
Hair care	13-15	9-11	8-10	5-7	2-4	26-27	23-25	19-21	16-17	13-15	9-11	7-8
Seek pleasure	16-17	13-14	11-13	8-9	5-6	1-3	26-27	22-23	18-20	16-17	12-13	9-11
Start a new project	29	28	29	28	27	26	25	24	23	22	21	20
Breed	4-5, 8-10	1, 4-6	1, 4-5	1-2, 23-24, 28-29	30-31	26-27	23-25	27-28	23-25	22	17-18	29-30
Destroy pests or weeds	16-17	none	29	25-27	22-24	19-20	16-17	22-23	18-20	16-17	12-13	9-11
Graft or pollinate	13-15, 23-24	9-11, 19-20	9-10	5-7	12-13	8-9	6-7, 10	2-3	26-27	27-28	23-25	21-22
Harvest above-ground crops	15-17	13, 21-22	20-22	17-18, 25-27	13-15	10-11	16-17	12-14	9-10	16-17	12-13	9-11
Harvest root crops	25-26	21-22	25-26	21-22	18-19	14-16	12-13	9, 17-18	13-15	11-12	7-8	5-6
Begin logging operation	25-26	21-22	25-26	21-22	22-24	19-20	16-17	12-14	9-10	16-17	12-13	9-11
Prune or cut hay	23-24	19-20	23-24	19-20	16-17	13	10	29-31	26-27	23-24	19-20	17-18
Seed grain	20-22	17-18	16-17	12-14	10-11	6-7	3-5, 31	1, 27-28	23-25	20-22	17-18	14-16
Set posts or pour concrete	4-5	1	25-26	21-22	18-19	14-16	18-20	15-16	11-12	8-10	none	none
Slaughter	none	none	15-17	14-16	13-15	11-13	11-13	9-11	7-9	7-9	5-7	5-7
Wean	4-5, 8-10	1, 4-6	1, 4-5	1-2, 23-24, 28-29	30-31	26-27	23-25	19-21	16-17	13-15	28-29	25-26

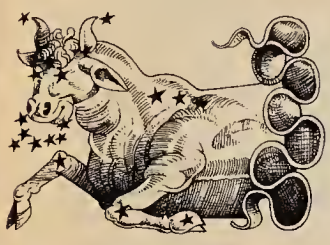
ARIES March 21-April 20.

Symbol: ♈ The Ram. *Ruling planet:* Mars.
Element: Fire. *Quality:* Assertive. *Ability:* To lead.

Governs: Explorers, pioneers, beginnings, and innovations. *Colors that draw luck:* Shades of red. *Best time of year for:* Personal luck — Mar. 21-Apr. 20; love and recreation — July 23-Aug. 22; travel, meeting new people, and fun — Nov. 23-Dec. 21. *Compatible with:* Fire signs (Leo and Sagittarius) and Air signs (Gemini, Libra, Aquarius). *Places that offer new opportunities:* Puerto Rico, Canada, and Denmark.

TAURUS April 21-May 20.

Symbol: ♉ The Bull. *Ruling planet:* Venus.
Element: Earth. *Quality:* Materialistic. *Ability:* To follow through.



Governs: Builders, farmers, hard work, and possessions. *Colors that draw luck:* Shades of pink. *Best time of year for:* Personal luck — Apr. 21-May 20; love and recreation — Aug. 23-Sept. 22; travel, meeting new people, and fun — Dec. 22-Jan. 19. *Compatible with:* Earth signs (Virgo and Capricorn) and Water signs (Cancer, Scorpio, and Pisces). *Places that offer new opportunities:* Ireland and St. Louis.

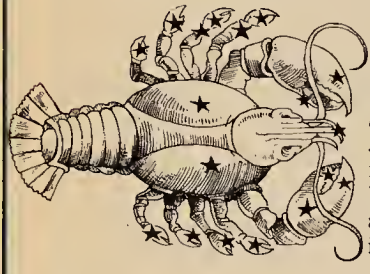
GEMINI May 21-June 20.

Symbol: ♊ The Twins. *Ruling planet:* Mercury.
Element: Air. *Quality:* Intellectual. *Ability:* To communicate.

Governs: Writers, siblings, neighborhoods, and ideas. *Colors that draw luck:* Shades of yellow. *Best time of year for:* Personal luck — May 21-June 20; love and recreation — Sept. 23-Oct. 22; travel, meeting new people, and fun — Jan. 20-Feb. 19. *Compatible with:* Air signs (Libra and Aquarius) and Fire signs (Aries, Leo, and Sagittarius). *Places that offer new opportunities:* Belgium, London, and San Francisco.

CANCER June 21-July 22.

Symbol: ♋ The Crab. *Ruling planet:* Moon.
Element: Water. *Quality:* Compassionate. *Ability:* To understand.



Governs: Mothers, Elders, endings, and home. *Colors that draw luck:* Shades of sea green. *Best time of year for:* Personal luck — June 21-July 22; love and recreation — Oct. 23-Nov. 22; travel, meeting new people, and fun — Feb. 20-Mar. 20. *Compatible with:* Water signs (Scorpio and Pisces) and Earth signs (Taurus, Virgo, and Capricorn). *Places that offer new opportunities:* Holland, Venice, and New Hampshire.

LEO July 23-August 22.

Symbol: ♌ The Lion. *Ruling planet:* Sun.
Element: Fire. *Quality:* Forceful. *Ability:* To supervise.

Governs: Rulers, leaders, children, and creations. *Colors that draw luck:* Shades of gold and orange. *Best time of year for:* Personal luck — July 23-Aug. 22; love and recreation — Nov. 23-Dec. 21; travel, meeting new people, and fun — Mar. 21-Apr. 20. *Compatible with:* Fire signs (Aries and Sagittarius) and Air signs (Gemini, Libra, and Aquarius). *Places that offer new opportunities:* India, France, Philadelphia, and Chicago.

VIRGO August 23-September 22.

Symbol: ♍ The Virgin. *Ruling planet:* Mercury.
Element: Earth. *Quality:* Curious. *Ability:* To organize.

Governs: Bankers, accountants, health, and place of work. *Colors that draw luck:* Shades of brown. *Best time of year for:* Personal luck — Aug. 23-Sept. 22; love and recreation — Dec. 22-Jan. 19; travel, meeting new people, and fun — Apr. 21-May 20. *Compatible with:* Earth signs (Taurus and Capricorn) and Water signs (Cancer, Scorpio, and Pisces). *Places that offer new opportunities:* Paris, Switzerland, Boston, and Los Angeles.

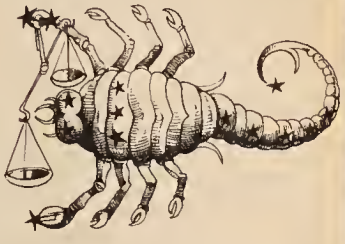
LIBRA September 23-October 22.

Symbol: ♎ The Scales. *Ruling planet:* Venus.
Element: Air. *Quality:* Idealistic. *Ability:* To relate.

Governs: Diplomats, lawyers, relationships, partners, and politics. *Colors that draw luck:* Shades of blue. *Best time of year for:* Personal luck — Sept. 23-Oct. 22; love and recreation — Jan. 20-Feb. 19; travel, meeting new people, and fun — May 21-June 20. *Compatible with:* Air signs (Gemini and Aquarius) and Fire signs (Aries, Leo, and Sagittarius). *Places that offer new opportunities:* Manhattan, China, Japan, and South Carolina.

SCORPIO October 23-November 22.

Symbol: ♏ The Scorpion. *Ruling planet:* Pluto.
Element: Water. *Quality:* Powerful. *Ability:* To concentrate.



Governs: Detectives, researchers, secrets, and passions. *Colors that draw luck:* Shades of dark red. *Best time of year for:* Personal luck — Oct. 23-Nov. 22; love and recreation — Feb. 20-Mar. 20; travel, meeting new people, and fun — June 21-July 22. *Compatible with:* Water signs (Cancer and Pisces) and Earth signs (Taurus, Virgo, and Capricorn). *Places that offer new opportunities:* Colorado, Norway, Rio de Janeiro, and Washington, D.C.

SAGITTARIUS November 23-December 21.

Symbol: ♐ The Hunter. *Ruling planet:* Jupiter.
Element: Fire. *Quality:* Expansive. *Ability:* To be versatile.

Governs: Hunters, scholars, travel, and religion. *Colors that draw luck:* Shades of purple. *Best time of year for:* Personal luck — Nov. 23-Dec. 21; love and recreation — Mar. 21-Apr. 20; travel, meeting new people, and fun — July 23-Aug. 22. *Compatible with:* Fire signs (Aries and Leo) and Air signs (Gemini, Libra, and Aquarius). *Places that offer new opportunities:* Australia, Spanish Riviera, and the Grand Canyon.

CAPRICORN December 22-January 19.

Symbol: ♑ The Mountain Goat. *Ruling planet:* Saturn.
Element: Earth. *Quality:* Trustworthy. *Ability:* To be disciplined.

Governs: Authoritarian figures, fathers, time, and status. *Colors that draw luck:* Shades of gray and black. *Best time of year for:* Personal luck — Dec. 22-Jan. 19; love and recreation — Apr. 21-May 20; travel, meeting new people, and fun — Aug. 23-Sept. 22. *Compatible with:* Earth signs (Taurus and Virgo) and Water signs (Cancer, Scorpio, and Pisces). *Places that offer new opportunities:* Alaska, Brussels, Georgia, Rhode Island, and Mexico.

AQUARIUS January 20-February 19.

Symbol: ♒ The Water Bearer. *Ruling planet:* Uranus.
Element: Air. *Quality:* Independent. *Ability:* To be inventive.

Governs: Scientists, astronomers, changes, and television. *Colors that draw luck:* Electric blue and indigo. *Best time of year for:* Personal luck — Jan. 20-Feb. 19; love and recreation — May 21-June 20; travel, meeting new people, and fun — Sept. 23-Oct. 22. *Compatible with:* Air signs (Gemini and Libra) and Fire signs (Aries, Leo, and Sagittarius). *Places that offer new opportunities:* Massachusetts, Arizona, Peru, and New Zealand.

PISCES February 20-March 20.

Symbol: ♓ The Fish. *Ruling planet:* Neptune.
Element: Water. *Quality:* Imaginative. *Ability:* To be psychic.

Governs: Fishermen, poets, dreams, and inspirations. *Colors that draw luck:* Shades of white. *Best time of year for:* Personal luck — Feb. 20-Mar. 20; love and recreation — June 21-July 22; travel, meeting new people, and fun — Oct. 23-Nov. 22. *Compatible with:* Water signs (Cancer and Scorpio) and Earth signs (Taurus, Virgo, and Capricorn). *Places that offer new opportunities:* Maine, Vermont, and Portugal.

ANECDOTES AND PLEASANTRIES

A motley collection of amazing if sometimes useless facts, strange stories, and questionable advice kindly sent to us during 1986 by readers of this 195-year-old publication.

TEN WAYS TO BE A WINNER IN '87

The Middleton Lancing Tournament
Charleston, South Carolina

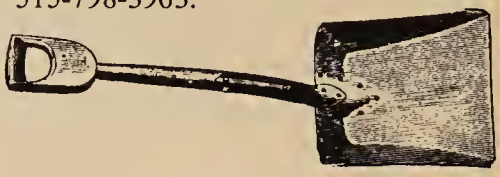
During the third week in October, daring horsemen in colonial costumes spear a series of two-inch rings in less than six seconds. If you are as fortunate as Dr. Grayson Brown, a perennial winner, you'll gallop off with a hand-carved sterling silver spoon shaped like a rice stalk, a memento of Middleton Place's historic past as a rice plantation. Should your lance falter, however, you can still play musical chairs on horseback and feast on southern cooking. For information call Rita Hall: 805-556-6020.

World Champion Duck-Calling Contest
Stuttgart, Arkansas

Each contestant has a minute and a half to quack calls that announce a greeting, beckoning, mealtime, mating, or loneliness. Divisions include junior, women, and world champs. All calls may be produced by artificial means, by voice, or by lip. Winners are selected by a panel of qualified judges. Held in November. 501-673-1602.

Domino Tournament
Halletsville, Texas

For $7.50 you can enter this tournament held the third or fourth Sunday in January. The action is double time: pairs teams go at it in double elimination at the Knights of Columbus Hall, south of town on Highway 77. Afterwards there's a big feed consisting of Texas barbecued beef, German potatoes and sauerkraut, iced onion rings, and shiner suds from the local brewery. Call Grand Knight Daniel Rother at 515-798-3963.



Annual Shovel Racing Championships
Angel Fire Ski Resort, New Mexico

Held on presidential weekend in February, it's open to anyone and features two categories. The production category is for the individual who refuses to use anything but a virgin shovel straight from the factory. In the second category you may use an old ski boot, a sail, or even a bed sheet. Serious shovelers have been clocked at 72 miles per hour. 505-377-2301.

International Pancake Race
Liberal, Kansas

Marsha Streiff recently made a name for herself by wielding her pancake-laden skillet 415 yards in 65.6 seconds. There's also a parade, four-mile fun run, and a pancake-eating contest. Write to Host Chairman, P.O. Box 676, Liberal, KS 67901.

Heavyweight Ski Contest
Sugarloaf, Carrabassett Valley, Maine

You can't even enter unless you weigh 225 if you're a woman and 250 if you're a man. In fact, the more you weigh, the bigger your handicap. Held in early March. Entry fees are three

cents per pound — all proceeds going to the Maine Lung Association. Before the race, contestants carbo-load energy reserves at an all-you-can-eat banquet. Call Nancy Briggs: 207-237-2000.

Old-Time Spitting Contest
Raleigh, Mississippi

If your wad travels over 33′ 7″, you could beat the tobacco-spitting record held by Jeff Barber of Ocean Springs, Mississippi. Held at Billy John Crumpton's Pond, Route 18, on the last Saturday in June. After the air has cleared, there's a picnic, country music, and children's old-fashioned games. Call 601-782-4628.

National Cluck Off
Wayne, Nebraska

If you're a good chicken clucker, you could win a cash prize of $50 to $100. If not, try the Egg Drop Contest. Contestants must catch raw eggs dropped from the top of the city's crane. No entry fee. Held second week in July. All entrants get a free T-shirt and an omelet feed. Write Jane O'Leary, Box 262, Wayne, NE 68787.

Husband-Calling Contest
Des Moines, Iowa

Held at the Heritage Village Fair Grounds mid to late August. Some wives sing, others use a pet name, and some pretend they're calling their honeys on a CB. The judges listen for windbags with a winning way. Also, kiddies can enter the Mom-Calling Contest. Phone 515-262-3111.

Tall Tales Contest
Fort Bridger, Wyoming

On Labor Day weekend, mountain men re-create the Old West by putting up teepees and mountain homes. As the sun sets, the tales get as wild as the leaping flames of the campfires. Should you spin the best yarn, you can walk off with a wooden plunder chest and a painted and beaded elkskin robe. For more, call Fort Bridger State Historical Society: 307-782-3842.

Compiled by June Giudice and James L. Goff

WHY BEING A SQUARE PEG IN A ROUND HOLE IS A GOOD THING

(Anyone care?)

Being called a "square peg in a round hole" is not a compliment today, but the origin of the phrase had quite a different meaning.

Barns were (and some today still are) built by post-and-beam construction. Yankee barn builders cut and fitted large timbers so the pieces interlocked and formed the skeleton of the barn. At each place where two timbers came together, a hole was drilled and a peg was driven in to hold the frame together. Round holes were the easiest to drill, but round pegs had to be turned on a lathe or carefully trimmed by hand. A lot of friction was created by a round peg in a round hole. If the peg wasn't just the right size, it would bind and resist being driven completely through the mated timbers; or it would be loose and would not hold the timbers tight. Square pegs, on the other hand, were easy to cut with a saw, but cutting a square hole (with chisels) was a very time-consuming process.

How did the Yankee barn builder handle this problem? He drilled his round holes and cut square pegs just slightly oversize. Then with his mallet he drove the square peg home. The edge of the hole peeled back the surplus wood on the corners of the peg; and because only the edges of the peg were touching the hole, there was very little friction to keep the peg from being driven completely into place. Thus the two timbers were locked tight together. To a Yankee barn builder a "square peg in a round hole" made all the sense in the world.

by Donald Entner

Continued

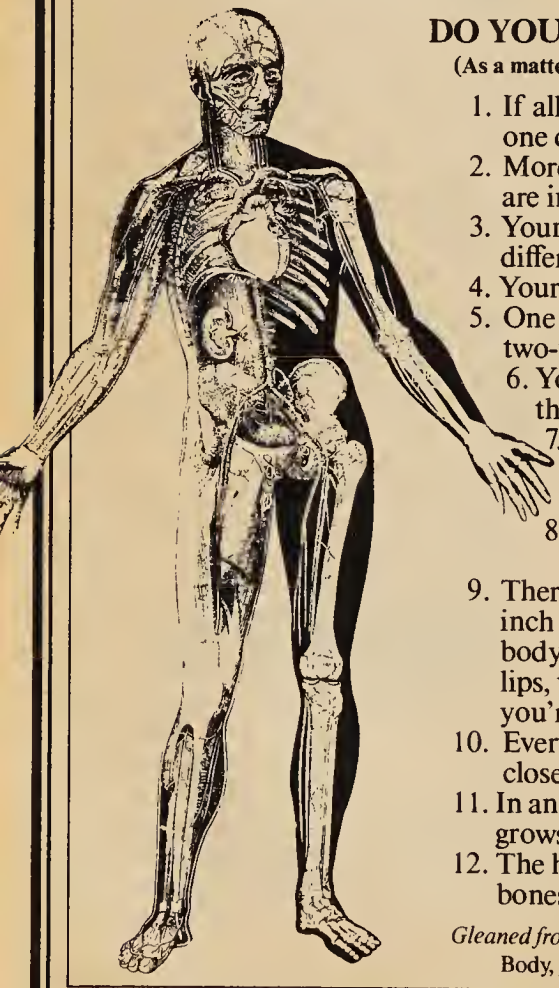
MAYBE WE SHOULD SEND SOME PEOPLE BACK WHERE THEY CAME FROM

(Warm up the spaceships, duckie.)

The March 31, 1986, issue of *U.S. News & World Report* said that the population of the whole world reached exactly five billion sometime during the month of March 1986 — not 1987 as everyone thinks. Their statement was based on previous counts plus the fact that world population grows by two percent each year — or three persons per second.

In sheer biomass alone, man represents 200 million tons, rivaled only by the shrimplike krill found in the Antarctic seas.

Incidentally, while you read this little item, the human family swelled by 57 people — more if you're a slow reader.

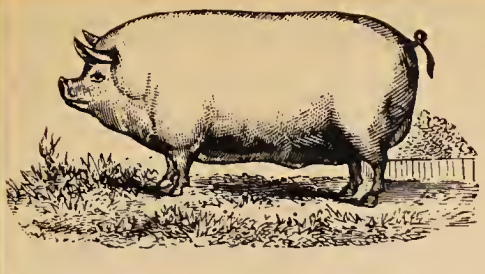


DO YOU REALLY KNOW YOURSELF?

(As a matter of fact, you're pretty wonderful.)

1. If all 600 muscles in your body pulled in one direction, you could lift 25 tons.
2. More than half of your body's 206 bones are in your hands and feet.
3. Your eye can distinguish nearly 8,000,000 differences in colors.
4. Your digestive tract is 30 feet long.
5. One cubic inch of bone can withstand a two-ton force.
6. Your ears can discriminate among more than 300,000 tones.
7. The surface area of your lungs is 20 times greater than the surface area of your skin.
8. Your heart pumps more than 2,000 gallons of blood every day.
9. There are 1,300 nerve endings per square inch in your fingertips: the only parts of the body more sensitive to the touch are the lips, the tongue, and the tip of your . . . well, you're wrong . . . the tip of your nose.
10. Every day, blinking causes the eye to be closed for a half hour.
11. In an average lifetime the hair on your head grows about 25 feet.
12. The human skull is made up of 29 different bones.

Gleaned from various volumes in The Library of the Human Body, *published by Torstar Brooks, Etobicoke, Ontario*



GETTING ALONG WITH YOUR PIGS

(Some of it may be a lotta garbage.)

In an experiment last winter, it was found that the pigs on Doug Johnson's farm in Fairfield, Iowa, were much happier and calmer when they were subjected to a gentle male voice coming from the "Babble 123" computer set up near the pigpen by Fairfield Software. Here are the four statements broadcast at the pigs that they *particularly* liked:

1. "My mind and heart are always crowded by visions of your coy elbow." (Mr. Johnson's 13- to 14-year-old pigs scampered around the pen in an orgy of good-humored playfulness when they heard the voice saying *that*.)

2. "The blood rushes to my head when we play bridge at your mother's every Friday night." (Two of the older pigs liked this one best.)

3. "I like to fondle your sleeveless fur coat." (Some reaction but nothing special.)

4. "I think I'd swoon if you allowed me to kiss your limpid umbrella." (This one sent them hog wild.)

A sociologist who was on a panel charged with gauging the pigs' reaction to the computer voice said it didn't matter what was said. Rather it was simply that the sound "may have had a calming effect." (There's always somebody around like that.)

While we're on the subject of what pigs like and don't like, we ought to report that Dr. Paul Hemsworth, leader of an Australian research team that has spent the last five years studying pigs, says that pigs do *not* like someone "standing upright" near them, do *not* like being patted, and finally, do *not* like being touched by someone wearing a pair of gloves.

BETTER START LOOKING UP ABOUT THE YEAR 2134

On November 30, 1954, a nine-pound meteorite plunged through the roof of the home of Mrs. E. H. Hodges in Sylacauga, Alabama, bounced off a radio, and then hit Mrs. Hodges in the shoulder. She was bruised but OK. It is hoped she'll be the last American hit by a meteorite for about another 147 years.

Scientists at Herzberg Institute of Astrophysics in Ottawa, Canada, using a network of 60 cameras for the past nine years to study meteorite falls, calculate that one human in North America will be hit by a meteorite every 180 years. They based their calculations on the number of meteorite falls of a size large enough to be detected, the number of humans in Canada and the United States, the average human size, the time a person could be expected to be outdoors (although Mrs. Hodges screwed up *that* calculation — she was hit indoors), and other factors.

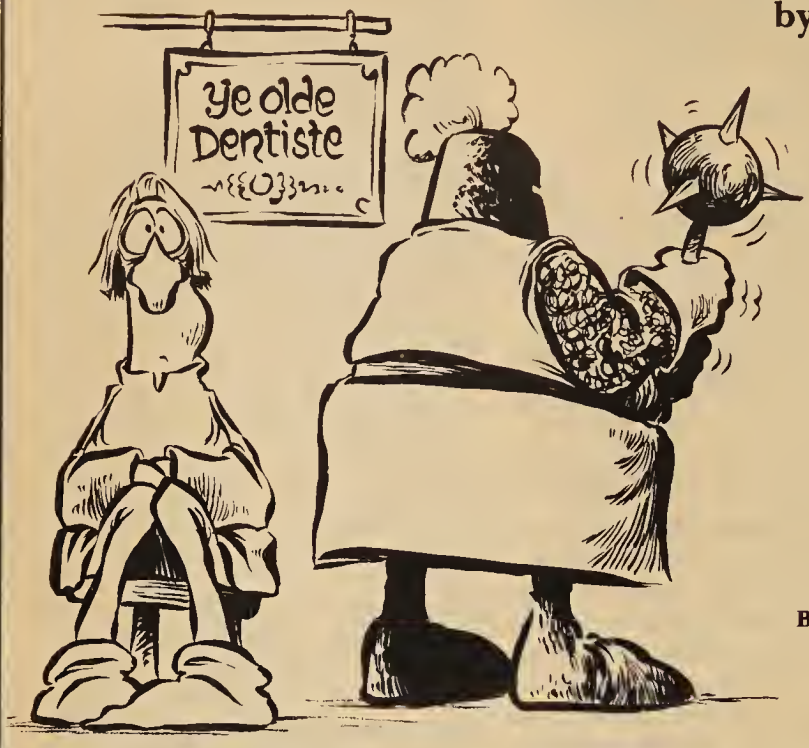
Worldwide, the Canadian scientists said, one could expect a human to be struck by a meteorite once in every nine years, while 16 buildings a year could be expected to sustain some meteorite damage.

(Although the scientists did not include it in their report, it is believed in some quarters that, from the year 1987 on, anyone hit by a meteorite darn well deserves it.)

Favorite Toothache Remedies

Some are really quite simple, some are a little weird, and a few are probably worse than the toothache itself . . .

by Tim Clark



illustrated by Bruce Hammond

There was never yet Philosopher that could endure the toothache patiently.
— WILLIAM SHAKESPEARE

☐ THE EXQUISITE PAIN OF TOOTHACHE has been part of the human condition for as long as humans have had teeth. Stone Age skulls show evidence of tooth decay, and the oldest known medical document, the Ebers papyrus (3700 B.C.), suggests the use of ground incense or cloves to relieve the pain of toothache.

Most toothaches are caused by infection of the tooth pulp, the nerves, lymph, blood vessels, and other tissue inside the hard enamel and dentin casing of the tooth. That casing begins to decay when carbohydrate foods, especially sugars, are taken into the mouth. Microorganisms in the mouth combine with saliva to transform the sugars into acids that, if undisturbed, start to dissolve the calcium that is the main ingredient of the dentin and enamel.

For thousands of years people thought toothache was caused by a worm boring its way into the tooth. Perhaps it was because when teeth were extracted, the slender pink pulp dangled from the rotten tooth. In the Orkney Islands of Great Britain, people still refer to toothache simply as "the worm." Israeli archaeologists recently unearthed the skull of a Nabatean warrior buried around 300 B.C., who had a bronze wire inserted into one of his teeth. The wire had oxidized and turned the whole tooth green. The scientists speculate that the soldier's physician had pushed the wire into his tooth to kill the worm. It is the oldest dental filling yet discovered.

Dr. Frederick Waite, in *High Points in the History of Dentistry* (1931), identifies Andromachus the Elder, a Greek physician who lived around the time of Christ, as the first to make temporary fillings out of a resinous material. He also used opium to relieve toothache pain. Cascellius, a Roman, was the first recorded specialist in dentistry (the poet Martial wrote that he "removes or restores a bad tooth") in A.D. 80. A few decades later another Roman named Archigenes invented the first dental drill, a crude device operating on the bow-and-string method.

The most common treatment of diseased teeth was extraction, a hideous procedure that was done in three ways. One was to loosen the tooth by the application of caustics — the drawback was that the caustics tended to loosen adjoining teeth as well. Another approach was to insert a dry peppercorn into the cavity, which would soon swell so large as to break the tooth into pieces that were more easily extracted. Most common of all was the use of dental forceps, or tongs. The patient lay on his back, his head between the physician's knees, while the tooth was shaken back and forth until it came loose or the patient's jaw was dislocated or broken. It's no wonder that most people preferred rotting teeth.

Those who suffered from toothache used a variety of folk remedies or prayed to the patron saint of toothache, St. Apollonia, "a virgin of advanced age," according to authorities, who was martyred in A.D. 249 for professing Christianity. She refused to deny her faith even while Roman soldiers pulled out all of her teeth. Prayers uttered on her saint's day, February 9, are regarded as especially effective, and many churches in Europe treasure relics of the saint, including some of her teeth.

Modern dentistry began in the late 17th century, after Anton von Leeuwenhoek, inventor of the microscope, discovered the presence of bacteria in dental tartar. Pierre Fauchard, a French physician of the early 18th century, is regarded as the father of dentistry because he denounced the worm theory and encouraged dentists to share their knowledge of tooth problems for the good of mankind.

Famous American dentists include John Greenwood (1760-1819) of New York, who was the first to use a foot-powered drill, and made George Washington's ivory false teeth. Greenwood wore one of Washington's natural teeth on his watch-chain as a souvenir.

Dr. Horace Wells of Hartford, Connecticut, was the first to recognize the anesthetic effects of nitrous oxide, or laughing gas, in dentistry. He chose to be the guinea pig, inhaling the gas while a fellow dentist removed a perfect tooth from his mouth on December 11, 1844. Dr. Wells was so excited by the success of his experiment that he arranged a demonstration before a skeptical audience of doctors in Boston. For some reason, the anesthetic failed, and the poor subject screamed in pain. Dr. Wells was so humiliated by the disaster that he later committed suicide.

★ ★ ★ ★ ★

The patient lay on his back, his head between the physician's knees, while the tooth was shaken back and forth until it came loose or the patient's jaw was dislocated or broken.

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Today, toothache as a result of decay may be on the verge of extinction. Better eating habits, preventive hygiene, and most of all, fluoridation of water supplies and toothpaste have reduced the incidence of tooth decay in Americans by 50 percent in the last 20 years. According to the National Institute of Dental Research, nearly 40 percent of all children between the ages of five and 17 have no cavities at all, and the use of

resin sealants on children's teeth is expected to eliminate cavities entirely. Anti-cavity vaccines, amino-acid solutions that dissolve tooth decay, new plastics that replace metal fillings, and permanent dental implants are among the recent and expected developments creating a financial crisis for dentists.

However, dentistry will always be the most common profession. This can be proved, according to an old story, by wrapping a bandage around your jaw and complaining of a toothache. Every person you meet will suggest a remedy. Here are some of the more exotic methods used throughout human history to prevent or cure the toothache. Take them, as the Talmud suggests for toothache, with a grain of salt.

THE SIMPLE METHODS

- Put your right stocking on before your left.
- Get out of bed left foot first.
- Put the first aching tooth you have removed in a glass of whiskey and drink the whiskey. You will never have to remove another tooth.
- Trim your fingernails and toenails on Fridays.
- Run three times around a church without thinking of a fox.
- The mathematician Pascal concentrated on a difficult problem until he solved it and found the toothache gone as well.
- Fasting on Maundy Thursday protects against toothache.
- Carry a double hazelnut in your pocket to ward off toothaches.
- Hold a slice of warm onion against the ear on the same side as the ache.
- Help a struggling beetle off its back.
- In Saxony, the first to see the returning storks avoids toothache for a year.
- Put your right ring finger into your left ear.
- Kiss the lips of an infant not yet baptized.
- Peasants in Brunswick write on their front doors: "Toothache, stay away. I am not at home."

THE SIMPLE BUT DISGUSTING METHODS

- Eat grasshopper eggs.
- Place fresh cow manure on the side of the face where the ache occurs.
- Chew tobacco.
- American Indians chewed the bark of the northern prickly ash, which they called toothache-tree.
- Eat wax from altar candles.
- Hold a live frog against the aching cheek.
- Apply a crushed ladybug to the aching tooth.
- Never wash on a Tuesday.

THE JUST PLAIN DISGUSTING METHODS

- Drink the milk of an ass.
- Plug the cavity with your own ear wax.
- Kiss a donkey.
- Fill the cavity with crow dung.
- If the aching tooth is on the right side, remove the left eye of a crayfish, put it in a pipe with tobacco, and smoke it. If the ache is on the left, vice versa.

- Cook earthworms in oil, then place them in the ear opposite to the ache.
- Strangle a mole, then don't wash your hands for 24 hours.

THE WEIRD AND COMPLICATED METHODS

- Prick the aching tooth with a sliver of a pine tree that has been struck by lightning.
- Take a single clove of garlic, rub it with oil and salt, and place it on the thumbnail of the hand on the aching side.
- Ancient Chinese physicians made a pill out of garlic and saltpeter and placed it in the ear on the opposite side from the aching tooth.

- Roast a clove of garlic, crush it with your teeth, mix it with chopped horseradish seeds and mother's milk, and put it in the nostril on the opposite side from the aching tooth.
- Take a nail from a coffin, prick the aching gum with it until it bleeds, then hammer the bloody nail into an oak tree, saying: "Nail, I complain to thee/ My tooth, it bothers me/ In me it leaves/ In thee it stays/ It won't have anything to do with me forevermore."
- The tooth of a murdered man, or better still, an executed criminal, is an excellent remedy if applied to the aching tooth in a graveyard at midnight under a full moon.
- On Good Friday, comb your hair and collect the hair that falls out. Burn it and inhale the fumes.
- Find the first fern of spring and bite it off the ground.
- Tie a piece of moss that grows in a cemetery, preferably on an old skull, to your cheek.
- A Roman cure was to capture a frog, spit into its mouth, and set it free.
- Chase a cat across a plowed field (always perpendicular to the furrows) until it sweats, and rub the sweat on the aching tooth.
- Pick your teeth with the nail of the middle toe of an owl.
- Bite the cord of a churchbell during the chimes and say: "The mass is sung/ The bells are rung/ The epistles were read/ The worm in my tooth is dead."
- Go to a stream before sunrise, straddle it, bend over backwards until you can take a mouthful of water, then spit it out.

BETTER TO HAVE THE TOOTHACHE

- Pliny recommended eating a mouse twice a month.
- Eat the eyes of a vulture.
- Noble Roman ladies used mouth washes made out of lizard livers, earthworms steeped in vinegar, and "the urine of an innocent boy."
- New Zealanders eat the head of an eel.
- Bite off the head of a live mouse, put it in a bag and suspend it from your neck. The ribbon or thread must not have a knot in it.
- Press the finger of a corpse against the aching tooth.
- If all else fails, an ancient Chinese physician recommended a pill of arsenic, which the patient should "put close to aching tooth, then sleep. Cure certain." And final. □□

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WEYMOUTH SAVINGS BANK

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MAIN OFFICE
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BICENTENNIAL OFFICE
295 Washington St., Weymouth
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NORTH WEYMOUTH BANKING CENTRE
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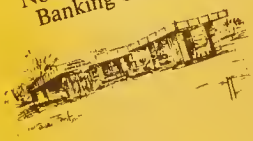
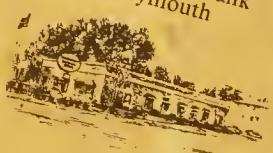
WEYMOUTH SAVINGS BANK

From the Pine Tree Mint Coins to Electronic Banking

North Weymouth
Banking Centre



Bicentennial Bank
Weymouth



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From the Horse and Buggy Age to the Space Age

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