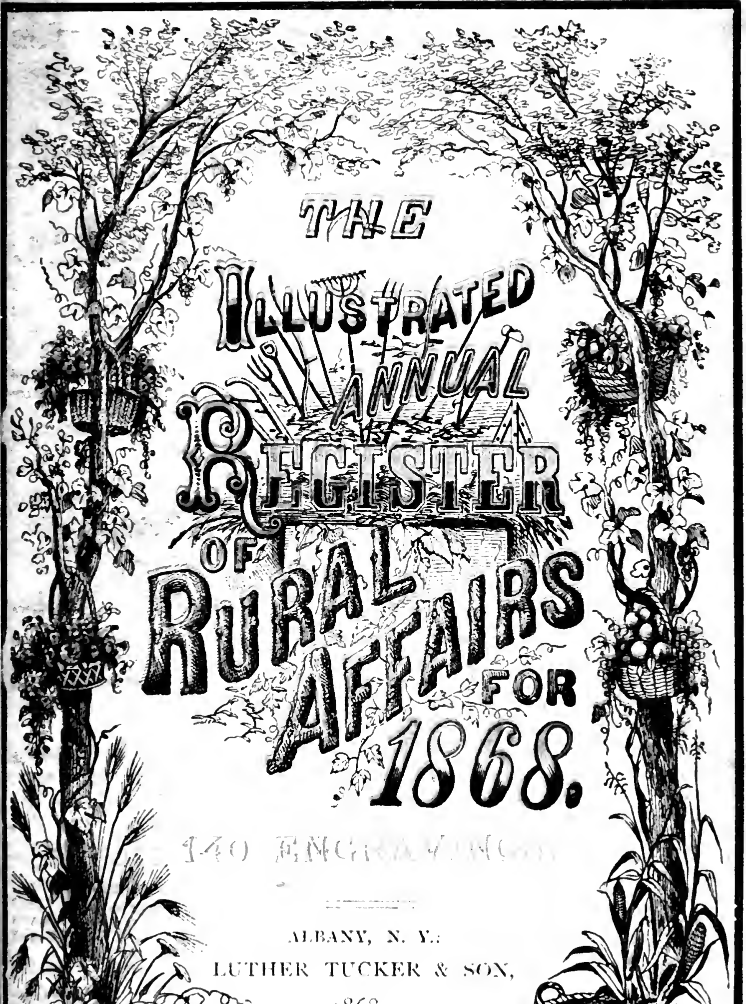

THE ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS FOR 1868.

140 ENGRAVINGS.

ALBANY, N. Y.:
LUTHER TUCKER & SON,
1868

Number Fourteen—Price 30 Cents.

"The Best of all the American Newspapers Devoted to Matters of Rural Economy."—*Scottish Farmer, Edinburgh.*

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AND

COUNTRY GENTLEMAN.

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THE

ILLUSTRATED ANNUAL

REGISTER OF RURAL AFFAIRS

AND

CULTIVATOR ALMANAC

FOR THE YEAR 1868,

CONTAINING

PRACTICAL SUGGESTIONS FOR THE FARMER AND HORTICULTURIST.

With Nearly 150 Engravings.

BY J. J. THOMAS,

AUTHOR OF THE 'AMERICAN FRUIT CULTURIST,' AND 'FARM IMPLEMENTS,'
ASSOCIATE EDITOR OF THE 'CULTIVATOR & COUNTRY GENTLEMAN.'

ALBANY, N. Y.:
LUTHER TUCKER & SON, 395 BROADWAY.
1868.

PUBLISHERS' ADVERTISEMENT.

THE ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS has now reached the FOURTEENTH YEAR of publication, and the present number is the second of a Fifth Triennial Volume. The leading article it contains is on a subject of great practical importance to every farmer, the Rotation of Crops. It is followed by an interesting description of the methods of Small Fruit Culture adopted on the Hudson, largely illustrated. A chapter succeeds devoted to Shrubs and Shrubberies, with hints on Ornamental Planting, and drawings and descriptions of all the most desirable varieties for general introduction. The large number of Contrivances in Rural Economy, for which directions are given in the next paper, will be found as serviceable as they are simple and unpretending. Dr. FITCH continues the instructive essay on Garden Insects of which a portion was given in the ANNUAL REGISTER for 1867. Aside from the foregoing articles there are many others of almost equal value, and the number of Engravings is unusually large.

THE REGISTER OF RURAL AFFAIRS is designed to supply, in connection with the Calendar pages of an Almanac, an ANNUAL of Agriculture and Horticulture, incidentally illustrating the progress we are making from year to year in these important Arts, as well as condensing within a small compass the largest possible amount of information for the farmer and fruit grower, and indeed on all points connected with the out-door or in-door labors of those whose homes are in the Country. While the previous numbers will consequently be found to contain more or less on every branch of practical cultivation, they are also especially rich in Designs for Farm and Country Houses and Working Men's Cottages—on Ornamental Planting and the care of Gardens and Grounds,—and on related topics, such as fences and gates, architecture generally, vegetable physiology, entomology, farm and horticultural implements, the care of domestic animals, hints for housekeepers, underdraining, butter and cheese making, poultry and bee-keeping, &c., &c.—thus constituting in fact a LIBRARY in themselves.

An edition on larger and finer paper, omitting Calendar and Advertising pages, is issued in Triennial Volumes, handsomely bound for preservation and reference. FOUR of these Volumes are now ready, embracing, under the simple and comprehensive title of RURAL AFFAIRS the whole series of the ANNUAL REGISTER, (previous to 1867) complete—sold separately or together at $1.50 each. These Four volumes comprise about *Thirteen Hundred Pages*, and no less than *Seventeen Hundred Illustrations*. In the two following pages we present a brief outline of their respective Contents, to which the reader is referred.

The Publishers have also the Numbers in paper covers, as they originally appeared, (with the exception of those for 1855 and 1857,) either of which may at any time be obtained by remitting Thirty Cents, or any four of them for One Dollar, enclosed by mail to LUTHER TUCKER & SON, *Albany, N. Y.*, who will also send the bound volumes postpaid at the price above named, except to those districts only reached by the Overland Mail. The Number for 1867 is worth double its price for the essay on the Culture of the Grape alone, or for its article on Milk Farming, from the practiced pen of DONALD G. MITCHELL, Esq., author of "My Farm of Edgewood."

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Country Dwellings.—FIFTEEN DESIGNS, accompanied with Plans, in many instances of several floors—also estimates of Cost—together with General Rules for Building, and Remarks on the Art of Planning a House.

Laying Out Grounds.—FOUR ARTICLES on Laying Out Farms—two on Grounds around Houses and Flower-Gardens—eight on MODES OF PLANTING and various Trees and Shrubs.

What Fruits to Choose.—SIXTY-ONE VARIETIES of Apples; FIFTY-FOUR of Pears; TWENTY-EIGHT of Peaches; TEN of Nectarines and Apricots; THIRTY-FOUR of Plums; TWENTY-EIGHT of Cherries; THIRTEEN of Strawberries, and a Dozen of Native and Foreign Grapes are DESCRIBED—with Approved Lists and Select Assortments.

Domestic Animals.—IMPROVED BREEDS illustrated by portraits. A valuable article on Doctoring Sick Animals, with Simple Rules and Remedies, embracing the most common Diseases of Horses, Cattle, Sheep and Swine.

Fruit Culture.—TWENTY-TWO ARTICLES—Treatment of Orchards, Large and Small Fruits, with a large number of brief Notes, presenting many valuable Hints and Suggestions.

Farm Buildings.—Barns, Carriage Houses, Stables, the Piggery, Smoke-House, Poultry House—Cisterns, Erecting Lightning Rods, &c.

Farm Implements.—TWENTY-THREE ARTICLES, amply illustrated, embracing nearly all the principal Implements in which the farmer is concerned—Wind Mills, Steam Engine, &c.

Butter and Cheese Making.—The best modes and means treated at considerable length, accompanied by Designs for Dairy Houses.

Rural Economy.—Many Articles and Notes, the fruits of the Author's long experience and observation, on Farm Management, Rotation, Packing Trees and Plants, Satisfactory Farming, &c., &c.

Rustic Seats and Structures.—Illustrated designs for Summer Houses, Flower Stands, Rock Work, and other similar Rural Ornaments.

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Flower and Kitchen Garden.—Annual Flowers—Vegetable Management—the Vinery and Green-House—the Verbena—also, a full Article on Hedging and HEDGES, with Directions for their Cultivation.

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Domestic Animals.—Feeding—Steaming Food—Veterinary Receipts—Wintering and Stabling—Wool, &c.

Nursery Lists.—A Descriptive and Illustrated List of the Principal Nurseries in the United States—Supplement to the above—Nurseries in Europe.

Ornamental Planting.—Beautifying Country Houses—Modes of Grouping—Lawns, Walks and Rustic Objects—with NINE PLANS of Grounds and nearly Forty Engravings.

Implements of Tillage.—Tillage—the Gang Plow—Improvements in Plows and Harrows—Plowing and Subsoiling—Ditching Plows—Implements for Surface Tillage.

Other New Implements, &c.—Farm Workshops—a Horse-Power—Hay Fork—Mill—Stalk Cutter—Potato Digger—Painting Tools—with numerous hints.

Rural and Domestic Economy.—Root Crops—Good and Bad Management—Dairy Economy—Rules for Business—Early Melons—Cleaning Seed Wheat—Packing Trees.

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Working Men's Cottages.—Six Designs and Seventeen Engravings—the Cottages costing from $250 to $800.

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Farm Work.—A calendar of Suggestions for each month in the Year, with Fifty-six Engravings—including Ice-Houses and storing ice—making Stone Wall, and many other incidental points often omitted—a very valuable article.

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Entomology.—A full Chapter on Collecting and Preserving Insects, particularly interesting to beginners in this important science

Country Homes.—An article with Eight Designs, accompanied by ground plans, &c.

Pruning.—The principles and practice fully described, with over Thirty illustrations.

Poultry.—Treatise on the Turkey—Poultry Houses and their Arrangement with Designs.

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Domestic Animals.—A full article on Mutton Sheep—The Management of Swine—also hints for the Bee-Keeper, &c., &c.

Implements and Inventions.—Mechanical Contrivances for various purposes—the Implements of Horticulture—new Machines—largely illustrated.

Woodlands.—Planting Timber for Screens—the care and Culture of the Timber Crop.

INDEX OF No. 14, FOR 1868.

ILLUSTRATIONS.

THE

CULTIVATOR ALMANAC,

FOR 1868.

ASTRONOMICAL CALCULATIONS IN EQUAL OR CLOCK TIME.

ECLIPSES FOR THE YEAR 1868.

THERE WILL BE ONLY TWO ECLIPSES this year, both of the Sun, and neither of them visible in the United States.

I. An Annular Eclipse of the Sun, February 23d. Visible in South America, Africa and Southern Europe.

II. A Total Eclipse of the Sun, August 18th. Visible in Eastern Africa, Southern Asia and in Australia.

A TRANSIT OF MERCURY over the Sun's disc, will occur November 5th. Invisible in the United States.

MORNING AND EVENING STARS.

MORNING STARS.—Venus after July 16. Mars from January 2 to November 13. Jupiter from March 10 to July 4. Saturn until February 24, and after November 29.

EVENING STARS—Venus until July 16. Mars until January 2, and after November 13. Jupiter until March 10, and after July 4. Saturn from February 24 to November 29.

THE FOUR SEASONS.

		D.	H.	M.			D.	H	M.
Winter	begins 1867, December	22—	1	31	mo., and	lasts	89	0	56
Spring	do. 1868, March	20—	2	27	mo.,	do.	92	20	27
Summer	do. 1868, June	20—10		54	eve.,	do.	93	14	31
Autumn	do. 1868, September	22—	1	25	eve.,	do	89	17	55
Winter	do. 1868, December	21—	7	20	mo.,	Trop.year,	365	5	49

CYCLES OF TIME AND CHURCH DAYS.

Dominical Letters,	E D	Septuagesima Sund.	Feb. 9	Easter Sunday,	April 12
Epact,	6	Sexagesima, do.	do. 16	Low Sunday,	do. 19
Golden Number,	7	Quinquagesima do.	do. 23	Rogation Sunday,	May 17
Solar Cycle,	1	Ash Wednesday,	do. 26	Ascension Day,	do. 21
Roman Indiction,	11	Quadragesima Sund.	Mar. 1	Pentecost Sunday,	do. 31
Jewish Lunar Cycle,	4	Mid-Lent Sunday,	do. 22	Trinity Sunday,	June 7
Dionysian Period,	197	Palm Sunday,	April 5	Middle of the Year,	July 1
Julian Period,	6581	Good Friday,	do. 10	Advent Sunday,	Nov. 29

THE PLANETS.

MERCURY will be at the most favorable stations for visibility, February 17, June 13, and October 9, being then Evening Star, and appearing in the west just after sunset; also April 7, August 5, and November 24, being then Morning Star, and appearing in the east just before sunrise.

VENUS will be in the constellation Capricornus until January 20, then in Aquarius until February 15, being directly south of the Urn January 23. It passes the equinoctial February 15 rising exactly on the east point of the horizon, and setting squarely in the west. It will be in Pisces from this time to March 12, then in Aries until April 6. On the 4th of April it will be 2° south of the brightest star in the Pleiades. April 14 it will be 8° north of Aldebaran, and on the 25th it will be 2° 22' south of Beta Tauri. It passes the solstitial colure May 4, and will be farthest north May 6. May 7 it reaches its greatest eastern elongation from the sun, 45° 31'. On the 26th it will be 7° south of Castor, and on the 30th it will be 4° south of Pollux. June 9 it will be the *brighest;* after which it approaches the Sun and daily loses its splendor. June 23 it becomes stationary, having been moving direct, or eastward since its last superior conjunction, but now it begins to retrograde, and is situated a little southwest of the nebulæ in Cancer. It passes Pollux again July 18th, 12° 28' to south of it; but this will not be visible, as Venus will be in inferior conjunction with the Sun on the 16th, and itself invisible. It now moves off from the sun westward apparently, and increases in beauty as a *morning* star. On the 7th of August it becomes stationary again, and begins to pass the stars eastward, and reaches its greatest splendor again on the 21st. On the 25th of September it reaches its greatest western elongation, 46° 9'. October 6th it will be 1° south of Regulus. November 7 it crosses the Equator southward; November 21st, 4° north of Spica; December 10, enters Libra's Square; and on the 15th is near the middle of it; December 29th, 6° 12' north of Antares.

MARS will come to the meridian during the daylight for the first nine months of the year. It has no opposition this year, and will not be an object of much interest until near the close of the year. November 27 it will be 2° north of Regulus in the handle of the Sickle. It will be near the Sickle during November and December.

JUPITER has been travelling northward since May 8th, 1865, and on the first of May it crosses the Equator, and rises exactly in the east at 3h. 32m. morn. It will be southeast of the Urn in the first part of the year, but directly east of it May 1. October 1 it will be the brightest and in opposition to the Sun, rising at sunset and setting at sunrise. On the 8th of April it will be *very close* to Mars.

SATURN will be in opposition May 23, and brightest, rising as the Sun sets, and setting as the sun rises. It will be in the region 10° or 12° north of Antares all of the year.

OCCULTATIONS.—The Moon will occult or eclipse the bright star *a* Tauri, or Aldebaran, January 7, at 1h. 17m. morn., at Washington, the star reappearing at 2h. 20m. The same star will also be occulted again November 29, at 5h. 54m. eve., at Washington, and reappear at 6h. 51m. eve. These occultations are interesting to witness.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FIRST QUARTER,	2	11 18 ev.	11 6 ev.	10 54 ev.	1	12 3 43
FULL MOON, . . .	9	6 9 ev.	5 57 ev.	5 45 ev.	9	12 7 17
THIRD QUARTER	16	0 20 ev.	0 8 ev.	11 56 mo.	17	12 10 17
NEW MOON, . . .	24	2 34 ev.	2 22 ev.	2 10 ev.	25	12 12 33

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES	SUN SETS.	MOON SETS.	H. W. BOST'N
		H M	H M	H M	H M
1	W	7 30	4 38	11 13	3 28
2	T	7 30	4 39	morn	4 13
3	F	7 30	4 40	0 13	5 5
4	S	7 30	4 41	1 14	5 58
5	E	7 30	4 42	2 18	6 59
6	M	7 29	4 43	3 26	8 1
7	T	7 29	4 44	4 33	9 4
8	W	7 29	4 45	5 40	10 4
9	T	7 29	4 46	rises.	11 4
10	F	7 29	4 47	6 8	11 56
11	S	7 29	4 48	7 20	ev. 48
12	E	7 28	4 50	8 31	1 40
13	M	7 28	4 51	9 40	2 29
14	T	7 28	4 52	10 40	3 18
15	W	7 27	4 53	11 51	4 7
16	T	7 27	4 54	morn	5 0
17	F	7 26	4 55	0 54	5 56
18	S	7 26	4 56	1 53	6 53
19	E	7 25	4 58	2 52	7 48
20	M	7 24	4 59	3 47	8 43
21	T	7 24	5 0	4 41	9 33
22	W	7 23	5 1	5 32	10 20
23	T	7 22	5 3	6 17	11 4
24	F	7 22	5 4	sets.	11 44
25	S	7 21	5 5	6 12	morn
26	E	7 20	5 6	7 9	0 21
27	M	7 19	5 8	8 7	1 0
28	T	7 18	5 9	9 5	1 38
29	W	7 17	5 10	10 4	2 18
30	T	7 16	5 12	11 5	2 57
31	F	7 15	5 13	morn.	3 40

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

SUN RISES	SUN SETS.	MOON SETS.	H. W. N. Y.
H M	H M	H M	H M
7 25	4 43	11 13	0 14
7 25	4 44	morn	1 1
7 25	4 45	0 13	1 51
7 25	4 46	1 13	2 43
7 25	4 47	2 16	3 44
7 25	4 48	3 23	4 46
7 25	4 49	4 30	5 49
7 24	4 50	5 36	6 50
7 24	4 51	rises.	7 47
7 24	4 52	6 12	8 40
7 24	4 53	7 23	9 34
7 23	4 54	8 33	10 25
7 23	4 55	9 41	11 12
7 23	4 56	10 48	ev. 3
7 22	4 57	11 50	0 54
7 22	4 59	morn.	1 47
7 21	5 0	0 52	2 42
7 21	5 1	1 51	3 38
7 21	5 2	2 49	4 33
7 20	5 3	3 44	5 28
7 19	5 4	4 37	6 19
7 18	5 5	5 28	7 6
7 17	5 7	6 13	7 47
7 17	5 8	sets.	8 6
7 16	5 9	6 15	9 7
7 16	5 10	7 11	9 46
7 15	5 11	8 8	10 23
7 14	5 13	9 6	11 0
7 13	5 14	10 4	11 41
7 12	5 15	11 4	morn.
7 12	5 16	morn.	0 26

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

SUN RISES	SUN SETS.	MOON SETS.
H M	H M	H M
7 19	4 49	11 14
7 19	4 50	morn.
7 19	4 51	0 12
7 19	4 52	1 11
7 19	4 52	2 14
7 19	4 53	3 20
7 19	4 54	4 26
7 19	4 55	8 32
7 19	4 56	rises.
7 19	4 57	6 16
7 19	4 58	7 26
7 18	4 59	8 35
7 18	5 0	9 42
7 18	5 1	10 48
7 18	5 2	11 49
7 17	5 3	morn.
7 17	5 5	0 50
7 16	5 6	1 48
7 16	5 7	2 45
7 15	5 8	3 40
7 15	5 9	4 33
7 14	5 10	5 23
7 14	5 11	6 9
7 13	5 12	sets.
7 12	5 13	6 18
7 12	5 15	7 14
7 11	5 16	8 10
7 10	5 17	9 6
7 9	5 18	10 4
7 8	5 19	11 3
7 8	5 20	morn.

LET SAVING be the watchword now;
Save the flesh of animals by attending to their comfort;
Keep them warm, sheltered and clean;
Feed and water them regularly;
Give wholesome food and pure water;
Keep stables clean and ventilated;
Watch animals and supply all wants;
Save Fodder, by good feeding racks;
Feed often and in small quantities;
Shelter them from winds and storms;
Protect trees from mice by treading snow about them;
Subscribe for Agricultural Papers.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FIRST QUARTER,	1	1 32 ev.	1 20 ev.	1 8 ev.	1	12 13 41
FULL MOON, . . .	8	4 51 mo.	4 39 mo.	4 27 mo.	9	12 14 28
THIRD QUARTER	15	4 33 mo.	4 21 mo.	4 9 mo.	17	12 14 16
NEW MOON, . . .	23	9 36 mo.	9 24 mo.	9 12 mo.	25	12 13 20

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES	SUN SETS.	MOON SETS.	H. W. BOST'N
		H M	H M	H M	H M
1	S	7 14	5 14	0 7	4 30
2	E	7 13	5 15	1 9	5 25
3	M	7 12	5 16	2 15	6 28
4	T	7 11	5 18	3 20	7 37
5	W	7 10	5 19	4 23	8 45
6	T	7 9	5 21	5 22	9 48
7	F	7 8	5 22	rises.	10 48
8	S	7 6	5 23	6 4	11 40
9	E	7 5	5 24	7 17	ev. 28
10	M	7 4	5 25	8 26	1 16
11	T	7 2	5 26	9 35	2 4
12	W	7 1	5 28	10 40	2 48
13	T	7 0	5 29	11 43	3 35
14	F	6 59	5 30	morn	4 25
15	S	6 57	5 32	0 43	5 18
16	E	6 56	5 33	1 41	6 18
17	M	6 54	5 35	2 35	7 14
18	T	6 53	5 36	3 27	8 11
19	W	6 52	5 38	4 13	9 3
20	T	6 50	5 39	4 57	9 51
21	F	6 48	5 40	5 37	10 36
22	S	6 47	5 42	6 12	11 17
23	E	6 45	5 43	sets.	11 55
24	M	6 44	5 45	6 59	morn.
25	T	6 42	5 46	7 58	0 32
26	W	6 41	5 47	8 59	1 10
27	T	6 39	5 49	10 0	1 49
28	F	6 38	5 50	11 1	2 30
29	S	6 37	5 50	morn.	3 14

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

SUN RISES	SUN SETS.	MOON SETS.	H. W. N. Y.
H M	H M	H M	H M
7 11	5 18	0 5	1 17
7 10	5 19	1 7	2 14
7 9	5 20	2 12	3 14
7 7	5 21	3 16	4 22
7 6	5 22	4 19	5 30
7 5	5 23	5 18	6 34
7 4	5 25	rises.	7 32
7 3	5 26	6 7	8 22
7 2	5 27	7 18	9 15
7 1	5 28	8 27	10 2
7 0	5 30	9 35	10 46
6 58	5 31	10 39	11 32
6 57	5 32	11 41	ev. 21
6 56	5 34	morn	1 12
6 55	5 35	0 40	2 4
6 53	5 36	1 38	3 3
6 52	5 37	2 31	4 0
6 51	5 39	3 23	4 55
6 49	5 40	4 9	5 48
6 48	5 41	4 53	6 37
6 46	5 43	5 33	7 21
6 45	5 44	6 9	7 59
6 44	5 45	sets.	8 38
6 42	5 46	7 0	9 19
6 41	5 48	7 58	9 56
6 39	5 49	8 58	10 33
6 38	5 50	9 58	11 13
6 37	5 51	10 59	11 59
6 36	5 52	morn.	morn.

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

SUN RISES	SUN SETS.	MOON SETS.
H M	H M	H M
7 7	5 21	0 3
7 6	5 23	1 4
7 5	5 24	2 8
7 4	5 25	3 12
7 3	5 26	4 15
7 2	5 27	5 13
7 1	5 28	rises.
7 0	5 29	6 9
6 59	5 30	7 20
6 58	5 32	8 27
6 57	5 33	9 34
6 55	5 34	10 38
6 54	5 35	11 39
6 53	5 36	morn.
6 52	5 38	0 37
6 51	5 39	1 34
6 49	5 40	2 27
6 48	5 41	3 19
6 47	5 42	4 5
6 46	5 44	4 49
6 44	5 45	5 30
6 43	5 46	6 6
6 42	5 47	sets.
6 40	5 48	7 1
6 38	5 49	7 58
6 37	5 51	8 58
6 36	5 52	9 57
6 34	5 53	10 56
6 34	5 53	11 59

CONTINUE the labors of winter and and prepare for the coming season;
Continue the care of domestic animals;
Diligence only can be successful;
Neglect will certainly end in loss;
See constantly to their comfort;
Keep them well sheltered;
Avoid the discomfort of dirt;

Avoid the waste from bad food;
Avoid the loss from bad water;
Save by chopping up fodder;
Save by grinding fed grain;
Save by mixing with roots;
Fill ice-houses with ice;
Encase in a foot of sawdust;
Provide ventilation above.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FIRST QUARTER,	1	0 5 mo.	11 53 ev.	11 41 ev.	1	12 12 25
FULL MOON, . . .	8	3 38 ev.	3 26 ev.	3 14 ev.	9	12 10 32
THIRD QUARTER	15	10 45 ev.	10 33 ev.	10 21 ev.	17	12 8 18
NEW MOON, . . .	24	2 15 mo.	2 3 mo.	1 51 mo.	25	12 5 53
FIRST QUARTER,	31	7 41 mo.	7 29 mo.	7 17 mo.		

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES	SUN SETS.	MOON SETS.	H. W. BOST'N	SUN RISES	SUN SETS.	MOON SETS.	H. W. N. Y.	SUN RISES	SUN SETS.	MOON SETS.
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	D	6 36	5 51	0 5	4 4	6 35	5 53	0 2	0 51	6 33	5 54	morn.
2	M	6 35	5 52	1 8	5 4	6 34	5 53	1 5	1 50	6 32	5 55	1 1
3	T	6 33	5 53	2 11	6 9	6 32	5 54	2 7	2 55	6 30	5 56	2 3
4	W	6 31	5 54	3 10	7 20	6 30	5 55	3 8	4 5	6 29	5 57	3 2
5	T	6 30	5 55	4 5	8 29	6 29	5 56	4 1	5 14	6 27	5 57	3 57
6	F	6 28	5 56	4 55	9 33	6 27	5 57	4 52	6 19	6 26	5 58	4 48
7	S	6 26	5 57	5 39	10 29	6 25	5 58	5 37	7 14	6 24	5 59	5 34
8	D	6 25	5 58	rises.	11 21	6 24	5 59	rises.	8 2	6 23	6 0	rises.
9	M	6 23	5 59	7 11	ev. 6	6 22	6 0	7 11	8 51	6 21	6 1	7 11
10	T	9 21	6 0	8 19	0 49	6 20	6 1	8 18	9 36	6 20	6 2	8 18
11	W	6 20	6 2	9 27	1 34	6 19	6 2	9 25	10 19	6 18	6 3	9 23
12	T	6 18	6 3	10 29	2 0	6 17	6 3	10 26	11 2	6 17	6 4	10 24
13	F	6 16	6 4	11 30	3 3	6 16	6 4	11 26	11 48	6 15	6 5	11 23
14	S	6 14	6 5	morn.	3 51	6 14	6 5	morn.	ev. 37	6 13	6 6	morn.
15	D	6 13	6 6	0 27	4 43	6 12	6 6	0 24	1 30	6 12	6 7	0 19
16	M	6 11	6 7	1 20	5 40	6 11	6 8	1 16	2 26	6 10	6 8	1 12
17	T	6 9	6 9	2 9	6 37	6 9	6 9	2 5	3 23	6 9	6 9	2 1
18	W	6 7	6 10	2 54	7 35	6 7	6 10	2 50	4 20	6 7	6 10	2 45
19	T	6 6	6 11	3 35	8 29	6 6	6 11	3 31	5 14	6 6	6 11	3 28
20	F	6 4	6 12	4 11	9 18	6 4	6 12	4 8	6 4	6 4	6 12	4 5
21	S	6 2	6 13	4 45	10 3	6 2	6 13	4 42	6 49	6 3	6 13	4 40
22	D	6 0	6 14	5 17	10 47	6 1	6 14	5 15	7 31	6 1	6 14	5 13
23	M	5 59	6 15	5 47	11 25	5 59	6 15	5 46	8 8	5 59	6 15	5 45
24	T	5 57	6 17	sets.	morn.	5 58	6 16	sets.	8 48	5 58	6 16	sets.
25	W	5 55	6 18	7 52	0 3	5 56	6 17	7 51	9 28	5 56	6 17	7 49
26	T	5 53	6 19	8 56	0 42	5 54	6 18	8 54	10 11	5 54	6 18	8 51
27	F	5 52	6 20	9 39	1 25	5 52	6 19	9 56	10 50	5 53	6 19	9 53
28	S	5 50	6 21	11 3	2 8	5 51	6 20	10 59	11 39	5 51	6 19	10 55
29	D	5 48	6 22	morn.	2 55	5 49	6 21	morn.	morn.	5 50	6 20	11 56
30	M	5 46	6 23	0 5	3 48	5 47	6 22	0 1	0 34	5 48	6 21	morn.
31	T	5 45	6 24	1 5	4 49	5 46	6 23	1 1	1 36	5 47	6 22	0 56

FINISH the jobs of winter, and prepare for spring labor in earnest;
Procure rails for repairing fences;
Finish cutting fuel for summer;
Clean grain for spring crops;
Clean grass seed for spring seeding;
Repair hinges in zagging gates;
Repair defects in stone walls;
See that tools are ready for work;
Paint and grease carts and wagons;
Examine and replace harrow teeth;
Put rakes, forks and scythes in order.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FULL MOON, . . .	7	2 33 mo.	2 21 mo.	2 9 mo.	1	12 3 45
THIRD QUARTER	14	5 51 ev.	5 39 ev.	5 27 ev.	9	12 1 25
NEW MOON, . . .	22	3 36 ev.	3 24 ev.	3 12 ev.	17	11 59 23
FIRST QUARTER,	29	1 34 ev.	1 22 ev.	1 10 ev.	25	11 57 47

DAY OF MONTH.	DAY OF WEEK.	CALENDAR For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.				CALENDAR For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.				CALENDAR For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.		
		SUN RISES.	SUN SETS.	MOON SETS.	H. W. BOST'N	SUN RISES.	SUN SETS.	MOON SETS.	H. W. N. Y.	SUN RISES.	SUN SETS.	MOON SETS.
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	W	5 43	6 25	1 59	5 56	5 44	6 24	1 55	2 42	5 46	6 23	1 50
2	T	5 41	6 27	2 49	7 6	5 42	6 26	2 45	3 54	5 44	6 24	2 41
3	F	5 40	6 28	3 34	8 14	5 41	6 27	3 31	4 58	5 42	6 25	3 28
4	S	5 38	6 29	4 14	9 14	5 39	6 28	4 12	6 0	5 41	6 26	4 10
5	D	5 36	6 30	4 51	10 8	5 37	6 29	4 50	6 54	5 39	6 27	4 49
6	M	5 35	6 31	rises.	10 57	5 36	6 30	rises.	7 40	5 37	6 28	rises.
7	T	5 33	6 32	7 6	11 41	5 34	6 31	7 4	8 23	5 36	6 29	7 3
8	W	5 31	6 33	8 11	ev. 22	5 33	6 32	8 8	9 9	5 34	6 30	8 6
9	T	5 30	6 34	9 14	1 6	5 31	6 33	9 11	9 52	5 33	6 31	9 8
10	F	5 28	6 36	10 15	1 50	5 30	6 34	10 11	10 34	5 31	6 32	10 8
11	S	5 26	6 37	11 11	2 34	5 28	6 35	11 7	11 16	5 30	6 33	11 2
12	D	5 25	6 38	morn.	3 21	5 26	6 36	11 59	ev. 6	5 28	6 34	11 54
13	M	5 23	6 39	0 3	4 9	5 25	6 37	morn.	0 56	5 27	6 35	morn.
14	T	5 21	6 40	0 50	5 3	5 24	6 38	0 46	1 50	5 25	6 36	0 42
15	W	5 20	6 41	1 32	5 58	5 22	6 39	1 29	2 44	5 24	6 37	1 24
16	T	5 18	6 42	2 10	6 56	5 20	6 40	2 7	3 41	5 23	6 38	2 3
17	F	5 16	6 43	2 45	7 48	5 19	6 41	2 42	4 33	5 21	6 39	2 39
18	S	5 15	6 45	3 16	8 41	5 17	6 42	3 15	5 25	5 20	6 40	3 13
19	D	5 13	6 46	3 47	9 26	5 16	6 43	3 45	6 12	5 18	6 41	3 44
20	M	5 12	6 47	4 17	10 12	5 14	6 44	4 16	6 58	5 17	6 42	4 16
21	T	5 10	6 48	4 47	10 56	5 13	6 45	4 48	7 39	5 16	6 42	4 48
22	W	5 9	6 49	sets.	11 36	5 11	6 46	sets.	8 18	5 14	6 43	sets.
23	T	5 7	6 50	7 47	morn.	5 10	6 47	7 45	9 4	5 13	6 44	7 42
24	F	5 6	6 51	8 43	0 18	5 8	6 48	8 40	9 50	5 11	6 45	8 36
25	S	5 4	6 52	9 58	1 3	5 7	6 49	9 54	10 36	5 10	6 46	9 50
26	D	5 3	6 53	11 0	1 52	5 6	6 50	10 56	11 26	5 9	6 47	10 51
27	M	5 1	6 55	11 57	2 44	5 4	6 51	11 53	morn.	5 8	6 48	11 49
28	T	5 0	6 56	morn	3 38	5 3	6 52	morn	0 24	5 6	6 49	morn.
29	W	4 58	6 57	0 49	4 39	5 2	6 53	0 45	1 26	5 5	6 50	0 41
30	T	4 57	6 58	1 33	5 45	5 0	6 55	1 30	2 30	5 4	6 51	1 27

ACTIVE field labors now commence, and should be vigorously pursued;
Clear, pick, roll and plaster meadows;
Finish repairing and staking fences;
Nail board fences, and lay up walls:
Draw out manure for spring crops;
Harrow it fine before plowing in;
Sow barley and oats early;
Pull red root and cockle from wheat;
Enrich the soil well for root crops;
Mix it thoroughly and pulvervize fine;
Avoid hasty and superficial work;
Destroy weeds early, when easily done;
Graft plums, apples and pears;
Set out young orchards in time;
Cut back the shoots to induce growth;
Keep the earth mellow and cultivated;
Cut back budded trees of last year.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FULL MOON, . . .	6	1 53 ev.	1 41 ev.	1 29 ev.	1	11 56 54
THIRD QUARTER	14	0 31 ev.	0 19 ev.	0 7 ev.	9	11 56 14
NEW MOON, . . .	22	1 52 mo.	1 40 mo.	1 28 mo.	17	11 56 11
FIRST QUARTER,	28	6 58 ev.	6 46 ev.	6 34 ev.	25	11 56 44

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES	SUN SETS.	MOON SETS.	H. W. BOST'N	SUN RISES	SUN SETS.	MOON SETS.	H. W. N. Y.	SUN RISES	SUN SETS.	MOON SETS.
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	F	4 56	7 0	2 15	6 51	4 59	6 56	2 13	3 37	5 2	6 52	2 10
2	S	4 54	7 1	2 52	7 54	4 58	6 57	2 50	4 30	5 1	6 53	2 49
3	D	4 53	7 2	3 26	8 52	4 56	6 58	3 26	5 37	5 0	6 54	3 25
4	M	4 52	7 3	4 0	9 44	4 55	6 59	4 0	6 30	4 59	6 55	4 0
5	T	4 51	7 4	4 32	10 32	4 54	7 0	4 33	7 17	4 58	6 56	4 35
6	W	4 49	7 5	rises.	11 17	4 53	7 1	rises.	8 0	4 57	6 57	rises.
7	T	4 48	7 6	8 0	11 57	4 52	7 2	7 57	8 42	4 55	6 58	7 53
8	F	4 47	7 7	8 59	ev. 40	4 51	7 3	8 55	9 26	4 54	6 59	8 51
9	S	4 46	7 8	9 54	1 24	4 49	7 4	9 50	10 10	4 53	7 0	9 45
10	D	4 44	7 9	10 44	2 7	4 48	7 5	10 39	10 50	4 52	7 1	10 35
11	M	4 43	7 10	11 28	2 51	4 47	7 6	11 24	11 35	4 51	7 2	11 19
12	T	4 42	7 11	morn.	3 37	4 46	7 7	morn	ev. 23	4 50	7 2	morn.
13	W	4 41	7 12	0 9	4 26	4 45	7 8	0 5	1 13	4 49	7 3	0 2
14	T	4 40	7 13	0 44	5 16	4 44	7 9	0 41	2 2	4 49	7 4	0 38
15	F	4 39	7 14	1 16	6 10	4 43	7 10	1 14	2 40	4 48	7 5	1 11
16	S	4 38	7 15	1 47	7 4	4 42	7 11	1 46	3 49	4 47	7 6	1 44
17	D	4 37	7 16	2 16	7 56	4 41	7 12	2 16	4 41	4 46	7 7	2 15
18	M	4 36	7 17	2 46	8 48	4 40	7 13	2 46	5 33	4 45	7 8	2 46
19	T	4 35	7 18	3 17	9 37	4 39	7 14	3 18	6 23	4 44	7 9	3 19
20	W	4 34	7 19	3 52	10 26	4 39	7 15	3 54	7 11	4 43	7 10	3 56
21	T	4 33	7 20	4 29	11 13	4 38	7 16	4 32	7 55	4 43	7 10	4 35
22	F	4 32	7 21	sets.	11 58	4 37	7 17	sets.	8 43	4 42	7 11	sets.
23	S	4 31	7 22	8 50	morn	4 36	7 18	8 46	9 34	4 41	7 12	8 41
24	D	4 31	7 23	9 50	0 48	4 36	7 19	9 46	10 25	4 41	7 13	9 42
25	M	4 30	7 24	10 45	1 39	4 35	7 20	10 41	11 15	4 40	7 14	10 37
26	T	4 29	7 25	11 33	2 33	4 34	7 20	11 30	morn.	4 39	7 14	11 26
27	W	4 29	7 26	morn.	3 27	4 34	7 21	morn.	0 13	4 39	7 15	morn.
28	T	4 28	7 27	0 17	4 26	4 33	7 22	0 15	1 13	4 38	7 16	0 12
29	F	4 27	7 28	0 55	5 27	4 32	7 23	0 53	2 12	4 38	7 17	0 51
30	S	4 27	7 28	1 30	6 28	4 32	7 23	1 30	3 14	4 37	7 17	1 29
31	D	4 26	7 29	2 2	7 30	4 31	7 24	2 2	4 14	4 37	7 18	2 2

THE PROMINENT labors of this month are planting, and completion of sowing.

Prepare ground thoroughly for corn;
Plant in straight even rows;
Secure seed corn from crows by tar:
Half a pint to a peck is enough

If the seed is scalded and then tarred;
Do every job in the very best manner;
Plant early kinds for fall feeding;
It will be nearly as good as old corn;
Fresh, unripe ears, are worth little;
Replant with early sorts only;
Make compost of coarse long manure.

MOON'S PHASES.	D.	H. M.	H. M.	H. M.	D.	H. M. S.
		BOSTON.	NEW-YORK.	WASHINGT'N	SUN ON MERID.	
FULL MOON, . . .	5	2 11 mo.	1 59 mo.	1 47 mo.	1	11 57 38
THIRD QUARTER	13	5 29 mo.	5 17 mo.	5 5 mo.	9	11 59 2
NEW MOON, . . .	20	10 1 mo.	9 49 mo.	9 37 mo.	17	12 0 42
FIRST QUARTER,	27	1 6 mo.	0 54 mo.	0 42 mo.	25	12 2 26

DAY OF MONTH.	DAY OF WEEK.	CALENDAR For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.				CALENDAR For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.				CALENDAR For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.		
		SUN RISES	SUN SETS.	MOON SETS.	H. W. BOST'N	SUN RISES	SUN SETS.	MOON SETS.	H. W. N. Y.	SUN RISES	SUN SETS.	MOON SETS.
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	M	4 25	7 30	2 34	8 26	4 31	7 24	2 36	5 11	4 36	7 19	2 37
2	T	4 25	7 30	3 7	9 17	4 30	7 25	3 9	6 3	4 36	7 19	3 11
3	W	4 25	7 31	3 42	10 6	4 30	7 26	3 45	6 52	4 36	7 20	3 47
4	T	4 24	7 32	rises.	10 54	4 30	7 26	rises.	7 38	4 35	7 21	rises.
5	F	4 24	7 32	7 46	11 35	4 29	7 27	7 42	8 17	4 35	7 21	7 38
6	S	4 24	7 33	8 37	ev. 17	4 29	7 28	8 33	9 3	4 35	7 22	8 29
7	D	4 23	7 33	9 24	1 0	4 29	7 28	9 19	9 46	4 34	7 23	9 15
8	M	4 23	7 34	10 7	1 41	4 28	7 29	10 3	10 27	4 34	7 23	9 58
9	T	4 23	7 35	10 44	2 23	4 28	7 30	10 41	11 6	4 34	7 24	10 37
10	W	4 23	7 36	11 18	3 5	4 28	7 30	11 15	11 50	4 34	7 24	11 12
11	T	4 22	7 36	11 50	3 49	4 28	7 31	11 48	ev. 35	4 34	7 25	11 46
12	F	4 22	7 37	morn	4 36	4 28	7 31	morn	1 23	4 34	7 25	morn.
13	S	4 22	7 37	0 18	5 25	4 28	7 32	0 17	2 12	4 34	7 26	0 16
14	D	4 22	7 38	0 46	6 19	4 28	7 32	0 46	3 4	4 34	7 26	0 46
15	M	4 22	7 38	1 16	7 14	4 28	7 32	1 17	3 58	4 34	7 26	1 17
16	T	4 22	7 38	1 47	8 9	4 28	7 33	1 48	4 55	4 34	7 27	1 50
17	W	4 22	7 39	2 23	9 5	4 28	7 33	2 25	5 50	4 34	7 27	2 28
18	T	4 22	7 39	3 3	9 58	4 28	7 33	3 6	6 44	4 34	7 28	3 9
19	F	4 22	7 39	3 49	10 55	4 28	7 34	3 53	7 39	4 34	7 28	3 57
20	S	4 23	7 40	sets.	11 46	4 29	7 34	sets.	8 28	4 34	7 28	sets.
21	D	4 23	7 40	8 35	morn.	4 29	7 34	8 31	9 21	4 34	7 28	8 26
22	M	4 23	7 40	9 28	0 36	4 29	7 34	9 24	10 14	4 35	7 28	9 20
23	T	4 23	7 40	10 16	1 29	4 29	7 34	10 13	11 4	4 35	7 29	10 10
24	W	4 23	7 40	10 57	2 21	4 29	7 35	10 54	11 58	4 35	7 29	10 52
25	T	4 24	7 41	11 32	3 13	4 30	7 35	11 31	morn.	4 35	7 29	11 30
26	F	4 24	7 41	morn	4 5	4 30	7 35	morn.	0 52	4 36	7 29	morn.
27	S	4 24	7 41	0 6	5 1	4 30	7 35	0 6	1 48	4 36	7 29	0 6
28	D	4 25	7 40	0 39	5 59	4 29	7 35	0 39	2 46	4 37	7 29	0 40
29	M	4 25	7 40	1 10	6 59	4 29	7 35	1 12	3 44	4 37	7 29	1 14
30	T	4 26	7 40	1 45	7 56	4 29	7 35	1 47	4 41	4 37	7 29	1 50

STIRRING the soil and destroying weeds will be the chief labors of this month;
Weeds will now appear by myriads;
Take them in hand early and easily;
If delayed, the labor will be great;
In growing from an inch to a foot, a weed increases a thousand fold;
One weed will sow seed for a thousand;
Then never allow them to ripen;
Stir the soil often among crops;
Let the horse cultivator pass often;
Depend less on hoeing by hand;
Hoes will work best if ground sharp;
Sow corn in thick drills for fodder;
It may occupy any vacant ground;
Sow ruta bagas early in the month.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FULL MOON, . . .	4	3 55 ev.	3 43 ev.	3 31 ev.	1	12 3 38
THIRD QUARTER	12	7 56 ev.	7 44 ev.	7 32 ev.	9	12 4 58
NEW MOON, . . .	19	5 12 ev.	5 0 ev.	4 48 ev.	17	12 5 53
FIRST QUARTER,	26	7 9 mo.	8 55 mo.	8 43 mo.	25	12 6 14

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES.	SUN SETS.	MOON SETS.	H. W. BOST'N	SUN RISES.	SUN SETS.	MOON SETS.	H. W. N. Y.	SUN RISES.	SUN SETS.	MOON SETS.
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	W	4 26	7 40	2 21	8 51	4 32	7 35	2 24	5 36	4 38	7 29	2 27
2	T	4 26	7 40	3 0	9 42	4 32	7 35	3 3	6 28	4 38	7 29	3 8
3	F	4 27	7 40	rises.	10 29	4 33	7 34	rises.	7 14	4 39	7 29	rises.
4	S	4 28	7 40	7 21	11 14	4 33	7 34	7 17	7 56	4 39	7 28	7 13
5	D	4 29	7 39	8 5	11 55	4 34	7 34	8 1	8 39	4 40	7 28	7 56
6	M	4 29	7 39	8 44	ev. 36	4 35	7 34	8 40	9 22	4 41	7 28	8 36
7	T	4 30	7 39	9 19	1 14	4 35	7 33	9 16	10 0	4 41	7 28	9 13
8	W	4 30	7 38	9 51	1 54	4 36	7 33	9 49	10 36	4 42	7 27	9 46
9	T	4 31	7 38	10 20	2 33	4 37	7 33	10 19	11 15	4 42	7 27	10 17
10	F	4 32	7 38	10 49	3 14	4 37	7 32	10 48	11 59	4 43	7 27	10 47
11	S	4 33	7 37	11 17	3 56	4 38	7 32	11 17	ev. 42	4 44	7 26	11 17
12	D	4 33	7 37	11 47	4 43	4 39	7 31	11 48	1 29	4 44	7 26	11 49
13	M	4 34	7 36	morn.	5 34	4 39	7 31	morn.	2 20	4 45	7 26	morn.
14	T	4 35	7 36	0 20	6 31	4 40	7 30	0 22	3 19	4 46	7 25	0 24
15	W	4 36	7 35	0 55	7 34	4 41	7 30	0 58	4 19	4 46	7 24	1 1
16	T	4 37	7 34	1 37	8 38	4 42	7 29	1 41	5 22	4 47	7 24	1 44
17	F	4 37	7 34	2 26	9 38	4 43	7 29	2 30	6 24	4 48	7 23	2 35
18	S	4 38	7 33	3 21	10 36	4 44	7 28	3 25	7 21	4 49	7 23	3 29
19	D	4 39	7 32	sets.	11 30	4 45	7 27	sets.	8 13	4 50	7 22	sets.
20	M	4 40	7 31	8 5	morn	4 45	7 26	8 2	9 8	4 51	7 21	7 58
21	T	4 41	7 30	8 51	0 21	4 46	7 26	8 48	10 0	4 52	7 21	8 45
22	W	4 42	7 30	9 31	1 13	4 47	7 25	9 30	10 47	4 52	7 20	9 28
23	T	4 43	7 29	10 6	2 5	4 48	7 24	10 5	11 35	4 53	7 19	10 5
24	F	4 44	7 28	10 41	2 51	4 48	7 23	10 41	morn.	4 54	7 18	10 42
25	S	4 45	7 27	11 12	3 41	4 49	7 23	11 16	0 27	4 55	7 18	11 17
26	D	4 46	7 26	11 47	4 33	4 50	7 22	11 49	1 20	4 56	7 17	11 51
27	M	4 47	7 25	morn.	5 29	4 51	7 21	morn.	2 15	4 57	7 16	morn.
28	T	4 48	7 24	0 22	6 27	4 52	7 20	0 25	3 13	4 58	7 15	0 28
29	W	4 49	7 23	1 0	7 25	4 53	7 19	1 4	4 10	4 58	7 14	1 7
30	T	4 50	7 22	1 41	8 24	4 54	7 18	1 45	5 9	4 59	7 13	1 49
31	F	4 51	7 21	2 27	9 16	4 55	7 17	2 31	6 2	4 59	7 12	2 35

CONTINUE to cultivate well, till arrested by the labors of haying and harvesting;

Continue the war against weeds;

"A stitch in time will save" thousands;

Cut hay at the medium season;

If too early it will lack substance;

If too late it will be hard and woody;

Cut wheat a week before dead ripe;

The grain will weigh more and be better;

The straw will be brighter and richer;

Cut timber by the middle of summer.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FULL MOON, . . .	3	7 8 mo.	6 56 mo.	6 44 mo.	1	12 6 1
THIRD QUARTER	11	7 44 mo.	7 32 mo.	7 20 mo.	9	12 5 10
NEW MOON, . . .	18	0 27 mo.	0 15 mo.	0 3 mo.	17	12 3 43
FIRST QUARTER,	24	8 3 ev.	7 51 ev.	7 39 ev.	25	12 1 45

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES.	SUN SETS.	MOON SETS.	H. W. BOST'N
		H M	H M	H M	H M
1	S	4 52	7 20	3 17	10 5
2	D	4 53	7 18	rises.	10 52
3	M	4 54	7 17	7 20	11 30
4	T	4 55	7 16	7 54	ev. 10
5	W	4 56	7 15	8 23	0 47
6	T	4 57	7 14	8 53	1 25
7	F	4 58	7 12	9 21	2 3
8	S	4 59	7 11	9 50	2 41
9	D	5 0	7 10	10 19	3 22
10	M	5 1	7 8	10 54	4 6
11	T	5 2	7 7	11 30	4 59
12	W	5 3	7 6	morn	5 59
13	T	5 4	7 4	0 14	7 5
14	F	5 5	7 3	1 5	8 14
15	S	5 6	7 1	2 4	9 19
16	D	5 7	7 0	3 10	10 21
17	M	5 8	6 58	sets.	11 17
18	T	5 10	6 57	7 22	morn
19	W	5 11	6 55	8 0	0 6
20	T	5 12	6 54	8 36	0 53
21	F	5 13	6 52	9 11	1 40
22	S	5 14	6 51	9 47	2 27
23	D	5 15	6 49	10 21	3 14
24	M	5 16	6 48	11 0	4 3
25	T	5 17	6 46	11 40	4 57
26	W	5 18	6 44	morn.	5 56
27	T	5 19	6 43	0 25	6 57
28	F	5 20	6 41	1 13	7 54
29	S	5 21	6 39	2 4	8 49
30	D	5 22	6 38	2 58	9 38
31	M	5 23	6 36	3 54	10 23

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES.	SUN SETS.	MOON SETS.	H. W. N. Y.
		H M	H M	H M	H M
1	S	4 56	7 16	3 21	6 51
2	D	4 57	7 14	rises.	7 36
3	M	4 58	7 13	7 17	8 12
4	T	4 59	7 12	7 51	8 54
5	W	5 0	7 11	8 21	9 33
6	T	5 1	7 10	8 52	10 11
7	F	5 2	7 9	9 21	10 45
8	S	5 3	7 7	9 51	11 23
9	D	5 4	7 6	10 20	ev. 7
10	M	5 5	7 5	10 56	0 53
11	T	5 6	7 4	11 33	1 46
12	W	5 7	7 2	morn.	2 46
13	T	5 8	7 1	0 18	3 50
14	F	5 9	7 0	1 9	4 58
15	S	5 10	6 58	2 8	6 5
16	D	5 11	6 57	3 14	7 7
17	M	5 12	6 55	sets.	7 59
18	T	5 13	6 54	7 20	8 51
19	W	5 14	6 53	7 59	9 39
20	T	5 15	6 51	8 36	10 25
21	F	5 16	6 50	9 12	11 10
22	S	5 17	6 48	9 49	11 59
23	D	5 17	6 47	10 24	morn.
24	M	5 18	6 45	11 3	0 50
25	T	5 19	6 44	11 44	1 44
26	W	5 20	6 42	morn	2 42
27	T	5 21	6 41	0 29	3 42
28	F	5 22	6 39	1 17	4 39
29	S	5 23	6 37	2 8	5 34
30	D	5 24	6 36	3 1	6 24
31	M	5 25	6 34	3 57	7 9

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

SUN RISES.	SUN SETS.	MOON SETS.
H M	H M	H M
5 0	7 11	3 26
5 1	7 10	rises.
5 2	7 9	7 14
5 3	7 8	7 48
5 4	7 7	8 20
5 5	7 6	8 51
5 6	7 5	9 21
5 6	7 4	9 51
5 7	7 2	10 22
5 8	7 1	10 58
5 9	7 0	11 37
5 10	6 59	morn.
5 11	6 58	0 22
5 12	6 56	1 14
5 13	6 54	2 12
5 14	6 53	3 19
5 15	6 52	sets.
5 16	6 51	7 18
5 17	6 50	7 58
5 17	6 48	8 36
5 18	6 47	9 14
5 19	6 45	9 51
5 20	6 44	10 27
5 21	6 43	11 7
5 22	6 41	11 48
5 23	6 40	morn.
5 24	6 38	0 34
5 25	6 37	1 21
5 26	6 35	2 12
5 26	6 34	3 5
5 27	6 32	4 0

FINISH up haying and harvesting;
Cut oats before the straw is full yellow;
It will waste less and be better fodder;
Secure the gleanings by a horse rake;
Drag stubble while wet to start weeds;
Carefully house all harvest tools;
Carefully secure the best seed wheat;
Thoroughly winnow out the foul seeds;
Never sow any chess;
Allow no weeds to go to seed;
Cut up briars to destroy them;
Keep roots thoroughly clear of weeds;
Cut underdrains through wet lands;
Drain muck swamps for the manure.

MOON'S PHASES.	D.	H. M.	H. M.	H. M.	D.	H. M. S.
		BOSTON.	NEW-YORK.	WASHINGT'N		SUN ON MERID.
FULL MOON, . . .	1	11 13 ev.	11 1 ev.	10 49 ev.	1	11 59 39
THIRD QUARTER	9	5 20 ev.	5 8 ev.	4 56 ev.	9	11 57 0
NEW MOON, . . .	16	8 35 mo.	8 23 mo.	8 11 mo.	17	11 54 12
FIRST QUARTER,	23	10 38 mo.	10 26 mo.	10 14 mo.	25	11 51 25

DAY OF MONTH.	DAY OF WEEK.	CALENDAR For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.				CALENDAR For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.				CALENDAR For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.		
		SUN RISES	SUN SETS.	MOON RISES.	H. W. BOST'N	SUN RISES	SUN SETS.	MOON RISES.	H. W. N. Y.	SUN RISES	SUN SETS.	MOON RISES.
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	T	5 24	6 35	rises.	11 4	5 26	6 33	rises.	7 47	5 28	6 31	rises.
2	W	5 26	6 33	6 56	11 42	5 27	6 31	6 54	8 24	5 29	6 29	6 53
3	T	5 27	6 31	7 24	ev. 17	5 28	6 29	7 24	9 3	5 30	6 28	7 23
4	F	5 28	6 29	7 52	0 54	5 29	6 28	7 53	9 40	5 31	6 26	7 54
5	S	5 29	6 28	8 22	1 32	5 30	6 26	8 23	10 17	5 32	6 25	8 25
6	D	5 30	6 26	8 54	2 11	5 31	6 25	8 57	10 53	5 33	6 23	8 59
7	M	5 31	6 24	9 30	2 53	5 32	6 23	9 33	11 37	5 34	6 22	9 36
8	T	5 32	6 22	10 10	3 40	5 33	6 21	10 14	ev. 26	5 35	6 21	10 18
9	W	5 33	6 21	10 55	4 35	5 34	6 20	11 0	1 22	5 35	6 20	11 4
10	T	5 34	6 19	11 50	5 37	5 35	6 18	11 54	2 23	5 36	6 18	11 58
11	F	5 35	6 17	morn.	6 45	5 36	6 16	morn	3 31	5 37	6 17	morn.
12	S	5 36	6 15	0 51	7 56	5 37	6 15	0 54	4 41	5 38	6 15	0 59
13	D	5 37	6 14	1 59	9 4	5 38	6 13	2 2	5 49	5 39	6 14	2 6
14	M	5 38	6 12	3 8	10 2	5 39	6 11	3 11	6 48	5 40	6 12	3 14
15	T	5 39	6 10	4 23	10 57	5 40	6 9	4 25	7 40	5 41	6 10	4 27
16	W	5 40	6 8	sets.	11 45	5 41	6 8	sets.	8 27	5 42	6 9	sets.
17	T	5 41	6 7	7 6	morn.	5 42	6 6	7 6	9 16	5 43	6 7	7 7
18	F	5 43	6 5	7 41	0 29	5 43	6 4	7 42	9 59	5 44	6 6	7 44
19	S	5 44	6 3	8 18	1 15	5 44	6 3	8 20	10 43	5 44	6 4	8 22
20	D	5 45	6 1	8 54	2 1	5 45	6 1	8 57	11 29	5 45	6 2	9 1
21	M	5 46	6 0	9 35	2 46	5 46	5 59	9 39	morn.	5 46	6 1	9 43
22	T	5 47	5 58	10 21	3 34	5 47	5 58	10 25	0 20	5 47	5 59	10 29
23	W	5 48	5 56	11 7	4 27	5 48	5 56	11 11	1 14	5 48	5 58	11 15
24	T	5 49	5 54	11 57	5 23	5 49	5 54	morn.	2 8	5 49	5 56	morn.
25	F	5 50	5 53	morn.	6 22	5 50	5 53	0 1	3 8	5 50	5 54	0 6
26	S	5 51	5 51	0 51	7 20	5 51	5 52	0 55	4 5	5 51	5 53	1 0
27	D	5 52	5 49	1 45	8 14	5 52	5 50	1 48	4 58	5 52	5 51	1 52
28	M	5 53	5 47	2 43	9 5	5 53	5 48	2 46	5 50	5 53	5 50	2 49
29	T	5 54	5 46	3 40	9 50	5 54	5 46	3 42	6 36	5 54	5 48	3 44
30	W	5 56	5 44	4 37	10 31	5 54	5 44	4 38	7 16	5 55	5 46	4 39

PUT LAND in the best order for wheat;
Let it be well enriched and made mellow;
Let the seed be sown with a drill;
Destroy smut by brining the seed;
Feed all fattening animals regularly;
Let the apartments of swine be kept clean;
Never keep them waiting for food;
Never let them squeal off their flesh;
Grub up bushes and briars;
Cut up straggling thistles in pastures;
Pull up scattered mulleins by roadsides;
Carefully select the best seed corn;
Sow timothy for next season's crop;
Drain bogs if the weather is dry;
Harvest buckwheat as soon as it ripens;
Soil and feed cows if pastures are short.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
FULL MOON, . . .	1	3 14 ev.	3 2 ev.	2 50 mo.	1	11 49 27
THIRD QUARTER	19	1 30 mo.	1 18 mo.	1 6 mo.	9	11 47 7
NEW MOON, . . .	15	6 17 ev.	6 5 ev.	5 53 mo.	17	11 45 17
FIRST QUARTER,	23	4 58 mo.	4 46 mo.	4 34 mo.	25	11 44 6
FULL MOON, . . .	31	6 21 mo.	6 9 mo.	5 57 mo.		

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES	SUN SETS.	MOON RISES.	H. W. BOST'N	SUN RISES	SUN SETS.	MOON RISES.	H. W. N. Y.	SUN RISES	SUN SETS.	MOON RISES.
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M
1	T	5 57	5 42	rises.	11 11	5 56	5 43	rises.	7 53	5 55	5 43	rises.
2	F	5 58	5 40	6 25	11 48	5 57	5 41	6 26	8 31	5 56	5 42	6 27
3	S	5 59	5 39	6 57	ev. 24	5 58	5 39	6 59	9 11	5 57	5 40	7 1
4	D	6 0	5 37	7 30	1 5	5 59	5 38	7 33	9 51	5 58	5 39	7 36
5	M	6 1	5 35	8 9	1 47	6 0	5 36	8 13	10 31	5 59	5 37	8 16
6	T	6 2	5 33	8 53	2 32	6 1	5 35	8 57	11 15	6 0	5 35	9 1
7	W	6 3	5 32	9 44	3 22	6 2	5 33	9 48	ev. 7	6 1	5 34	9 52
8	T	6 4	5 30	10 41	4 19	6 3	5 31	10 45	1 6	6 2	5 32	10 49
9	F	6 6	5 28	11 43	5 23	6 4	5 30	11 46	2 8	6 3	5 31	11 51
10	S	6 7	5 27	morn	6 30	6 5	5 28	morn	3 17	6 4	5 29	morn.
11	D	6 8	5 25	0 50	7 40	6 7	5 27	0 53	4 25	6 5	5 28	0 57
12	M	6 9	5 23	2 1	8 45	6 8	5 25	2 3	5 30	6 6	5 26	2 6
13	T	6 10	5 22	3 12	9 42	6 9	5 23	3 14	6 28	6 7	5 25	3 15
14	W	6 11	5 20	4 23	10 33	6 10	5 22	4 24	7 18	6 8	5 23	4 24
15	T	6 13	5 19	sets.	11 22	6 11	5 20	sets.	8 3	6 9	5 22	sets.
16	F	6 14	5 17	6 10	morn	6 12	5 19	6 11	8 49	6 10	5 21	6 14
17	S	6 15	5 15	6 48	0 4	6 13	5 17	6 50	9 34	6 11	5 19	6 53
18	D	6 16	5 14	7 26	0 48	6 14	5 16	7 30	10 19	6 12	5 18	7 34
19	M	6 17	5 12	8 10	1 34	6 15	5 14	8 14	11 3	6 13	5 16	8 18
20	T	6 18	5 11	8 57	2 21	6 16	5 13	9 1	11 51	6 14	5 15	9 6
21	W	6 20	5 9	9 48	3 6	6 18	5 12	9 52	morn	6 15	5 14	9 57
22	T	6 21	5 8	10 41	3 56	6 19	5 10	10 45	0 42	6 16	5 13	10 49
23	F	6 22	5 6	11 36	4 49	6 20	5 9	11 40	1 37	6 18	5 11	11 44
24	S	6 23	5 5	morn.	5 45	6 21	5 7	morn	2 31	6 19	5 10	morn.
25	D	6 24	5 3	0 29	6 40	6 22	5 6	0 32	3 26	6 20	5 9	0 35
26	M	6 26	5 2	1 29	7 34	6 23	5 4	1 32	4 19	6 21	5 8	1 34
27	T	6 27	5 1	2 27	8 25	6 24	5 3	2 28	5 10	6 22	5 6	2 30
28	W	6 28	4 59	3 25	9 11	6 26	5 2	3 25	5 57	6 23	5 5	3 26
29	T	6 29	4 57	4 25	9 56	6 27	5 1	4 25	6 42	6 24	5 4	4 24
30	F	6 31	4 57	rises.	10 39	6 28	4 59	rises.	7 23	6 25	5 2	rises.
31	S	6 32	4 55	5 30	11 21	6 29	4 58	5 33	8 2	6 26	5 1	5 35

FINISH harvesting autumn crops;
Let potatoes be always put away dry;
They will be less affected by rot;
Keep them ventilated and cool;
Ventilate all roots buried in heaps;
Carefully hand-pick winter apples;
Handle them about as carefully as eggs;
Avoid bruising the trees by ladders;
Give care to fattening animals;
Feed regularly, and just enough;
Avoid waste, dirt and surfeit;
Paint buildings and out-houses.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
THIRD QUARTER	7	9 3 mo.	8 51 mo.	8 39 mo.	1	11 43 41
NEW MOON, . . .	14	6 11 mo.	5 59 mo.	5 47 mo.	9	11 44 1
FIRST QUARTER,	22	2 2 mo.	1 50 mo.	1 38 mo.	17	11 45 16
FULL MOON, . . .	29	8 16 ev.	8 4 ev.	7 52 ev.	25	11 47 23

CALENDAR

For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.

DAY OF MONTH.	DAY OF WEEK.	SUN RISES	SUN SETS.	MOON RISES.	H. W. BOST'N
		H M	H M	H M	H M
1	D	6 33	4 54	6 8	11 59
2	M	6 34	4 53	6 50	ev. 43
3	T	6 36	4 51	7 40	1 30
4	W	6 37	4 50	8 35	2 20
5	T	6 38	4 49	9 36	3 11
6	F	6 39	4 48	10 40	4 7
7	S	6 41	4 47	11 49	5 10
8	D	6 42	4 45	morn.	6 17
9	M	6 43	4 44	0 57	7 20
10	T	6 44	4 43	2 7	8 21
11	W	6 46	4 42	3 15	9 16
12	T	6 47	4 41	4 25	10 8
13	F	6 48	4 40	5 34	10 56
14	S	6 49	4 39	sets.	11 41
15	D	6 51	4 39	6 0	morn.
16	M	6 52	4 38	6 47	0 23
17	T	6 53	4 37	7 37	1 10
18	W	6 54	4 36	8 29	1 56
19	T	6 56	4 35	9 24	2 40
20	F	6 57	4 34	10 21	3 26
21	S	6 58	4 34	11 18	4 13
22	D	6 59	4 33	morn.	5 2
23	M	7 0	4 32	0 15	5 54
24	T	7 2	4 32	1 13	6 40
25	W	7 3	4 31	2 11	7 39
26	T	7 4	4 31	3 10	8 29
27	F	7 5	4 30	4 11	9 18
28	S	7 6	4 30	5 14	10 5
29	D	7 7	4 30	rises.	10 54
30	M	7 8	4 29	5 32	11 39

CALENDAR

For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.

SUN RISES	SUN SETS.	MOON RISES.	H. W. N. Y.
H M	H M	H M	H M
6 30	4 57	6 10	8 44
6 31	4 56	6 54	9 28
6 32	4 54	7 44	10 17
6 34	4 53	8 39	11 2
6 35	4 52	9 40	11 56
6 36	4 51	10 44	ev. 54
6 37	4 50	11 52	1 56
6 38	4 49	morn	3 2
6 40	4 48	0 59	4 5
6 41	4 47	2 7	5 4
6 42	4 46	3 15	6 2
6 43	4 45	4 24	6 54
6 44	4 44	5 32	7 39
6 46	4 43	sets.	8 23
6 47	4 42	6 4	9 10
6 48	4 41	6 51	9 56
6 49	4 40	7 41	10 40
6 50	4 39	8 33	11 22
6 51	4 39	9 28	morn.
6 53	4 38	10 24	0 11
6 54	4 38	11 20	0 59
6 55	4 37	morn.	1 49
6 56	4 36	0 17	2 40
6 57	4 36	1 14	3 32
6 58	4 35	2 11	4 24
6 59	4 35	3 9	5 14
7 0	4 35	4 10	6 4
7 2	4 34	5 12	6 51
7 3	4 34	rises.	7 38
7 4	4 34	5 36	8 21

CALENDAR

For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.

SUN RISES	SUN SETS.	MOON RISES.
H M	H M	H M
6 27	5 0	6 14
6 28	4 59	6 58
6 29	4 58	7 48
6 31	4 57	8 44
6 32	4 56	9 44
6 33	4 55	10 47
6 34	4 54	11 55
6 35	4 53	morn.
6 36	4 52	1 1
6 37	4 51	2 9
6 38	4 50	3 15
6 39	4 49	4 23
6 40	4 48	5 30
6 41	4 47	sets.
6 43	4 47	6 8
6 44	4 46	6 55
6 45	4 45	7 46
6 46	4 44	8 37
6 47	4 44	9 32
6 48	4 43	10 28
6 49	4 43	11 23
6 50	4 42	morn.
6 51	4 42	0 19
6 52	4 41	1 15
6 53	4 40	2 11
6 55	4 40	3 9
6 56	4 40	4 8
6 57	4 40	5 9
6 58	4 39	rises.
6 59	4 39	5 41

THIS MONTH closes up the Autumn work, and prepares for the winter.
Hurry up with harvesting roots;
Speedily secure ruta bagas and beets;
Carrots should follow closely after;
Transplant hardy fruit trees;
Stake them up against the wind;
Shelter them if in windy positions;
Trees removed may be safely healed in;
Bury the roots and most of the tops;
Pack the earth solid among the roots;
Bank smoothly a foot about young trees;
It will securely protect them from mice;
Lay down raspberries and grapes;
Cover with two inches of earth;
The crop will be certain and better.

MOON'S PHASES.	D.	BOSTON. H. M.	NEW-YORK. H. M.	WASHINGT'N H. M.	SUN ON MERID. D.	H. M. S.
THIRD QUARTER	6	4 50 ev.	4 38 ev.	4 26 ev.	1	11 49 29
NEW MOON, . . .	13	8 49 ev.	8 37 ev.	8 25 ev.	9	11 52 52
FIRST QUARTER,	21	11 44 ev.	11 32 ev.	11 20 ev.	17	11 56 42
FULL MOON, . . .	29	9 3 mo.	8 51 mo.	8 39 mo.	25	12 0 41

DAY OF MONTH.	DAY OF WEEK.	CALENDAR For Boston, New-England, New-York State, Michigan, Wisconsin, Iowa, and Oregon.				CALENDAR For New-York City, Philadelphia, Connecticut, N. Jersey, Penn., Ohio, Indiana and Illinois.				CALENDAR For Washington, Maryl'd, Virginia, Kent'ky, Miss'ri, and California.			
		SUN RISES	SUN SETS.	MOON RISES.	H. W. BOST'N	SUN RISES	SUN SETS.	MOON RISES.	H. W. N. Y.	SUN RISES	SUN SETS.	MOON RISES.	
		H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	
1	T	7 10	4 29	6 27	ev. 26	7 5	4 34	6 31	9 13	7 0	4 39	6 36	
2	W	7 11	4 29	7 27	1 17	7 6	4 33	7 32	10 2	7 1	4 39	7 36	
3	T	7 12	4 28	8 32	2 9	7 7	4 33	8 36	10 50	7 2	4 38	8 40	
4	F	7 13	4 28	9 41	3 0	7 8	4 33	9 44	11 45	7 2	4 38	9 48	
5	S	7 14	4 28	10 49	3 55	7 9	4 32	10 51	ev. 41	7 3	4 38	10 53	
6	D	7 15	4 28	11 57	4 53	7 10	4 32	11 58	1 40	7 4	4 38	11 59	
7	M	7 16	4 28	morn	5 53	7 11	4 32	morn	2 39	7 5	4 38	morn.	
8	T	7 17	4 28	1 7	6 57	7 12	4 32	1 7	3 41	7 6	4 38	1 7	
9	W	7 17	4 28	2 13	7 54	7 13	4 32	2 12	4 39	7 7	4 38	2 11	
10	T	7 18	4 28	3 21	8 51	7 14	4 32	3 19	5 36	7 8	4 38	3 17	
11	F	7 19	4 28	4 27	9 54	7 15	4 32	4 24	6 30	7 9	4 38	4 21	
12	S	7 20	4 28	5 32	10 43	7 15	4 32	5 29	7 18	7 9	4 39	5 25	
13	D	7 21	4 28	sets.	11 20	7 16	4 33	sets.	8 2	7 10	4 39	sets.	
14	M	7 22	4 28	5 16	11 55	7 16	4 33	5 20	8 38	7 11	4 39	5 25	
15	T	7 22	4 29	6 18	morn.	7 17	4 33	6 22	9 32	7 12	4 39	6 27	
16	W	7 23	4 29	7 12	0 46	7 18	4 33	7 16	10 15	7 12	4 40	7 20	
17	T	7 24	4 29	8 8	1 29	7 18	4 33	8 12	10 54	7 13	4 40	8 15	
18	F	7 24	4 29	9 5	2 12	7 19	4 34	9 8	11 37	7 14	4 40	9 11	
19	S	7 25	4 30	10 2	2 53	7 20	4 34	10 5	morn.	7 14	4 41	10 7	
20	D	7 26	4 30	10 59	3 35	7 20	4 35	11 0	0 21	7 15	4 41	11 2	
21	M	7 26	4 31	11 58	4 20	7 21	4 35	11 58	1 7	7 15	4 42	11 59	
22	T	7 26	4 31	morn.	5 8	7 21	4 36	morn.	1 53	7 16	4 42	morn.	
23	W	7 27	4 32	0 55	5 57	7 22	4 37	0 55	2 43	7 16	4 43	0 54	
24	T	7 27	4 32	1 54	6 52	7 22	4 37	1 53	3 37	7 17	4 43	1 52	
25	F	7 28	4 33	2 55	7 44	7 23	4 38	2 53	4 29	7 17	4 44	2 51	
26	S	7 28	4 33	3 59	8 42	7 23	4 39	3 56	5 27	7 17	4 44	3 53	
27	D	7 28	4 34	5 3	9 35	7 23	4 39	4 59	6 21	7 18	4 45	4 56	
28	M	7 29	4 35	rises.	10 29	7 23	4 40	rises.	7 14	7 18	4 46	rises.	
29	T	7 29	4 36	5 10	11 20	7 24	4 40	5 15	8 4	7 18	4 47	5 19	
30	W	7 29	4 37	6 16	ev. 11	7 24	4 41	6 20	8 57	7 19	4 47	6 24	
31	T	7 30	4 37	7 26	1 3	7 24	4 42	7 29	9 49	7 19	4 48	7 33	

PREPARE ample shelter for animals;
Protect them against beating winds;
Keep them dry and well littered;
Avoid the exposure of wet;
Avoid the discomfort of dirt;
See that the hay is not wasted under foot;
Let stock be regularly salted;

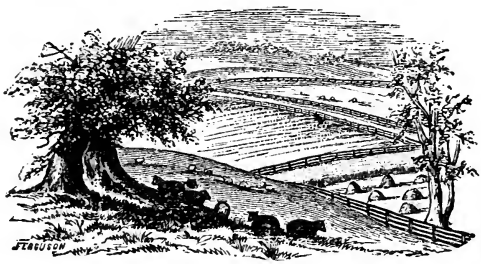
Give sheep good shelter, hay and roots;
Balance accounts for the season;
Calculate the amount of fodder needed;
Arrange the farm for regular rotation;
Arrange a plan of systematic labor;
Study the success of other Farmers,
By taking the best Agricultural Papers.

THE

ILLUSTRATED ANNUAL REGISTER

OF

RURAL AFFAIRS.



ROTATION OF CROPS.

THE ROTATION OF CROPS has one great advantage over all other agencies in conducting farm operations. It accomplishes by thought alone, that which in other directions requires heavy expenditures or hard labor. Manuring is the great prime mover; rotation the guide of this moving force. The former may be compared to the engine which propels the vessel; the latter the rudder which directs all the exerted power to a beneficial end.

With a few exceptions, the most successful husbandry is that which includes a mixture or combination of the different departments. Domestic animals assist in the manufacture of manure. Hay and grass, grain and roots furnish their food. The straw serves as a sponge to hold the otherwise wasting manure, yielded by these animals. Thus the one becomes a means of increasing the other; animals enrich the soil and increase the crops; this increase of crops again supports an increased number of animals, and a mutual augmentation takes place.

The continued cultivation of the same land with the same or similar crops, is attended with a constant exhaustion or running down of the soil. A crop of wheat, or of oats, or of corn, raised year after year on the same piece of ground, yields less each successive year, till little or noth-

ing is finally produced. (Fig 2.) The soil deteriorates in every part, meadows run out, and moss and weeds come in. Tillage grounds wear away in fertility, till they fail to produce materials for making manure. The exceptions are where enriching or non-exhausting crops are raised,

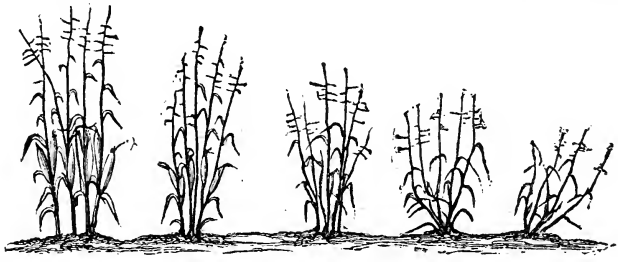


Fig. 2.—*Successive diminution of Corn, grown continuously on the same Ground.*

or where heavy manuring is constantly resorted to; as in the case of permanent pastures in dairy regions, which are regularly top-dressed; or the market gardens near cities, kept enriched by heavy manuring.

There are several advantages in adopting a rotation. One is the preservation of the fertility of the soil; a second is, checking the spread of weeds; and a third, is an even distribution of labor throughout the season.

I. Preservation of Fertility.

Farmers are sometimes driven as they suppose, in cases of necessity, to crop hard to raise money to pay their debts. But in thus endeavoring to get a little increased interest on their capital, they are making a most formidable draft on the principal. An additional amount of information and planning and proper arrangement,—would preserve the fertility of the land, and the crops would soon be increased more than by hundreds of dollars worth of labor without. Where experiments have been made with different courses of crops—some of them bringing wheat often into the course and other cash-producing but soil-exhausting crops; and others with such crops at greater intervals—the increased richness of the land in the latter cases has been attended with the greatest profit at the end. A crop of forty bushels of wheat from an acre, once in four years, is far better than twenty bushels once in two years, for then, three years of intervening crops in the former, instead of two only in the latter case, are afforded for other crops, which may be much heavier besides. Hence those of the same kind, occurring at remote intervals, prove most profitable, even though for some of the intervening crops there may be little demand in market. Take as example, the results of a bad and of a good course, which on many soils would not be far different from the following:

I. A hard-cropping course—one acre:

1st year—Wheat, 20 bushels,		$40.00
2d do — do 10	do	20.00
3d do —Oats, 25	do	12.50
4th do —Wheat, 8	do	16.00
		$88.50

The land diminished in value.

II. A better rotation—one acre:

1st year—Wheat, 20 bushels,	$40.00
2d do —Clover and grass, 1¼ tons,	18.00
3d do — do do 1¼ do	18.00
4th do —Corn, 40 bushels,	30.00
	$106.00

A difference of $17.50. The land not diminished in value.

1. An important principle is—*all plants during growth, exhaust the soil more or less.* They derive while growing, a part of their support through the roots, and a part from the atmosphere through the leaves. Hence by removing the plants, a part of the constituents of the soil is removed; but if suffered to remain by plowing under or by returning from the barn-yard in the shape of manure, they serve to enrich the land.

2. Another principle is, *that plants at different periods of their growth, exhaust the soil unequally.* As a general rule, they impoverish the soil but little during early growth or while in a green state, but they make a heavy draft upon it, while ripening their seeds. Hence, pasture which is consumed while young and green, injures the soil less than hay, especially if the latter is cut after the seeds are ripe; corn sown for fodder, exhausts but little, but the exhaustion is greater when it furnishes a crop of ripened grain; flax, though usually a severe crop, is far less so if removed while in a green and growing state.

3. *Different plants do not exhaust in the same manner nor in an equal degree.* Some plants take more of certain ingredients from the soil than others. Different plants also feed from different depths. The roots of some of the grasses for example, extend downward but a few inches; while red clover often reaches a depth of two or three feet. While, therefore, one obtains nourishment from near the surface, another finds its supply down in the subsoil. This consideration, however, is of minor importance in arranging a rotation, as most plants throw down roots as far as good cultivation extends. Broad-leaved plants generally derive more from the air and less from the soil than those with narrow leaves; hence, when buried as manure, they restore most largely to the soil.

4. *Some plants admit of a heavier application of manure than others.* Such are generally broad-leaved succulent plants, as beets, turnips and corn; and, indeed, most plants whose value depends mainly on the quantity of green growth, as grasses for meadow and pasture. But the smaller grain crops, as wheat, oats and barley, may be so heavily manured as to promote too luxuriant a growth of leaf and stalk, at the expense of the seed. Hence, in a rotation, the manure should be given to such as are most immediately benefitted by a heavy application. The delay in time

and subsequent intermixture by tillage, gradually fit it for the more delicate crops. The manure should be always applied as soon as possible after breaking up from grass, that thorough admixture may take place before seeding down. This intermixture is of much more consequence than most are aware of; for by leaving fresh manure in lumps, unpulverized and unmixed, plants not only derive little comparative benefit from it, but by aiding in drying the soil in times of drouth, it has actually lessened, instead of increased, the products of the land.

Many other rules growing out of the preceding principles, will suggest themselves to the reflecting cultivator. From these principles, it will be perceived that *Farming is a continued system of exhaustion and return*, where properly managed; and not a continued system of exhaustion only, as when badly conducted; or, rather, exhaustion without any system whatever. The best way of making most effectually this return, should in all cases whatever, be considered the great leading object in all rotations, and the immediate profit from sales, the second great object. And, hence, in all good husbandry, the crop which gives the greatest immediate return in money, is not always the most profitable; but the one which puts the soil in the best condition, and helps to make the most permanently enriching manure, must be properly appreciated. The one may draw the treasure out of the soil, but the other accumulates it; the one expends the wealth of the land, the other collects it. If, for instance, a crop of green herbage be turned beneath the soil, though yielding of itself no return whatever, yet if it increases the following crop of corn from thirty to fifty bushels the acre, and a subsequent crop of wheat from fifteen to twenty-five bushels, it becomes, in reality, equal in nett value to twenty bushels of corn and ten of wheat.

II. Checking the Spread of Weeds.

As a general rule, naked fallows are the most efficient means of destroying weeds. Canada thistles and other plants which spread by the roots, may be killed in a single season on a clean fallow, where they are kept constantly turned under. Hoed crops if closely attended to and kept clean throughout the season, answer the same purpose with some other weeds. Other crops, as buckwheat, corn sown in thick drills for fodder, and a heavy growth of clover, serve as *smothering crops*, and greatly lessen the amount, if they do not wholly destroy weeds. *Some plants favor the growth of certain weeds more than others.* Cockle and chess flourish with wheat, alyssum with flax, and most sown crops are attended with an increase of grasses. These weeds multiply greatly where a single crop is raised on the same lands for many years successively; but rotation prevents this evil and thwarts their increase. The same remarks will apply, in some degree, to certain destructive insects, as for instance, the grub and the wire-worm.

III. Distribution of Labor.

The farmer who obtains labor at low wages does not always obtain it most cheaply. By a bad management of his succession of crops, he may be excessively crowded at one time and have little to do at another. An equal distribution throughout the season, therefore, becomes an important object,—enabling him to do everything in season, to do it well, and keep his farm hands at all times fully engaged. A rotation proper for one district of country, may be unfitted to another possessing a different soil, climate and market; and discretion must be employed by each land owner, to secure the best system. He should therefore, observe the leading objects:

1. To avoid exhausting the soil.
2. To return as much manure as possible.
3. To prepare for future crops.
4. To prevent the growth of weeds.
5. To distribute the labor equally.
6. To modify his rotation to existing circumstances; as, where labor is scarce and land plenty, to stock heavily with cattle; or where land is scarce, and labor and manure abundant, to make the raising of crops the principal business.

To assist further in planning a rotation, cultivated plants have been classified under separate heads; as for example:

1. Enriching crops, including all such as are plowed under for manure.
2. Non-exhausting, as pasture, peas, beans, and all grains cut before ripe, such as corn sown for fodder and green oats.
3. Exhausting, as ripened grain, turnips and potatoes.
4. Very exhausting, as flax, tobacco and hops. The more frequently the first named enter the rotation, the better will the fertility of the soil be kept up. A similar result will be secured where returning manure to the soil is a prominent object, and hence the raising of grain and roots may be made renovating instead of exhausting crops.

Having laid down the leading principles, it remains for us to give a few examples of practice. All farming may be regarded as some kind of rotation; either regular or irregular, however imperfect it may be, unless there is a perpetual succession of the same crop. There are all grades from the worst and rudest to the complete well-digested system. Among bad examples, prevailing to a greater or less extent in many parts of the country, the following were given many years ago in the Farmers' Register. Specimens of the two-course system were:

1st year—Corn.

2d year—Wheat, or oats if on land too poor or light for wheat. After harvest, the stubble grazed closely until next spring, when plowed again for corn.

When too poor to bear any small grain crops, that part of the course

is omitted on such poorer spots of the field, and afterwards on all; thus changing the relation to,

1st year—Corn.

2d year—Natural growth of weeds, grazed.

When not grazed the second year, as was sometimes the case, for want of separate fencing or some other cause, this rotation made a nearer approach to alternate and improving husbandry. It was then,

1st year—Corn.

2d year—Weeds not grazed, forming a very poor manuring crop.

An improvement was made on this by the adoption of the three-course system:

1st year—Corn.

2d year—Wheat, and afterwards .the spontaneous growth of grass and weeds, grazed.

3d year—Pasture, closely grazed.

This was supposed to be a great march in agricultural improvement, and by some regarded as the summit of perfection, to which two-course and no-course cultivators aspired as the height of their ambition. The exhaustion of the second year was moderated on the poorer parts, by the wheat being then omitted, for the simple and very obvious reason that it would not grow there. On those parts there were, of course, two years of rest from tillage, in the three. Col. Taylor introduced a four-course system, which was as follows:

1st year—Corn.

2d year—Wheat and clover sown—or if too poor for wheat, left at rest and not grazed.

3d year—Clover, (and weeds,) not mown nor grazed.

4th year—Clover, not mown nor grazed. This course possessed the advantage of giving two and a half years, out of four, for vegetables to grow which were to die and decay on the soil, and finally to be plowed in. It was a great improvement on the others. But it was materially opposed to the principles of good husbandry in several respects. It furnished vegetable manure only. A large portion of the value of this was lost, by dissipation into the air during its decay. The returns from the land were necessarily small, as only two years out of four produced crops for harvesting. And it greatly increased the labors of tillage, by the increase of noxious weeds. It happens in the preceding specimens, that the longer courses are better than the short ones, but the mistake must not be made of supposing that the number in any course is the index of its excellence. A good two-course system may be devised which shall be better than a bad eight-course system. For example, an alternation of wheat and clover with the application of manure, and especially if the clover continue two years to be plowed in, would be far better than another course, consisting of wheat, corn, barley, oats, wheat, oats, without manure or seeding,

which would be eminently exhausting, all these belonging to the class of exhausting crops already mentioned.

We now proceed to give a few examples of good rotations, which may be adopted or varied according to circumstances. An excellent farmer in a wheat growing region pursued the following for twenty years, the chief part of his farm being regularly laid out in ten acre lots for this purpose:

1st year—Wheat after clover.
2d do.—Corn, potatoes and ruta bagas, with all the manure.
3d do.—Barley.
4th do.—Wheat, sown with clover.
5th do.—Clover, pastured. A portion of the farm consisting of low wet ground, was kept in permanent meadow, being occasionally top-dressed and rarely broken up and reseeded. Another part, too rough to be brought into the regular course, was subjected to summer fallow, and occupied with wheat, clover and grass for pasture. This farm invariably afforded heavy crops, and so clear had the soil become, that the amount of hard labor required for dressing the hoed crops, was not one-third that usually expended. The only objection to this course, is the frequent occurrence of the wheat crop, which would be removed by suffering the clover and grass to remain two or more years, instead of one. This change would likewise admit a greater number of domestic animals, and a consequent increase of manure—the whole occupying seven instead of five fields. The following course is adapted to eight fields:

1st year—Wheat with clover seed.
2d do.—Pasture.
3d do.—Meadow.
4th do.—Fallow.
5th do.—Wheat.
6th do.—Oats and barley with clover seed.
7th do.—Pasture.
8th do.—Corn and roots with manure.

Thus if each field contained ten acres, there would be each year twenty acres of wheat, twenty in pasture, ten in meadow, ten in summer fallow, ten in oats and barley, and ten in corn and roots. The chief objection is, that as there are only ten acres of meadow, there would be hardly enough dry fodder for the domestic animals supported by the twenty acres of pasture, besides stubble and summer fallow; more especially in our long winters, where for nearly six months green food cannot be had. A large quantity of roots would of course lessen the difficulty; and a permanent wet meadow, or a crop of corn sown as fodder, would obviate it. With a more southern region the objection would not exist.

A fine example of the benefit of rotation was furnished some years ago by an old, practical, hard-working farmer in Pennsylvania. He commenced business as a day laborer, and when thirty years of age, by the avails of his industry added to a small legacy, was enabled to purchase

and to pay for in part, a farm of 130 acres, 100 being under cultivation, but in a very low condition. When he commenced farming he adopted a a particular system of rotation, to which he has adhered for forty years, and his success was the best comment on the value of his experiment, he being then worth at least $100,000, notwithstanding several pecuniary losses he has at various times sustained.

The following simple three and four course systems may be adopted in grain growing districts :

Three-course system :

1st year—Corn and roots, well manured.

2d year—Wheat.

3d year—Clover one or more years, according to fertility and amount of manure at hand. Early corn should be planted to admit of early removal for sowing the wheat.

Four-course system :

1st year—Corn and roots with all the manure.

2d year—Barley, or peas, or both.

3d year—Wheat.

4th year—Clover, one or more years.

Oats is a severe crop any where in a rotation ; but may be admitted on strong soils, the 2d year, if followed with fine manure. An experienced farmer who adopts the preceding three-course system, never permits oats to grow on land fit for wheat, but confines the crop exclusively to the more moist parts of his farm, otherwise devoted to meadow and pasture.

The following course occupies nine fields :

1st year—Corn and roots with all the manure.

2d year—Barley.

3d year—Wheat seeded with clover.

4th year—Pasture.

5th year—Meadow.

6th year—Fallow.

7th year—Wheat.

8th year—Oats or barley with clover.

9th year—Pasture or meadow.

A rotation used by some good farmers in Maryland, is this :

1st year—Corn with manure.

2d year—Oats with 150 pounds of guano, and buckwheat turned under as manure.

3d year—Wheat, clover and timothy.

4th year—Meadow.

5th year—Pasture.

6th year—Buckwheat, root crops and peas.

The rotation below is well adapted to stony soils when the dairy is a prominent business :

1st year—After fall plowing, sow in spring to oats.

2d year—After fall plowing, plant corn in spring, applying a compost of muck, manure and ashes, and top-dressing with plaster.

3d year—After fall plowing sow early in spring to wheat, barley, or a thinly seeded crop of oats, seeding down to clover and timothy, and top-dressing with one bushel of plaster to the acre.

4th—Let the land lie in grass as long as it produces well, with the help of plaster and a triennial dressing in autumn.

The following course is used where little else than the dairy is depended on for profit, the wheat or flour being purchased :

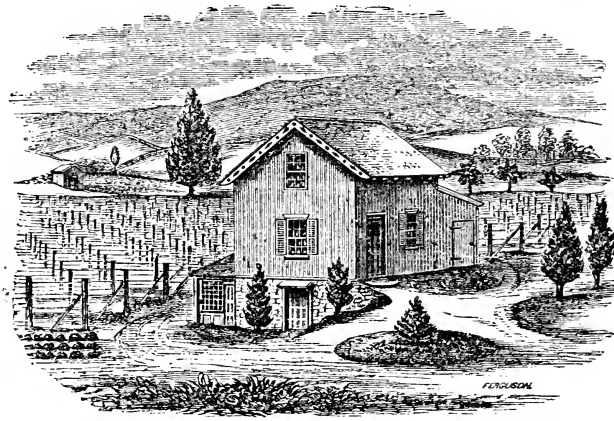
1st year—Corn or sward with manure from barn-yard, (applied and spread in autumn or during winter,) and one bushel of plaster to the acre, putting the old or composted manure and plaster in the hills.

2d year—Sow barley, spring wheat or a thinly seeded crop of oats, with timothy and clover.

3d—Pasture or mow five or six years, and top-dress with manure in autumn. The grass seed should be sown at the rate of about half a bushel per acre, that the pasture may be fine and rich like old fields.

The following diagram exhibits to such as may not be familiar with the subject, the manner of laying out a farm with fields, each being alloted to its regular course, with the following rotation in each field for the six years : Wheat, corn and roots, barley, wheat, clover, grass :

No. 1.	No. 2.	No. 3.
1865—Wheat. 1866—Corn and roots. 1867—Barley. 1868—Wheat. 1869—Clover. 1870—Grass.	1865—Corn and roots. 1866—Barley. 1867—Wheat. 1868—Clover. 1869—Grass. 1870—Wheat.	1865—Barley. 1866—Wheat. 1867—Clover. 1868—Grass. 1869—Wheat. 1870—Corn and roots.
LANE WITH GATE TO EACH FIELD		
No. 6.	No. 5.	No. 4.
1865—Grass. 1866—Wheat. 1867—Corn and roots. 1868—Barley. 1869—Wheat. 1870—Clover.	1865—Clover. 1866—Grass. 1867—Wheat. 1868—Corn and roots. 1869—Barley. 1870—Wheat.	1865—Wheat. 1866—Clover. 1867—Grass. 1868—Wheat. 1869—Corn and roots. 1870—Barley.



CULTURE OF SMALL FRUITS ON THE HUDSON.

By Prof. T. H. Burgess, of Highland, Ulster Co.

TO A PASSENGER on one of the evening boats that ply on the Hudson in June, the taking aboard of numerous peculiar boxes, often several hundred at some of the landings, is a note-worthy item. True, the ease of the sofa, and the politics of the saloon, or the twilight glory of the river scenery, may be sufficient excuse for not prying into the mystery of these boxes piled on deck; indeed the boxes themselves seem to forbid such "prying," each being secured by a small padlock, one key of which is in the vest pocket of the owner on shore, (or perchance standing at your elbow;) the other is in the desk of the consignee in the city. "Captain," you may inquire, "what are those boxes?" "Those are berries," would probably be the reply. Leaving them to pass on to the great city, to be distributed about four or five o'clock next morning, by the cartmen to the commission agents, and find their way to the corner groceries, and before the day is done, to be "smothered in cream," and refresh the inner man of thousands—get ashore, if you feel inclined, recognize an old friend, and spend a day among the "berry men." Mount on top of a load of empty boxes, which has been selected from the heterogeneous pile thrown off with no especial care by the boatmen, and you will soon reach a comfortable home, hidden away among the hills and the trees, and will be awakened by the robins next morning, which also are interested in fruit, although they may not listen to a talk on the *modus operandi* of fruit culture.

Half an hour before the arrival of the boat, the "berry men" drive

down to the river, each with a spring wagon load of boxes or chests, which hold from fifty to one hundred baskets of fruit, (or from a half bushel to one bushel,) apiece. A bill of each day's shipment is handed to the agent for the boat, and a duplicate is sent in one of the fruit chests, (marked "bill," on the cover) to the consignee, who pays freight and cartage, and can tell whether all consigned has reached him, by means of these bills. On the outside of the chests, as well as inside of the covers, the number of baskets, cups or pints, is marked, to save further counting, and when the grocery-men or consumers bring back the empty chests, they are returned as promptly as possible to the owners.

There is, however, much complaint among the berry men, on account of the loss of chests frequently occurring; sometimes the cartmen get them on the wrong boat; sometimes the boatmen make mistakes and leave at one landing chests belonging both sides of the river from Cornwall to Tivoli; sometimes they are not returned by the consumers to the commission agent. Generally the owners charge the amount of lost chests to the commission agent, and we have known some who did *charge*, them again with taking the amount out of next years' consignments. By careful account keeping with the chests, having them all numbered, and by comparison with the books of the agent, it may be ascertained who is the responsible party. Losses in this way sometimes have amounted to 30, 50 and even 80 dollars, in a single season.

Those agents who take care to return chests promptly, and contrive to keep their customers posted on each day's sales, either by mail or by a card sent in the empty chests, soon find their business improving. Berry men will prefer those agents who get the best prices, and *keep them posted.* At the close of the season the account is settled; ten per cent. commission is charged on gross sales; freight and cartage usually amounts to about five per cent. more; the remainder is the share of the grower. This tithe of the commission dealers seems an unnecessary burden on the consumers, who ought to have the fruit a penny a basket cheaper, but there appears no better way practicable to either grower or consumer; indeed, it may be the very best plan for both, to have the produce thus pass through the hands of wholesale dealers, securing the best market for the one, and better and more certain supply to the other.

The necessary fixtures for growing small fruits, are good plows, a subsoil plow, cultivator, horse hoe, spading forks, narrow steel hoes, trowels for transplanting, and pruning shears, &c. A Packing House must be provided—either a room in some other building, a cheap shed in the field provided with shelves for holding the cups of fruit brought in by the pickers, and room for storing chests, &c.; but it is usual to have a substantial building, sometimes arranged also for grape packing and storage, and with a cellar for packing plants, and preserving vines and cuttings.*

* The engraving at the head of this article represents the packing house of O. J. Tillson, of Highland, a skillful cultivator and marketer of small fruits at that place.

To each acre of strawberries if well cultivated, 5,000 cups or baskets will be required, with chests to pack them in, and often an extra supply will be needed, in case a warm day follows a shower, ripening the berries with unusual rapidity. The cost of these articles is approximately as follows:

Utensils more than for usual farming,	$25.00
Packing House, from 15 to 500 dollars, say,	250.00
Cups or baskets, for each acre,	100.00
Chests,	70.00
Currant and cherry boxes,	15.00

But these are permanent investments and will answer for cultivating and marketing every variety of small fruit. Chests can be made cheaply during winter. Sometimes heavy lath are used for the sides, fastening the covers with screws or keys; some make them of slats planed and painted, and bound with iron, and put the covers on with hinges; others prefer tight chests, painted and marked with number, name and residence. The hinges are put on the *outside*, so that opening and throwing back the covers, will not break them. Fig. 5.

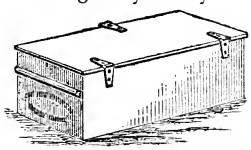


Fig. 5.—*Method of putting on hinges.*

Most growers affirm that the fruit keeps better when ventilated, (fig. 6,)

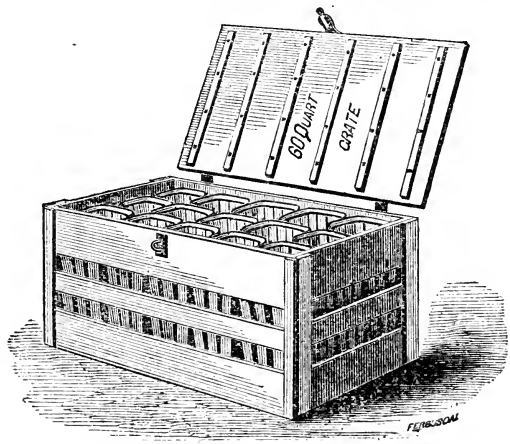


Fig. 6.—*Chest allowing Ventilation.*

especially when it remains unsold over the Sabbath; some think ventilation makes little difference, and that the Antwerp raspberry, especially, keeps best in close chests.

Packing houses should be cool and well ventilated, and the packing

delayed as late in the day as possible, and when packed the chests should be set in a cool place.

The neatest packages of first class fruit, sell readiest. In most of the western cities, these fruits are sold by measure; but to prevent bruising, the fruit is not generally changed in New-York, from the basket it is picked in, until it reaches the consumer.

Along the Hudson river and some other places, baskets and boxes, three of which hold a quart, are favorites for both Antwerps and strawberries.

Pint and quart cups are coming into general use elsewhere, especially for larger sized fruit. The practice of having different sized baskets, hold-

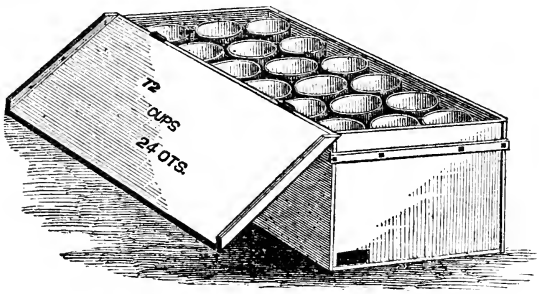


Fig. 7.—*Close Chest.*

ing a half pint to a pint, and selling by the "basket," must give place to more definite and exact measure. This subject has been before the Legislature of New-York, and has been discussed by the Farmers' Club of the American Institute, New York. But the interests and investments in various sized baskets, and the machinery for making them, as yet have prevented any action. We suggest the following as fair all around; market berries shall be sold by measure, and pint and quart cups are recommended, but where other sizes are used they should be of uniform capacity, and the exact quantity they hold must be marked on the chest or crate.

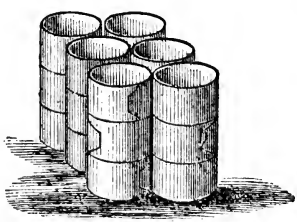


Fig. 8.—*Mode of packing round boxes.*

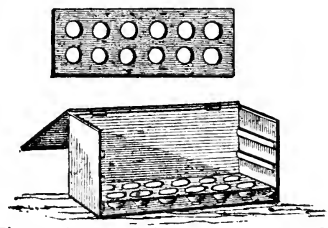


Fig. 9.—*Section of chest for carrying earthen bowls of fruit—showing board with holes to receive them.*

Fruit-growers will do well to visit the market frequently and study the

tastes and preferences of consumers. If cups or baskets of certain forms or sizes are preferred, it will pay to humor them. Sometimes care in arranging the fruit on the tops of the cups, pays for the labor, although it is not recommended, farther than for neatness, with such berries as the Wilson, where the "hull," or calyx, adheres to the fruit.

It will also pay to discard stained baskets or cups, and buy new, oftener than it is done. Some berry-men, aware of this fact, use white earthen bowls, (fig. 9,) so packed as to carry safely, and claim that they get back the price of the bowls every year, in the higher price of the fruit, and suffer little loss from breakage.

Fig. 10.—*Mode of packing baskets of Strawberries.*

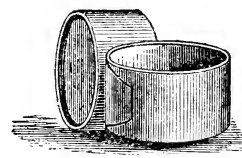


Fig. 11.—*Round Box.*

BASKETS.—The old fashioned splint baskets hold from half a pint to a pint—cost $15 to $20 per thousand, (fig. 10.) The Milton Round box, (fig. 11,) made of elm, steamed and bent round a pine bottom, holds one-third of a quart, is a light, durable and neat box, the best we have used of that size. Price $25 per thousand. The common square box (fig. 12,) made of a single thin piece of basswood, whitewood or pine, cut partly through so as to bend at the corners, (fig. 13,) and tacked around a square bottom, is advantageous in economy of space, requiring chests little more than half as large for 100 square boxes as for the same number of baskets.

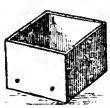


Fig. 12.—*Square box — bottom "set up"— sides of one piece, bent at corners.*

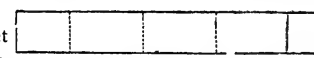


Fig. 13.—*Strip of thin wood to form square Box.*

The "Veneer" basket (fig. 14,) holds a pint, and is a very neat and strong basket, manufactured at Westville, Ct.

Fig. 14.—*Veneer Fruit Basket.*

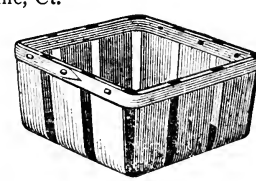


Fig. 15.—*American Basket.*

The "American" basket, (fig. 15,) quarts and pints, is a very neat, light and fancy basket, made at New Britain, Ct.

Various plans for cheap "gift boxes," to go with the fruit, have been

gotten up— to cost from $8 to $10 per thousand. The octagonal box is made of two pieces of veneering—that for the sides being cut partly through at the corners, so as to bend around the bottom and fasten with slips of tin.

The Burlington free fruit box is represented in fig. 16. The advantage of these is that they are always fresh and clean, and not having to be returned, may bring enough more to pay for the box. Especially when sent to a distant market, this is very desirable. But when near, it is cheapest at present to buy good strong cups, use them three or four years, throwing aside those much stained; in this way the same cups may be used six or eight times.

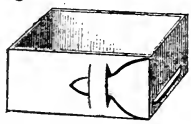


Fig. 16.—*Gift Box.*

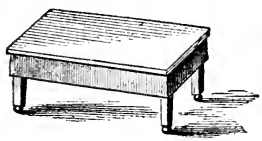


Fig. 17.—*Bench on Castors for packing Chests on.*

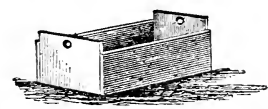


Fig. 18.—*Box for Currants, Cherries and Grapes, with higher ends to protect the fruit when set in tiers.*

A bench one and half feet high on rollers, (fig. 17,) will be found very convenient to place the chests upon when packing.

For marketing currants, cherries and grapes, boxes (fig. 18,) made of thin stuff the right size to fit the berry chests, and to hold from 5 to 15 lbs. are used. Some have the end pieces wider than the sides, to prevent the upper boxes touching the fruit in those below, and allow of ventilation. A grape box made of veneer, (fig. 19,) very light and cheap, to be sold with the fruit, and so arranged that the box can be packed with the top down, and when full the bottom fastened with a few tacks, is one of the neatest we have seen. When the covers are removed the box is level full, and the fruit appears in fine order, the bloom of the grapes not much injured. Picking baskets should be made five or six inches deep, with the sides perpendicular—or a box with a handle, like a basket, and also furnished with legs, (fig. 21,) is cheap and handy.

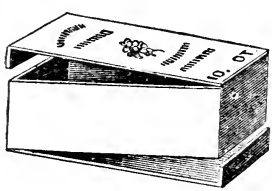


Fig. 19.—*Grape Box.*

The most profitable pickers are women and girls, about ten of whom are required to pick an acre. They usually board themselves and pick for 2 to 3 cents a quart, each picking from 100 to 200 baskets daily, or from 30 to 60 quarts. Pickers are hired for the season—they must be instructed to fill the cups a little more than level, arranging the last on the cup neatly, so that no further handling will be necessary, for *every touch*

injures the ripe berries. Each one has a shelf assigned for the cups she picks; thus the work of each can be inspected and counted. Sometimes a

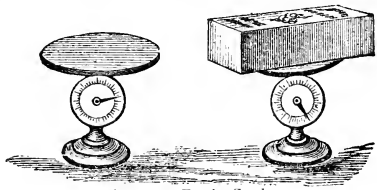


Fig. 20.—*Fruit Scale.*

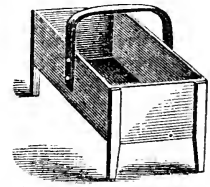


Fig. 21.—*Picking Stand.*

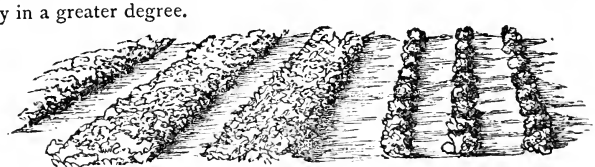
small premium is awarded for the neatest and most evenly filled cups, and, sometimes, not only the cups of some must be filled up properly, using a few of the picker's own cupfuls, but the vines must also be examined to see that they are picked clean. It has worked well with us, to give each picker a certain number of rows to pick and be responsible for, the season through.

Culture of the Strawberry.

The most approved method of culture is in rows about 3 feet apart, 14 inches in the row, and clip the runners every two weeks, (6 or 8 times,) the first season; they will not require it so frequently the next season. They should be well tilled with plow and cultivator, and hoed several times.

Fig. 22.—*Appearance of Stools or Hills.*

Plants treated this way, form large "stools," (fig. 22,) and look more like rows of field beans than strawberry beds. We have counted frequently 30, and sometimes 40 fruit stems, averaging 10 berries each, springing from a single plant. We cannot too strongly recommend this system of "hill culture," as it is called. Cutting off the runners, (for which we use sheepshears) effects the same that pruning does on young trees, only in a greater degree.



A—*Beds.* Fig. 23. B—*Hills.*

The "common system," is really no system at all. Set the plants in rows three or four feet apart, and "let them run," forming beds of small plants. (A. fig. 23.) A narrow path is kept plowed between the rows, and a great deal of weeding and backache is required to keep them clean. It is so easy to

let the plantation take care of itself, that many will not believe they are losing by it; indeed, the argument is often heard, that by this new method, instead of fifty plants you have only one—one, indeed, but a big one, one that can be managed, and is worth for fruiting purposes a hundred puny ones.

From careful observation we can affirm that "hill culture" admits of easier and better cultivation. The plants do not require mulching so much. If not eaten by the grub, they will last for years, and the grub does not injure them so much as it does the small plants.

The fruit is much larger and the product greater on an acre, and it is all easily found by pickers. And when plants are desired, a few rows may be allowed to "run," or after picking the fruit the first or second time, the "hills" may be allowed to send out runners, especially if it is intended to renew the plantation. Although by this culture the same plants will bear for years, it is usual that the first crop is the best. And some cultivators plow them up after first crop, and plant some other crop after strawberries, before renewing on the same ground. We are trying another plan, planting 2½ feet apart each way, and cultivate and plow both ways. Cutting the runners by a strong knife or revolving wheel with sharp edges attached to the side of a light narrow horse hoe or cultivator, (fig. 24.)

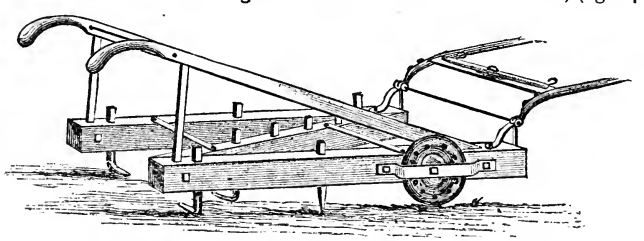


Fig. 24.—*Cultivator with sharp wheel for Cutting Runners.*

This plan of a cultivator we believe was first invented by Rev. M. F. Liehman, of Highland, New-York. The sides of the cultivator are parallel, and the middle piece is arranged so that the implement can be made wider or narrower at pleasure. The wheel is of cast iron, with segments cut from an old saw riveted on; the teeth may be merely harrow or cultivator teeth, or a set of knives made of an old carriage spring and bent at right angles, the bent part sharpened; these work admirably for cutting the weeds beneath the surface. By attaching thills the cultivator is held more steadily; doubtless these should be solidly attached to the implement, as in Alden's horse-hoe, to make it easier turning at the ends of the rows, &c.

Strawberries grow best on warm soils; strong soils are said to be benefited by a top-dressing of sand, and light soils by composts of muck. The ground should be underdrained, but not such as is apt to suffer from drouth.

It should be as free from weeds as possible; for instance, new ground, or a clover sod, plowed the autumn before planting. The sod of other grasses should have a crop of corn or potatoes taken off before planting. But if the "white grub" be found plenty, better try another field; they frequently eat up whole plantations. A little care in examining the soil to ascertain their presence, may prove valuable—another field may not contain many. Ashes and such composts of muck or leaf mold as are pretty free from weed seed, are the best manures. Barn-yard manures are better for raspberries and other vines.

For winter protection, in some soils, little more is needed than a furrow thrown up to the rows in autumn; on others, the action of the frost is very destructive if the vines are not mulched. For this, use rye straw, (cut short if convenient,) or shavings, sawdust or tan—a handful on each plant is sufficient. It will answer also to place beneath the plants the next spring to keep the fruit out of the dirt.

Spring is the best time for planting for field culture. Fall planting may be resorted to, to secure garden fruit the next season, in case it has been neglected in spring—in which case, the earlier planted, for instance after a July shower, the better. In gardens they may be planted thus, in the shade of trees, Indian corn, or other crop. Only a small quantity of fruit, can be expected the next season, but it is large and early.

Strawberries can be produced for from 3 to 5 cents per quart. Picking and packing costs 3 cents, and marketing about 3 cents. All received over 10 cents per quart, is the grower's profit. The average net price for the two past years was 20 cents per quart. The average yield per acre, for 1865, was 3,200 quarts, and for 1866, 2,000 quarts per acre, field culture. The profits were nearly equal on account of the higher prices of 1866. The estimate from which these averages have been derived, range from 1,000 to 6,000 quarts per acre, and the gross receipts from $200 to $1,000 per acre.

The sale of plants is often profitable, when there is a demand for them —100,000 or more may be raised on an acre, after fruiting. These may be sent safely to almost any distance, when put up in bunches of 25 to 50 —(the vines attached are strong enough to tie with.) These bunches should be packed with the tops each way, roots together, in alternate layers with *dry moss*. They should be placed so that air and light may get to the tops while the roots are embedded in the moss, (fig. 25.) If sent to a considerable distance, too much care in *drying the moss* cannot be taken, as it rapidly absorbs moisture; and narrow boxes should be used, not made tight, which hold one tier of bunches, unless the different tiers are held apart by slats, so as to admit air and light, and prevent heating. (*Raspberry* roots and *Grapevines* are usually packed

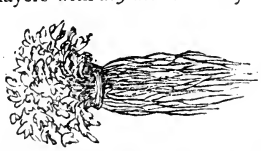


Fig. 25.—*Bunch of 25 Strawberry Plants, for Packing in Moss to send to a Distance.*

in damp or wet moss.) When moss cannot be had, strawberry plants may be safely sent with the roots coated with mud.

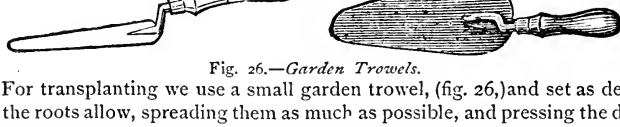


Fig. 26.—*Garden Trowels.*

For transplanting we use a small garden trowel, (fig. 26,)and set as deep as the roots allow, spreading them as much as possible, and pressing the dirt closely. Plants may be kept weeks in a damp place, but the roots should not be allowed to dry before setting. The evening is the best time for setting, and if the ground be very dry, water immediately.

We set out on level ground, either by a line or mark the rows by some simple method. If however, the ground or any part of it, be not sufficiently drained, plant on low ridges, made by two furrows thrown together. We do not hoe after the fruit sets. If the ground be placed in good order early in spring, nothing except mulching to keep the fruit out of the dirt, is required till after fruiting. All blossoms, especially on late set plants, should be removed the first season. Mowing off the tops after fruiting, has been tried by some and recommended. We tried it but once, on a bed, but thought the advantage was owing to checking the weeds. If it prevent the plants from multiplying, it may be worth experiment on plants in beds.

In gardens a plant can be grown on every square foot of ground, and be tilled with hoe and spading fork. If properly mulched, and the runners kept off, they will bear from a pint to a quart each, for several years. A small spot thus cultivated last year, produced *at the rate* of 14,400 quarts per acre, and sold at the rate of $4,000 per acre. This is mentioned to show how mechanics, poor women, or any body possessed of a garden, may find it profitable. The above was the result of the garden culture given by two small boys.

Culture of the Raspberry.

The Hudson River Antwerp was brought from England, and first propagated by a gentleman in Poughkeepsie, and introduced into Ulster county, by Edward H. Young, of Marlborough. The "Antwerp region" appears to be limited to the warmest soils and somewhat sheltered situations, between the Highlands and Catskills. In some towns every farmer almost has his "patch" of Antwerps, of from one quarter acre to five acres and upward. Generally, however, one acre well manured and cared for, pays the farmer better than a larger plantation, unless he relieves himself of most of his farm work.

After the second year each hill must be tied up to a stake (figs. 27 and 28,) about five feet high, which may be prepared in winter, at a cost of $10 to $15 per 1,000, and will last ten years.

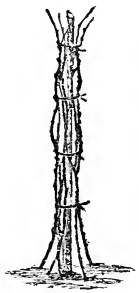


Fig. 27.—*Hill of Raspberries when first tied to stake in spring.*

After fruiting, the old canes are to be cut out, the ground plowed and hoed, the stakes removed to shelter or stacked in the field; and late in the autumn the young plants in the hills, are removed, and the canes left are bent down, (fig. 29,) and slightly covered with earth for winter protection.

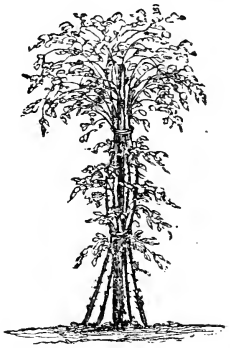


Fig. 28.—*Antwerps, tied to a stake.*

They are usually planted three or four canes in a hill, four or five feet apart each way; cut back to a few inches high when planted to prevent bearing, and secure a good growth the first year. They do not usually produce a full crop until the third year, and they continue to bear for many years; some fields have been planted fifteen years, and are yet doing well.

Fig. 29.—*Antwerp Raspberries Bent Down and held by a Shovel of Earth, till covered with Plow for Winter Protection.*

The white grub works on their roots almost as disastrously as on the strawberry. Some growers think the present stock degenerating, and efforts have been made to import a fresh stock of the same kind. Others attribute the apparent weakness to local causes, and some do not admit it at all.

Antwerps do best when slightly shaded, and are frequently cultivated in young orchards, or among grown trees, so that both are benefitted. Products vary different years, much depending on securing a good growth of canes, and on good showers just previous to, and during the picking season, which commences about July 5th, and lasts five or six weeks. The yield is from 1,000 to 4,000 quarts per acre, to which may be added the value of the young plants, which often amounts to 5,000 per acre; worth from $3 to $40 per thousand.

The best soils are shaley and gravelly loams, such as are peculiar to those sections which the Hudson river slates and shales underlie.

The "Black Cap" and "Philadelphia" are in course of trial, with promise of success. They are hardy, require no staking, and consequently may be produced at much less cost. The fruit of each bears transportation well, but is not so highly prized as the Antwerp.

Culture of Blackberries, Currants, &c

Blackberries compete with other fruits, especially with peaches, and sometimes are not sure of a ready market. They are often grown at little expense, on rough ground, useless formany other crops, and may be pruned

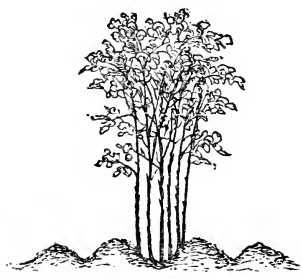


Fig. 30.—*End view of row of Pruned and Plowed Blackberries.*

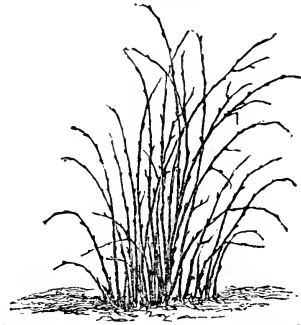


Fig. 31.—*End view of Unpruned Blackberry row.*

with hedge shears and bush scythe. Some growers realize from them more in proportion to the labor than other fruits, while others soon discard them.

Currants are growing in favor. The Red Dutch and Cherry are preferred. La Versailles is being introduced, and Black Naples sells well in market. Currants are planted five feet apart each way, and treated to clean culture. The finest quality, though not greatest quantity, is claimed for the tree form, which is obtained by removing all buds from the scion below the ground when planted. The shrub form is more hardy, and generally reproduces itself from the root in case of breaking the top. The currant worm has not appeared to do great damage in most parts of Eastern New-York.*

* In Western New-York the *Currant Worm* is easily and completely destroyed, and the crop and bushes saved, by sprinkling the leaves with White Hellebore, by means of a dredging box, which has fine holes, so as to give a thin coating of the powder. A few repetitions of the operation through the season, as needed, will exterminate these insects, but it is necessary to watch the bushes, and to apply the remedy at their first appearance. Those who complain of the failure of this remedy wait till the destruction is half completed before they begin. The White Hellebore may be had at the drug shops. Care must be taken not to inhale it. The first rain washes it from the fruit, and no harm results. For safety, the fruit should be washed before using, and previous to stemming. The *Rose Bug* so destructive to the blossoms of the grape, must be watched for about the last of June. Husman speaks of carrying torches at night through the vineyard, as destructive to insects. If it prove so to the Rose Bug it is worth attention. Fires lighted around the vineyard, burning the apple tree and other brush prepared for the purpose, especially if done by several farmers or vineyardists on adjoining lots, has been suggested for trial. Plowing the ground late in autumn has also been recommended to destroy the larvæ—a small white worm. The *White Grub*, so destructive to strawberries and other fruits, as well as potatoes and other crops, is said to remain in the ground in the larva state three years, when it changes to the insect form, producing what is termed the "June Bug" or "May Beetle." Every possible means of destroying or avoiding these grubs should be resorted to. Chickens will sometimes pick them up after the plow. Boys and girls paid for every hundred picked up and dug out from beneath strawberry plants that look like withering, and for the Rose Bugs picked from the grapevines, are the best remedies we have found. A mixture of sulphur and plaster, dusted over the vines, has been recommended as a remedy for the Rose Bug.

CHERRIES are profitable and cheaply produced. We have noticed the birds prefer the early sorts to strawberries, which may be worth planting to save the strawberries.

Some trees of good varieties of Heart and Bigarreau, produced the past season 10, 18, 24 and 48 dollars worth. One neighbor sold $90 worth from five trees, mostly the product of three of them. Being both ornamental and useful, the farmer cannot err in planting too many.

PROFITS OF BERRY CULTURE.

The profits of farming vary with the condition of the land and the brains that drive the business; but it will not be far from the truth to assert that in many parts of the country, convenient to market, common farming has ceased to be remunerative. After deducting expenses for utensils, wear of buildings, cost of manures and labor, little or nothing is "laid by" at the end of ten years. The farmer is obliged to use his money as fast as he makes it. In fact, with many, debt is their normal condition, and paying interest a part of their creed. Another class, less fortunate, are content to rent farms and migrate yearly. "Cropping" the farms of others is the business of their lives, never knowing what it is to feel on one's own ground—"I am monarch of all I survey."

It may be true that there is no such thing as a "worn-out farm," but many are terribly thread-bare; yet these may be well suited to fruit culture. Small quantities of manure may be afforded to each tree and plant every year, till the productiveness of the soil becomes such as to pay a generous income. Strawberries may be cultivated among grapes, and raspberries in the orchard. Many farmers have already proved that an acre or two, devoted to fruits, bring in just about harvest more ready money than the whole of their surplus products from the farm—not much heavy labor—no dusty threshing required. Poor women and children are eager to pick the fruit, and all the year look forward to "berry time" as the season of their most profitable employment. The weeds may all be pulled by the same cheap laborers.

An acquaintance who used to farm about 100 acres and employed two men all the year, averaged gross sales of $1,400 a year. He now has about five acres in small fruits, the net income of which was $2,650 last year. Putting most of his farm in grass and keeping several cows, he manages to have a surplus of four to five hundred dollars a year from the farm, and a supply of manure for his vines.

The following estimate is the cost of a two acre vineyard with strawberries cultivated in it—also the first three year's income:

Cost.	
700 Grapevines,	$100.00
700 Stakes,	15.00
12,000 Strawberry plants,	60 00
Grape trellis,	225.00
Labor, 3 years,	300 00
Rents,	60.00
Manure used,	50.00
Wear of tools,	25 00
	$835.00

Income.	
Grapevines and Cuttings,	$150.00
Sale of Strawberry plants,	700.00
Strawberries,	1,150.00
Grapes,	500.00
	2,500.00
	835.00
Profit,	1,665.00

In the following estimates the average is taken from the actual products of many farmers and fruit growers of New-York and New-Jersey.—Thorough culture can seldom be given when the farmer has grain crops also to be attended to, and for this reason the averages will not satisfy those who make fruit-growing a specialty—who spare no pains or expense in studying out and supplying the wants of their plants. Such persons will often double and quadruple the results of common field culture, and then, probably, not develop the full capacity of generous gratitude these fruits return for special attention. The following are the highest results we have information of:

Strawberries, 1865.—Half an acre of Wilson's Albany, "hill culture," at the rate of 6,100 quarts per acre—one and a quarter acres, hills, 6,000 quarts per acre. An eighth of an acre, Triomphe de Gand, at the rate of 3,600 quarts per acre—1866: Two and a half acres, "field culture," 4,280 quarts per acre.

Raspberries are reported as having produced from 5,000 to 7,000 quarts per acre.

Blackberries—2,000 to 3,000 quarts per acre.

Currants—Six tons per acre, worth $1,000.

The following table shows about the average cost and profits of small fruits, as usually raised by farmers, except the profits from sale of plants:

	No. of Plants per Acre.	Cost of Plants.	Cost of Preparing Ground & Planting.	Total Cost of Labor Yearly.	Cost of Chests and baskets for mark't'g.	Product and Income		
						1st Year.	2d Year.	3d Year.
Strawberries,	10,000	$50	$30	$100	$150	Plants only.	Product—Value. Plants. 2,500 qts., $450.	Product—Value. Plants 1,500 qts., $300.
Antwerp Raspberry,	9,000	100	25	85	120		Say $50.	Plants, 2,000 qts., $400.
Grapes,	500	125	30	60	65		Cuttings and Layers.	Cuttings. 2 tons, $500.
Currants,	1,600	130	20	40	100		....	1¼ ton, $200.
Blackberries,	2,000	30	20	40	75		Small Crop.	1,500 quarts, $250.

VALUE AFTER THE THIRD YEAR.

Strawberries—Need renewing biennially.
Antwerp Raspberries—$300 a year, besides plants, for a dozen years.
Grapes—Valuable for a lifetime.
Currants—Two to five tons annually if the currant worm is kept off.
Blackberries—A permanent investment not easily got rid of, worth $200 a year.

Blackcap Rasberries, and the "new sorts" of fruit, we have not sufficient data to average.

It is worthy of notice that in places where summer fruits are successful, the land rates highest in value, although it may be inferior farm land. Convenience to market and traveling facilities, fine scenery, and otherwise fa-

vorable situation, often contribute to increase these values, but not so uniformly as adaptation to fruits.

New-Jersey farm lands have increased from $43.50 per acre in 1850, to $60.50 in 1860—$17 in ten years. Delaware lands have increased in the same period $11 per acre. New-York farm lands from $29 to $38—or $9 in ten years. This rapid gain in the price of New-Jersey lands, is attributed mostly to the increased production of market fruits.

But not alone near markets, is the culture of small fruits recommended. They will command a ready sale at paying prices in almost every town and village. The people confined to the shops and factories, want fresh fruit, and it is often out of their reach. It is a sanitary blessing to the thousands of city consumers, and to the family of the farmer it is invaluable. From June to June, they may have a succession of varieties, and a constant supply, by little extra care in canning and keeping. Even at distant points, there is a chance for growers to assist in supplying the New-York market. The Triomphe de Gand strawberry, and often the Wilson, are brought from Pittsburg and Lockport.

North of the Highlands we usually get our highest prices for our latest strawberries, which go into market after the Southern supply is gone; farther South, the very earliest sell best. These fruits ought to be cheaper—they ought to come within the reach of the poor—the fall in price ought to be caused by the increase in quantity; nor should quality be ignored; superior fruit always sells readiest, and at extravagant prices.

The demand has not reached its maximum. The tastes and appetitites of the people are growing faster than our trees and vines. The markets are seldom glutted with good fruit—only the poor and damaged lots fail to pay a profit. As the price is reduced by the greater supply, it comes within reach of thousands more of appetites already sharpened to consume it.

Culture of the Grape.

Little need be said in addition to the article on "The Culture of the Grape," in last year's REGISTER. Fig. 32 shows a very good

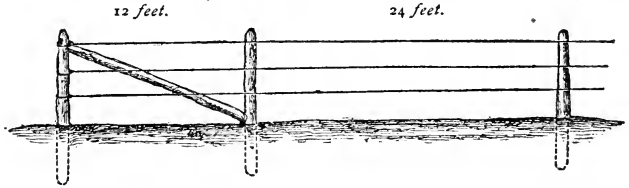


Fig. 32.—*Stout Trellis, for Long Rows in Vineyard. Posts 6 feet high—3 feet in ground.*

plan for bracing the end posts of a long trellis; it represents also a portable "reel," on which the coil of wire is placed, which turns on the spindle, allowing the wire to be drawn easily and expeditiously along the rows. An iron pin (fig. 33,) flattened at one end and pierced, so as to admit the

end of the wire and fasten it, is used for attaching the wires to the end posts. The pins are about six inches long and three-quarters of an inch in diameter; they should be oiled to prevent rust, and driven into holes bored in the end posts; turning the pin with a wrench or claw hammer, tightens the wire. A wrought nail driven beneath and bent over the wire is used instead of a staple, to attach it to the other posts. (These methods are used by O. J. TILLSON, Highland Vineyards, New-York.)

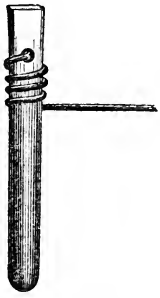


Fig. 33.—*Iron Pin*

Sometimes it may not be convenient to erect a permanent trellis the third year, as usual in training on the horizontal arm system. The vines may be trained a year or two, and kept in proper shape, on a temporary trellis made of two or three stakes and some cheap lath. Poles cut from the undergrowth of the woods, last long enough for grape stakes.

The profits of Grape Culture, since propagating plants is growing into a separate business, will not probably sustain a "mania" by such estimates as are frequently reported. Take out the income from the sale of plants, and many of the "high figures" that now feed our imaginations, would be cut down one-half. Many parts of our country will doubtless become famous for vintage, and some variety or other may be found adapted to every section. Good grapes may become cheap in market, and be served on farmers' tables as extensively as apples or peaches in the olden time. But there is possibly need of some caution; first testing varieties in our different soils and climates, before going to great expense in planting a vineyard, risking mildew and the rose bug, guessing at the pruning and culture, or giving little of either, on account of other work. Such investment may not in every case prove the best for the farmer.

Two tons of market grapes to the acre, is enough to allow the vines to bear, and the income from this will doubtless pay, where proper attention is given to secure fine fruit. But when it comes to selling poor crops to wine makers, for from $60 to $100 per ton, the enchantment is gone, as well as the profit; and the morality of this part of the business, admits of serious question. It is a doubtful search of temperance amateurs, for a grape making a wine so deficient in alcohol, that it may be recommended as a beverage. They will find it growing by the "Fountain of Youth," with the "Philosopher's Stone" at its root.

Large growers may realize large profits from wine making; farmers are not likely to do so. And we trust those planting will only plant what they can attend to well; and that every body will thus plant, until Greeley's town prize may be earned by every township in the Union. We trust that the demand for table grapes will increase with the supply, that easy me-

thods of keeping through winter may be discovered, and that jellies, &c., may use up the unmarketable fruit.

The vineyard—as indeed all fruit culture—requires educated labor. Great injury may be done by improper pruning or thinning. Some place their vines too much on the procrustean bed; others allow nature too much liberty. Each vine requires peculiar treatment, to some extent, and affords a separate study to the vine dresser. But this is a good feature, requiring study, posting up, waking up. A man (or woman, for ladies are entering this part of their original sphere,) cultivating fruit intelligently, soon finds that he has made a growth himself while watching that of his vines. He will take the Agricultural journals; read the best books on his profession; attend the Farmers' Clubs; help get up the Horticultural festivals and exhibitions, and in every sense become more of a *man;* fed on better fruit, and better steak, than had he continued his ancient customs of "hog and hominy" and "pork and beans."

Then plant the vines and the trees; you will be paid in many unexpected ways; by the increased value of your farms, the use of fruit in your families, the reading and study, or brain culture you will be led to acquire, the ornament and beauty almost sure to be added to your grounds, and your increased appreciation of it—the education of your children in such a home—in fact you may "sit every man under his vine, and under his fig tree." (In this stern climate "fig tree" may be understood figuratively, to mean cherry or pear tree.)

We love to eat of the trees our fathers planted; they did not plant enough; let us be wiser. The work is pleasant, it is exhilarating,—and *work* we must expect, for even these average profits are not vouch-safed to those who don't like to share that blessing in disguise—"in the sweat of thy face shalt thou eat bread," although dressing and tilling their vines might approximate to a physical return to Eden.

SHRUBS AND SHRUBBERIES.

WE SEE TOO LITTLE ORNAMENTAL PLANTING of the right kind. Americans have made less progress in this decorative but very useful art, than in nearly every thing else. Fine and costly buildings are erected, on which thousands are expended, surrounded by meagre improvements that have scarcely cost a hundred dollars. Some years since we examined a western city with magnificent buildings and many thousand inhabitants, without finding a single neat, well-kept door-yard that had been planted with taste. It is true, there are many exceptions all through the country, but this nevertheless, is the great and leading deficiency. Doubtless many are deterred from improvements of the kind by the mistaken belief that they require a large outlay of money. Planting may be either cheap or expensive at the option of the owner, without

reference to the taste displayed in its execution. The disposition of a few trees on a small piece of ground, may be really better than heavy expenditures in grading and planting broad acres with nothing but cost to recommend them. The defect arises from a want of thought. The owner does not feel an interest in the beauties of landscape forms and outlines, nor in the rich shading of well-disposed foliage ; but his mind is exclusively upon his business—his profits—dividends and accumulations. If he cultivated a taste for the beauties of nature he would see much to admire, even in a few well-disposed groups at his windows, and they would become a source of never-ending pleasure. But if he plants only for show, his large outlays for this purpose feed the eyes of others, while he starves himself.

The owner of a farm or of a village lot may ornament the grounds about his dwelling at little or heavy cost, just as he may choose. A farm house may be surrounded by a few large spreading trees, (fig. 34,) that shall afford all the richness of light and shadow seen in the most magnificent park, only on a smaller scale,—at almost no cost after the trees are planted, by either allowing the grass to be cropped short under them by sheep, or by cutting it with the scythe a few times during the summer, preventing it from growing more than two or three iches high. Unfortunately too many prefer a ton of hay to a fine shady refreshing lawn, and allow the grass to grow two feet high for mowing ; and they have their reward.

Fig. 34.—*Large Spreading Shade Trees.*

Next in cheapness, after the planting of trees, is the formation of shrubberies. The young plants, it is true, must be well cultivated for a time as well as the larger trees ; but if free growers are selected, such as the Tartarian honeysuckle, the Philadelphus, the Siberian lilac, the purple Fringe tree, Barberry, &c., they will require comparatively little attention after being well underway. The great advantage in employing shrubs instead of trees is in the larger number and the greater variety which may be introduced into a limited space ; and they may be so disposed by planting the lower or shorter kinds as to leave open views towards distant objects of interest, at the same time concealing the boundary fences. By selecting the finest bloomers a succession of flowers may be had through a large part of the season.

Advancing in labor and cost, the next after the shrubbery is the flower

garden made up of herbaceous perennials; which, like flowering shrubs, may remain unmoved for years where they are planted, but they require more care and cultivation to preserve vigor and ample bloom. And lastly comes the flower garden, made of annuals and bedding plants—the former to be planted every spring, and the latter wintered in green-houses, ready for setting out in beds when the warm season arrives.

The most perfect and finished grounds have a combination of all these —trees, shrubs, herbaceous perennials, annuals and bedding plants. But unless they are arranged with knowledge and skill, instead of forming a beautiful assemblage as a whole, the whole collection will be more likely to degenerate into a mass of confusion. It too often happens in planting a new place, that trees and shrubs are closely mingled together, and flower beds perhaps, placed in the shade of both. In a few years the trees outgrow the others which are shaded, stunted and deformed, and the trees themselves ultimately become a crowded mass. The remedy is intelligence and forethought. Distinct, well understood plans, must be made beforehand. If large trees are introduced at all, they must be placed toward the outside, so as not to shade nor hide the others. Small trees and large shrubs come next, and those of smaller size and herbaceous flowering plants are to be so disposed that they shall always have plenty of light, and not be crowded under by their larger and broader neighbors. And yet a regular and formal amphitheatre is not to be formed, for, as already observed, the boundaries should be low or open in the direction of the finer views, and the taller trees placed only where it is desirable to shut out unsightly objects or protect from strong prevailing winds.

The shubbery—the object of the present article—may thus be a component part only of a larger plantation, or it may cover nearly the whole surface of limited grounds. Sometimes an extended walk leading from one point to another, may be lined on one or both sides with ornamental or flowering shrubs—the taller kinds prevailing in some places and the shorter in others, as it may be desirable to conceal or open the view towards other objects.

There are two particular modes of disposing or arranging shrubs in planting them out. One is to place them in a continuous plantation, the taller in the rear, and decreasing gradually in height toward the foot-path or spectator; and the other, is to distribute them in beds, groups or clusters. It will generally be found best to adopt both these modes—the former for exteriors and the latter for central or open portions of the grounds. Such shrubberies as these should be laid out like modern or natural flower gardens—where a smoothly shaven grassy surface or lawn is traversed by bending gravel walks among circular or oval beds, cut in the turf, containing the flowering shrubs.

Much of the beauty and effect of these groupings depends upon bringing together such kinds as will form a pleasing combination. Too many of the same sort will produce sameness; and if too unlike, incongruity

would be the result. Different species of the same genus group well together as they have a common resemblance and yet some difference. The several species of Spiræa, for instance, are sufficiently unlike in foliage, color of flowers and habit of growth, to give variety of outline without formality. The same remark may be made of the Viburnums. Shrubs which bloom at the same period and which have some similarity in growth, may with propriety be grouped together, or at least placed in proximity. Among these may be mentioned as examples, the Forsythia and Cornelian Cherry; the Missouri Currant, Crimson Currant and Japan Quince; the Double Flowering Almond and Spiræa prunifolia; the large flowering Dogwood and Judas Tree; the common Lilac and Tartarian honey-suckle; the Laburnum and Rose acacia, &c.

It is important when shrubs are first planted out and for a few years afterwards, that the soil be kept deep, mellow and well cultivated. If allowed to become hard and covered with grass, the growth will be feeble and meagre. and fine, full and luxuriant forms cannot be attained. It would always be best if practicable to trench or subsoil the whole surface of the ground intended for the shrubbery; to enrich it well by successive additions of old manure or compost during the preparation; and to continue the constant cultivation of the soil for several years until a good growth has been attained. The vacant or open portions may then be covered with grass, and the soil immediately about and among the shrubs still kept open, in the form of regular beds or borders. If, however, the lawn or grass surface has been already formed, the beds of ample size may be cut in it, dug deep, well enriched, and kept constantly mellow for successive years after planting.

A sufficient amount of pruning or pinching back should (figs. 35 and 36,)

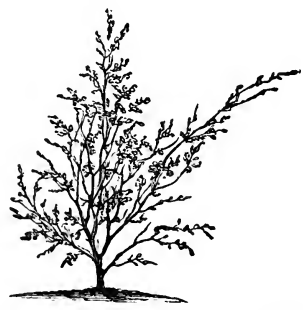


Fig. 35.—*Straggling Shrub, not pinched Back.*

Fig. 36. — *Compact Shrub, made so by Pinching.*

be given to the growing shrubs to keep them in a proper form without adopting the error of making them too regular, stiff, or formal. A better shape, as well as a more vigorous growth, may generally be given at the

start, by cutting back very freely, often nearly to the ground, when the transplanting is done.

Form of Beds.—There are but two forms which it is desirable to give to beds of shrubbery; namely, the circle or ellipse, (fig. 37.) Indeed all that is necessary may be attained by the adoption of the circle only—a sufficient variety with which may be imparted by making the beds of different sizes and distributing them singly, or grouping them together. Those of smaller size (fig. 38,) may contain from three to half a dozen plants. The larger ones may be occupied with a considerable cluster or mass, in which case the taller kinds should be at the centre, decreasing gradually toward the ouside, (fig. 39.) It may also be observed that generally the best effect will be produced by planting the centre with those which have dark and heavy foliage; and the exterior with such as are more light and feathery in form. Again—in planting those which are conspicuous for their brilliant berries, it will be found best to occupy the centre with some dark evergreens, against which, these shrubs, planted around them, shall form a fine and brilliant contrast in color.

Fig. 37.—*Bed of Shrubs.*

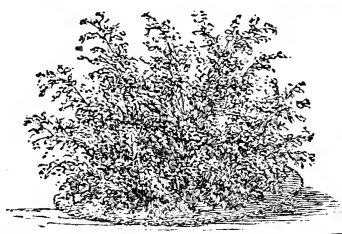


Fig. 38.—*Small Bed or Group of Shrubs.*

An important advantage in adopting the circular form, is the facility with which the outline is marked on the ground; and even after the shrubs have attained some height, the boundary may be accurately renewed by driving an upright stake *a.* (fig. 40,) in the middle for a pivot, on which an arm *b.* may revolve, having a rod *c.* at right angles, pointing downwards, for forming a circular scratch on the surface of the ground. A perfect ellipse is easily made by driving two small sticks *a. a.* (fig. 41,) into the ground, placing a cord *b.b.* in the form of a loop upon them, and then stretching this loop with a marking stick *c.* and scratching the surface of the ground through the whole circumference.

Fig. 39.—*A Group of Large Shrubs.*

Those who are about to form a shrubbery and who are not very familiar with the different species will find a great advantage in adopting the following practice. Make a general collection of all the shrubs intended for the plantation, either from nurseries or otherwise, as early as possible, and plant

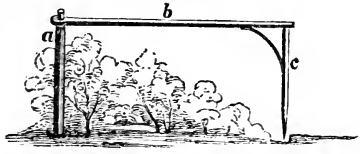


Fig. 40.

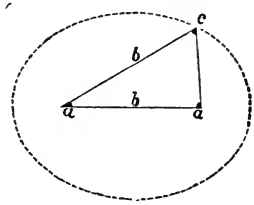


Fig. 41.

them in rich soil in nursery rows where they can receive high cultivation. They will here increase in size, and may be trained in the proper form; and when ready for final removal, the whole mass of the roots may be taken up and set out again with little difficulty, with almost no check in growth. From one to three years might be thus occupied in the nursery row, during which time the owner will find it a most interesting occupation to study their modes of growth, character of foliage, time of flowering, and whatever else may enable him to group them handsomely together. In the meantime, he may underdrain, trench, enrich, and otherwise prepare the ground that is finally to receive them, in the best manner, as well as fully to digest and mature his plan. Another advantage in first planting them in a nursery, is that he will be enabled to increase them in number in many instances, by dividing the roots.

In furnishing the following list of hardy and desirable shrubs, such as are adapted to general cultivation, it will be most convenient to the planter to divide them according to their size or height, so that they may be placed together.

No very accurate sub-division, however, of this kind can be made, as they vary considerably with soil, climate and treatment; and some, usually regarded as quite small, will after the lapse of half a century or more, reach a height of several feet. If any are found to be too tall for their compeers, they are easily cut back or removed.

Shrubs of Small Size.

Ceanothus, (*Ceanothus Americanus.*) A small shrub of neat appearance bearing numerous bunches of small white flowers; and if well cultivated and trained in form is quite ornamental. It is hardy and frequently grows wild throughout this country. It is sometimes known as the New-Jersey Tea.

Tree Pæony, (*Pæonia Moutan.*) Although a low shrub this plant when full grown and in bloom presents a magnificent appearance. The variety known as the Banksia, has bluish colored flowers usually about six inches in diameter and very double—single plants often showing fifty or sixty at a time. Several years are required for them to attain this size. The pop-

py-flowered variety is single, white with a purple spot at the base of each petal. The variety rosea is semi-double with rose-colored flowers. This shrub is quite hardy, but is difficult to propagate. The easiest mode, which is, however, quite slow, is by dividing the roots. For this purpose the plant should be placed in rich soil so as to increase rapidly in growth and taken up in autumn, and the stems and roots separated by means of a fine saw—every separated portion should have some roots remaining upon it. It is also propagated by layers, using the previous season's wood, tonguing and burying at least three inches deep in earth kept moist. If the growth is vigorous, roots will commence the first season, but the layers should not be removed until after the second summer. Skillful propagators increase the tree pæony by grafting into the common herbaceous species.

Deutzia gracilis, under the head of Deutzia scabra in the next division; Persian lilac, under the head of Lilacs in the third division; Kalmia angustifolia, under Kalmia in second division; and perhaps Mezereon, Clethra and some others in next division, might be placed under this head of small shrubs.

HYPERICUM *Kalmianum* is a small shrub two or three feet high, bearing a profusion of yellow flowers about midsummer. It is a native and perfectly hardy, and is usually raised from seeds.

MAHONIA, (*Mahonia Aquifolium.*) This fine shrub which is a little tender at the north, is properly an evergreen; but as its chief beauty is exhibited during the summer season, it is placed under this division. It has pinnate leaves, usually four pairs and an odd one, the leaflets being spring-toothed on the edges. It exhibits handsome clusters of yellow flowers late in spring, succeeded by blue berries. It grows three or four feet high, and needs the protection of straw or evergreen boughs in winter. It is progagated slowly by layers.

SHRUBS OF MEDIUM SIZE.

THE SPIRÆAS.—There are several species which possess much beauty. The Button spiræa or double plum-leaved, (*S. prunifolia,*) blossoms quite early in spring, bearing a profusion of double white flowers, and is perhaps the most ornamental of the shrubby species. The Hypericum leaved, (*S. hypericifolia,*) bears a profusion of quite small white flowers along its branches, and has a pretty and neat appearance, but is not showy. *S. opulifolia* and *S. lanceolata* bear their white flowers in bunches a little before mid-summer. *S. tomentosa* grows wild in many parts of the country and is distinguished by the reddish down on the under surface of its leaves, and by the handsome, compact panicles of reddish-pink flowers. *S. bella* is a native of Nepal, and produces beautiful rose-colored flowers in corymbs. There are several other species, but the preceding comprise some of the most desirable. All may be propagated by layers or suckers.

CLETHRA, (*Clethra alnifolia.*) A native shrub growing three or four

feet high and bearing spiked racemes of white flowers which appear about midsummer. It belongs to the same natural order as the Erica and Rhododendron, and has a fine aromatic odor and is easily cultivated.

THE FLOWERING CURRANTS.—The Missouri currant, (*Ribes aureum*,) bears a profusion of golden yellow flowers; and although not quite so ornamental as some other shrubs, the fragrance of the blossoms renders it a general favorite. It is quite hardy, and is easily propagated by cuttings and layers. A great improvement in its appearance may be effected by pruning it into a compact, symmetrical form. The Crimson-flowering currant, (*Ribes sanguineum*,) bears handsome pendent racemes of deep-red flowers, which appear early in spring. It is not perfectly hardy, and grows and blooms best if slightly protected in winter. A double variety has been raised, which is larger, hardier, later in blooming, but scarcely as ornamental as the parent or as easily raised by cuttings.

MEZEREON, (*Daphne Mezereum.*) This is one of the earliest and most beautiful shrubs of spring. The handsome pink flowers come out before the leaves, and nearly or entirely cover the small shoots along their whole length. The young shrubs begin to flower profusely before they are a foot high, but in the course of years they attain a height of five or six feet. There is but one objection to the cultivation of this beautiful shrub—the whole plant is poisonous to human beings, and the handsome scarlet berries have been eaten by young children—the best remedies for which are oil, fresh butter or milk. The mezereon is very easily propagated from seeds; which if suffered to become dry before sowing will remain two years in the soil; but if sown in autumn immediately after gathering, they will usually come up the following spring. This shrub is a native of the woods of northern Europe. There is a variety which has white flowers and yellow fruit; and another, quite distinct, which blooms in autumn; but these are rare.

Fig. 42.—*Double White Flowering Almond.*

DOUBLE DWARF ALMOND, (*Amygdalus nana*,) widely and well-known, is one of the handsomest of early flowering spring shrubs, its shoots presenting dense wreaths of double pink blossoms. (Fig. 42.) It is quite hardy and is commonly propagated by suckers or dividing the roots. The larger double almonds are propagated by

budding on peach, plum or almond stocks; and if kept trimmed in a compact shape are very ornamental early in spring. There are red, pink, and white varieties. These are not so double as the dwarf, some of the stamens being usually visible.

The KALMIAS are beautiful flowering evergreen shrubs, growing variously from one to ten feet high. They are often difficult to cultivate in gardens, especially if the ground be rich and in limestone regions. When they have failed to grow in such soils, they have been cultivated with entire success by carting a few hundred pounds of the sterile earth from their native locality. H. W. SARGENT, of Fishkill, New-York, widely known for his skill in the management of evergreens, says that he has found it less expensive to import plants from England, raised from seed, than to transplant from their native habitat on the mountains. They always grow best in the shade, as on the north side of a building or board fence. The broad-leaved or *Kalmia latifolia*, grows three or four feet high, but sometimes reaches ten feet. The glaucus and the narrow-leaved (*K. glauca* and *K. angustifolia*,) grow from one to three feet high.

Fig. 43.—*Rhododendron Catawbiense.*

RHODODENDRON CATAWBIENSE.—A shrub with evergreen leaves, bearing large, rich clusters of flowers with various shades of red, purple and pink. (Fig. 43.) It is most cheaply obtained by importations from the English nurserymen, and is supplied by American dealers. It is quite hardy and grows and flowers best in the shade. We have seen this shrub planted or interspersed through a natural growth of trees with excellent effect.

OAK-LEAVED HYDRANGEA, (*Hydrangea quercifolia.*) A native of Florida, but tolerably hardy at the north, where it continues flowering for several weeks during summer. (Fig. 44.) Its large panicled corymbs of white flowers give it a handsome and showy appearance. When full grown it is four or five feet high. It succeeds best in sheltered and rather moist situations. It is propagated by dividing the roots.

THE GREEN-HOUSE HYDRANGEA, (*Hydrangea hortensis*,) is one of the most magnificent of flowering shrubs, bearing large clusters of rose-colored blossoms. (Fig. 45.) It is easily propagated by cuttings and is managed without difficulty if kept well-watered. In rare instances it has grown to a height of five feet with a diameter of eight or ten feet, and with from five

hundred to a thousand clusters of flowers in a season. A correspondent of the *Horticulturist* stated in one of the early volumes, that it might be cultivated in open air about New-York, with a very slight protection—being naturally a swamp plant, if placed by the side of a pond in a shelter of thick evergreens, it would endure the winters and bloom superbly. In common garden soil its stem should be thinned out, bent down, and covered with sandy soil on the approach of winter. "In this way," the above writer adds, "I have known a single plant to attain a circumference of twenty feet, and produce more than a hundred bunches of blossoms in a season."

Fig. 44.—*Oak-leaved Hydrangea.*

Deutzia scabra (or Rough Deutzia,) bears a profusion of white flowers in the early part of summer and is one of the most ornamental shrubs. It may be propagated by cuttings or layers. *Deutzia gracilis* is much smaller and equally ornamental, and is increased easily by dividing the roots.

Indigo Shrub, (*Amorpha fruticosa.*) A shrub of medium size valued for the rich, purple spikes of its flowers; it needs pruning or pinching in, to give it a more compact form, and to prevent the straggling growth to which it is liable. Although less showy than some shrubs, it deserves a place in large collections.

Fig. 45.—*Hydrangea hortensis.*

Burning Bush, (*Euonymus.*) There are several species of this genus, most of which are remarkable for their brilliant scarlet fruit or berries, which continue through autumn, and give to the plant the name of Burning bush. The finest species is *E. latifolius* or broad-leaved burning bush, which sometimes grows ten feet high. Its broad shining leaves, and large red pendulous fruits and showy, orange-colored seeds after the capsules open, render it a fine ornament for the lawn. There are two American species, *E. atropurpureus* which has dark purple flowers, and *E. Americanus*, the flowers of which are yellow tinged with red, which are also quite ornamental in the same way, and the latter of which is of much smaller growth.

Forsythia, (*F. viridissima.*) The Forsythia has dark green stems and branches as well as leaves. It has somewhat the character of an evergreen, the leaves remaining unchanged into the early part of winter; but its chief beauty consists in its brilliant yellow flowers, which appear early

in spring before the leaves have expanded, and render it one of the most desirable of early bloomers. It often tends to grow rather loose and irregular unless the longer shoots are pinched or pruned in, giving it a more compact and better form.

Fig. 46.—*Weigela amabilis.*

WEIGELA, (*W. rosea.*) A shrub allied to the bush honeysuckle, introduced within a few years, and one of the finest ornaments of the garden. The blossoms are light-red or pink, and cover nearly the whole plant with a mass of bloom late in spring or early in summer. W. amabilis, (fig. 46,) continues much longer in bloom, but is not so showy as W. rosea. Both are easily propagated by layers.

JAPAN QUINCE, (*Cydonia Japonica.*) The scarlet variety is one of the most showy and brilliant of all our hardy shrubs. It seldoms grows more than seven or eight feet high, and requires many years to attain this size; in England it has been trained on walls as high as fifteen feet. It is somewhat irregular and thorny in growth, but may be trained into a handsome symmetrical shape, either in a rounded or ovate mass, by allowing numerous stems to spring up from the ground; or it may be trimmed to a single stem in a half-standard shape, when its pendent branches will give it a rich and striking appearance. It also forms beautiful small hedges or screens. The flowers are brilliant-scarlet and appear in spring before the leaves are fully expanded. They are an inch and a half to two inches in diameter, and cover the whole shrub with a brilliant display. It is readily propagated by layers and suckers, and also under good management by cuttings of the roots. It is usually quite hardy in the northern states, but occasionally the tips of the shoots are injured by severe winters.

The white or pink variety is similar to the preceding except in color; and while less brilliant is remarkable for the soft delicacy of its blush. It may be proper to add that if left to take its own course, the Japan quince will be apt to assume a straggling form without much beauty except when

in bloom, and care should therefore be taken to prune the exterior into proper shape.

JAPAN GLOBE FLOWER, (*Kerria Japonica*, formerly called *Corchorus.*) A shrub of moderate size and rather slender and not branching growth, bearing handsome double yellow flowers during the latter part of spring and early in summer. It is rather tender at the extreme north.

SHRUBBY HIBISCUS, (*Hibiscus syriacus.*) Known also by the name *Althæa*, and *Althæa frutex*. A well known and desirable shrub growing about six feet high in a rather erect form, the numerous branches assuming a somewhat fastigiate form. (Fig. 47.) The flowers appear about mid-summer and continue several weeks, when most other shrubs have done blooming, which adds to the value of this plant. They are of various shades from white to purple. The different varieties are mostly hardy in the northern States, although sometimes the tips of the shoots are winter killed ; the double-white is more tender. It does best in a deep, rich, light and not wet soil, and should be placed in an open airy situation where its wood will ripen. The single-flowered varieties are raised from seed which come true to their respective colors ; the double sorts are propagated by layers and by grafting on the single ones. They may be propagated also by cuttings under a bell-glass, planted in autumn and remaining during winter.

Fig. 47.—*Hibiscus syriacus.*

SWEET SCENTED SHRUB, (*Calycanthus floridus* and *C. laevigatus.*) These are shrubs of moderate size, possessing no special beauty, but generally esteemed for the high pine-apple or strawberry scent of the flowers, which are a dark purple. They bloom early in summer ; but it is stated that a succession may be obtained through the season by the removal of the terminal leaf-bud of a shoot, causing the production of two new flower-buds to each. They are propagated by layers and the division of the roots.

DWARF HORSE-CHESTNUT, (*Paria macrostachya.*) Although this is rather a loose-growing shrub, it is one of the most ornamental in the whole list, if pains are taken to keep it in compact form. It has long loose racemes of white flowers, with long projecting stamens, which give a feathery lightness to its fine fringed appearance. It blooms about mid-summer, after the flowers on most other shrubs have disappeared, and continues for several weeks, especially if growing in a rich moist soil. It is propagated by layers and suckers.

AZALEA.—The common native species, (*Azalea nudiflora,*) which grows wild in swamps in many places, is, when in bloom, one of the handsomest of all our native shrubs. The flowers appear in spring before the expansion of the leaves, and are disposed in clustered racemes. They are of various shades from flesh-color to pink and purple. Many varieties and hybrids have been obtained from this species by cultivation and crossing.

The azalea will not grow well in common soil, but requires rich moist peat, and it succeeds best in the shade. When the plants are removed from their native localities, which should be done in spring, the stems should be cut off near the ground, when, if in suitable soil, they will throw up numerous shoots and become healthy and vigorous. The most showy varieties have been obtained by cultivation. There are several distinct native species, all possessing a considerable degree of beauty.

ROSES constitute a large and beautiful class of shrubs; but an extended article would be required alone to do them justice or to give even a partial description of the varieties. We can only state in general times that they need more cultivation and pruning than most other shrubs. With the exception of a few of the strongest growers, they must be constantly and well cultivated, keeping the soil deep and mellow, and well manured; and cutting back early in spring so as to maintain a good supply of young and thrifty wood. In addition to all this care, a large number of the varieties require replacing every few years with young plants. Under the neglect which is too often seen, the flowers are small, meager and imperfect; but with the attention just described, they are more than doubled in size, becoming rich, full and magnificent.

SHRUBS OF LARGE SIZE, SOMETIMES PASSING TO SMALL TREES.

CHINESE WHITE MAGNOLIA, (*Magnolia conspicua.*) (Fig. 48.) When grafted on the *Magnolia acuminata* or American Cucumber tree, the Chinese Magnolia grows to a small tree, (fig. 49); when worked on the dwarf species (*M. purpurea,*) it is reduced to a shrub; on its own roots, it is intermediate between the two, or a large shrub. In either case it is one of the finest of all the spring bloomers. The large size of its rich white flowers, which are about like those of the white lily, and which appear in great profusion on the branches before the leaves have expanded, renders it one of the finest and most striking objects in a shrubbery in spring. A variety of this species known as the *Soulangeana* or Soulange's Purple, was obtained by hybridization with M. purpurea. In the growth and appearance of the tree it closely resembles the Chinese White, but is distinguished in its flowers by their purple exterior. It is also a few days later and is equally hardy.

Fig. 48.—*Magnolia conspicua.*

PURPLE DWARF MAGNOLIA, (*M. purpurea,*) is a small shrub, never

growing but a few feet high. (Fig. 50.) The flowers are quite large, are softly shaded with purple, and present a conspicuous and unique appearance in spring, although the shrub itself does not possess a great deal of

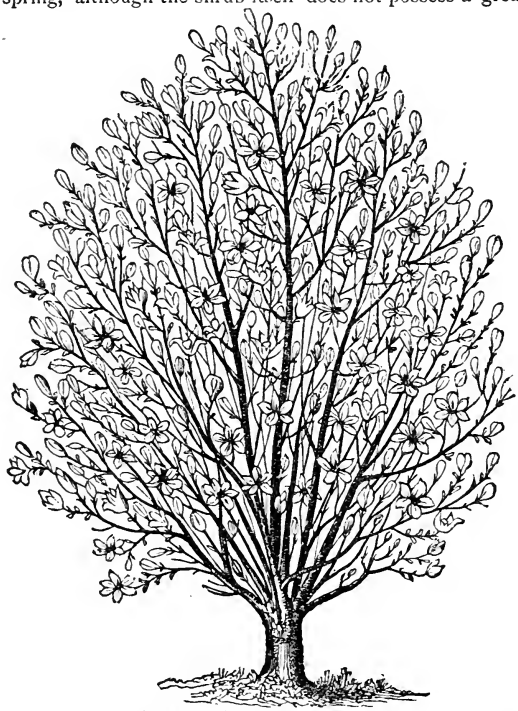


Fig. 49.—*Chinese Magnolia Tree.*

beauty. It is usually propagated by layers or from stools, about two years being required for the young plants to become well rooted. It has in rare instances been obtained from seed. If grafted on our native Magnolia or the Cucumber tree, it would probably become more vigorous and present a finer appearance. It is not quite so hardy as the others, the tips of the shoots being occasionally injured by severe winters.

As these Magnolias bloom early or before the leaves expand, the flowers will present a more conspicuous appearance if planted in front of dark evergreen trees, the foliage of which will contrast finely with the flowers.

Barberry—Although not very showy, a desirable, ornamental shrub growing naturally in a handsome, symmetrical form, throwing out numerous racemes of rich yellow flowers early in summer, succeeded by bright

crimson berries which continue through autumn into winter. The purple, leaved variety has dark purple foliage, and is singular as well as beautiful- The barberry is increased by suckers and rapidly by seeds. (Fig. 51.)

Fig. 50.—*Purple Dwarf Magnolia.*

PHILADELPHUS.—There are two well known species, one of which, the *P. coronarius* or Mock Orange, without possessing much beauty, is esteemed for the fragrance of its flowers, which appear early in summer. The large-flowered, *P. grandiflorus*, is much more showy, having larger and clear white flowers, which appear two or three weeks later without possessing the fragrance of the other. A common but improper name applied to this genus is Syringa, the generic name of the lilac.

THE LILACS.—The common lilac, (*Syringa vulgaris*,) is one of the finest and most ornamental shrubs, but its hardiness and rapid self-propagation by suckers have rendered it so common that its merits are hardly appreciated. English and French cultivators have raised many new varieties; but they are rather variations than improvements on the common white and purple sorts. The Persian lilac, (*S. persica*,) is smaller and more graceful in form, and the panicles are longer and looser. There is a white variety, and another with finely cut leaves. The Siberian or Rouen lilac (fig. 52,) is a hybrid between the common and Persian, and is undoubtedly the finest of all, being larger and richer in appearance than the Persian, and more graceful in growth, and presenting larger masses of flowers than the common sort.

Fig. 51.—*Barberry.*

TARTARIAN HONEYSUCKLE, (*Xylosteum tartaricum.*) This is one of the most desirable of all shrubs, forming handsome compact bushes, with smooth or glossy leaves. When in bloom they are beautiful and showy objects, the red, pink or white flowers being numerously sprinkled among the dark green leaves. There are several varieties, passing in shade from pure white to light pink and red. The variety with striped flowers is one of the finest.

ROSE ACACIA, (*Robinia hispida.*) An old and well known large shrub, with racemes of rich deep pink pea-like blossoms, appearing about the

first of summer. (Fig. 53.) It increases rapidly by suckers, and the plants thus obtained having one-sided roots, tend to throw the stems in

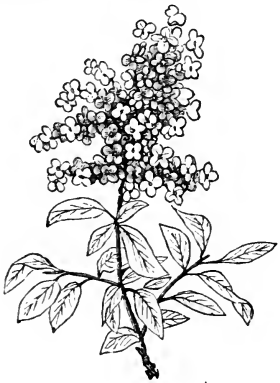


Fig. 52.—*Siberian Lilac.*

Fig 53.—*Rose Acacia.*

an oblique position, which should be guarded against by root pruning and by staking until established. The beauty of this fine shrub depends much on preserving symmetry of form in its outline by timely pinching or pruning.

DOGWOOD, (*Cornus florida*,) is a large shrub becoming a small tree, remarkable for its large white flowers, (so called) which come out in spring about the time that the leaves expand. The flowers themselves are in small inconspicuous bunches, the broad white involucres which surround them and give to this shrub its showy appearance, being usually mistaken for the petals of the flowers. Being rather disposed to grow loose and spreading, the dogwood should be pinched into a more compact form, which will render it more suitable for the shrubbery. It is propagated by seeds.

THE RED-STEM DOGWOOD, (*C. alba*,) grows from four to six feet high, is distinguished by its white wax-like berries in autumn, and its bright crimson stems in winter. It is the latter which give it its ornamental character and add to the gay appearance of the grounds during the winter season. It is commonly found growing wild in swamps and wet places, and consequently flourishes best in deep moist soil.

HAWTHORN, *Crataegus oxycantha.*) The English hawthorn has produced many varieties, three of which, the double-white, the double-pink and single red, are ornamental in a high degree, blooming late in spring. They are propagated by budding and grafting on the common hawthorn. It is a large shrub finally becoming a small tree.

BUFFALO BERRY. (*Shepherdia argentea.*) The flowers of this large shrub are not conspicuous and present little beauty; but the profusion of light red berries which cover the branches in autumn, renders it quite or-

namental. It is rather irregular and straggling in growth, but if pruned, may be brought into proper shape. It is diœcious, or with stamens and pistils on separate plants, and the two must be planted near together in order to produce crops of the berries. These berries are pleasant to the taste and are valuable for culinary purposes. The plants are easily propagated by seed.

Fig. 54.—*Hop Tree.*

THE HOP TREE, (*Ptelea trifoliata.*) (Fig. 54.) A large shrub of handsome growth, bearing greenish flowers in summer, which have but little beauty but which are followed by a profusion of broad-winged seeds, which give it a curious and pleasing appearance. It is a native of this country, is hardy and is easily propagated by seeds.

SILVERBELL TREE, (*Halesia tetraptera.*) This is a handsome delicate shrub, finally becoming a small tree. (Fig. 55.) The flowers are white, drooping and in form quite similar to those of the snow drop. They are produced in great abundance along the shoots, and give the whole tree a highly ornamental appearance. It is propagated from seed which having a hard or horny covering, should be mixed with moist sand or earth as soon as ripe and not allowed to become dry. They often remain above a year in the ground before germinating. *H. diptera* is regarded as the finest species, but is much rarer and flowers more sparingly when young.

Fig. 55.—*Silverbell Tree.*

CORNELIAN CHERRY, (*Cornus mascula.*) A handsome symmetrical large shrub, which bears a profusion of fine yellow flowers early in spring before the expansion of the leaves. Later in the season the shining deep crimson fruit which is of an oblong shape, renders it an object of considerable ornament. The name, cornelian cherry, is derived from the beautiful

color of this fruit, which resembles that of the cornelian. When fully ripe and just before dropping, this fruit is pleasant to many palates. It is readily propagated by seed, which should be divested of the pulp and planted or mixed with damp earth before they become dry.

WHITE FRINGE TREE, *Chionanthus virginica.*) This is a large shrub not very showy, but much admired for its snow-white flowers, which resemble fringes cut from tissue paper, and contrast strongly with its broad, dark-green shining leaves. To succeed well, it should receive good cultivation in a deep moist soil. It blooms early in summer. It may be propagated slowly by layers but more readily from seeds.

SLOE, (*Prunus spinosa.*) This is the English wild plum or Sloe, also called Blackthorn from the color of its bark. It forms a large shrub and when trained to a single stem ultimately becomes a small tree. The double-white variety is the only one worthy of cultivation for ornament—its numerous double snow-white flowers giving it an exceedingly pretty appearance in spring. Being rather coarse and stiff in growth and liable to sucker, it should not be introduced into small shrubberies.

SNOWBALL, (*Viburnum opulus.*) A very common and well known large shrub, bearing large balls or rounded masses of white flowers, presenting a showy and brilliant appearance early in summer. It is often allowed to grow in a straggling form, but is greatly improved by training to a single short stem at the bottom, or in the form of a small tree; or else by pruning into a rounded mass, resting on the surface of the ground. It is propagated with great ease by layering the young shoots in spring, from which a profusion of roots will be thrown out by autumn, when the newly rooted plants are separated by means of the knife, and set out so as to assume a regular shape and upright position. It is a native of Europe and Asia, and is cultivated every where The snow-ball is often known by the improper name of guelder rose. There are three American species worthy of introduction into large collections. *Viburnum lantanoides*, has large showy leaves and handsome clusters of white flowers. *V. prunifolium* has smaller glossy leaves and less showy flowers, but the whole plant if well trained has a neat ornamental appearance. *V. oxycoccus*, or bush cranberry, is desirable for its clusters of crimson berries, continuing through autumn and winter. It should have a rich and rather mucky soil, and the shrub made to assume a dense compact form, with a single stem below, giving it great superiority in appearance over the meager and straggling bushes growing wild in swamps.

PURPLE FRINGE, (*Rhus cotinus.*) This handsome and curious shrub is known by a number of names, such as smoke bush, fuzz tree, Venetian sumach, &c. The purple fringes or airy plumes which give to this shrub its name, are composed of the slender hairy pedicles which remain and increase in length after flowering, at first of a greenish color, but afterwards becoming brownish-purple, and remaining from the latter part of summer into autumn. The shrub is often allowed to grow into an irregular form,

which may be easily prevented by pinching in when young, or pruning afterwards. It is easily propagated by layers.

LABURNUM OR GOLDEN CHAIN, (*Cytisus Laburnum.*) A large graceful shrub bearing long pendent racemes of golden-yellow flowers. It is somewhat tender at the extreme north. The Alpine or Scotch laburnum, (*C. alpinus,*) (fig. 56,) is larger and stronger in growth and rather hardier. The laburnums are propagated easily from seed.

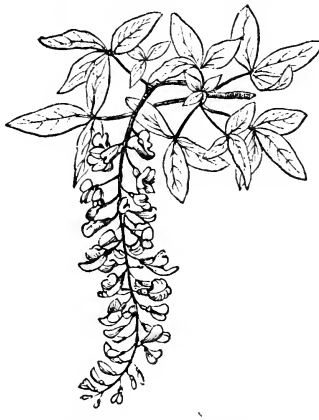


Fig. 56.—*Scotch Laburnum.*

JUDAS TREE OR RED-BUD, (*Cercis canadensis.*) (Fig. 57.) A small tree which can hardly be called a shrub, but which if pinched or pruned back as it should be to give it denseness of form and beauty of appearance, will be rendered very suitable for occupying the exterior portions of large shrubberies. Its beautiful purplish-pink blossoms appear in great profusion early in spring before the leaves, and render it one of the finest ornaments of early spring. It is easily propagated from seed.

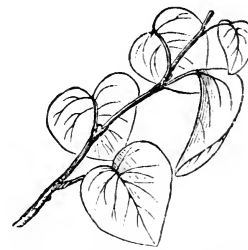


Fig. 57.—*Judas Tree or Red-bud.*

SERVICE-BERRY OR SHAD-BUSH, (*Amelanchior botryapium.*) A small tree frequently growing wild, and presenting a very ornamental appearance in spring, from its masses of white flowers which appear quite early or before the leaves expand—usually a few days before those of the apple and peach. It is well worthy a place in large shrubberies.

CLIMBING SHRUBS OR CREEPERS.

VIRGINIA CREEPER, (*Ampelopsis quinquefolia,*) called also Five-finger and American Ivy. The hardiness, rapidity of growth and richness of foliage of this plant, render it one of the most desirable among climbers. It grows wild throughout the country, and covers rocky cliffs and the trunks of large trees, often ascending to the height of sixty or seventy feet. Each leaf is composed of five leaflets, giving it a digitate or birds-foot form; whence the name five-finger. The form of the leaf serves to distinguish it at once from the *Rhus radicans* or Poison sumach with which

it is sometimes confounded by careless observers, as both plants often cover the trees in a similar manner. The Virginia creeper is not poisonous, being nearly allied to the grape and included under the same generic head by the older botanists. The leaves turn to a rich crimson in autumn. The tendrils fix themselves to the objects which support the stem by dilated sucker-like discs at their tips. Like the grape it is easily increased by layers and cuttings. On account of its hardiness it becomes an excellent substitute for the ivy, which is too tender to endure the winters in the more northern states.

PIPE-VINE OR DUTCHMAN'S PIPE, (*Aristolochia sipho* and *A. tomentosa.*) these two species much resemble each other, and form handsome, delicate climbing shrubs with broad, nearly round leaves. They are remarkable for the singular form of their flowers, which are tubular, crooked, and somewhat resemble a smoking pipe. They are propagated by layers.

TRUMPET CREEPER, (*Tecoma radicans—Bignonia* of older botanists.) This is a strong-growing climber, well known to ornamental planters in the northern states. (Fig. 58.) It is a native in Pennsylvania and further south. Its running stems are furnished with small rootlets by which it readily attaches itself to the bark of trees and brick walls. The flowers are trumpet-shaped, about three inches long and of a deep rich brownish crimson. It is quite hardy in the northern states, unless it be in the most severe winters; and is well adapted to covering walls and the sides of buildings, its dark-green foliage contrasting finely with the large rich-colored flowers.

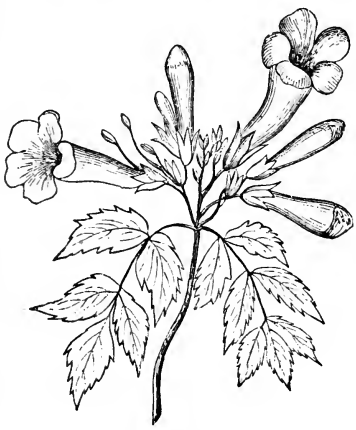


Fig. 58.—*Trumpet Creeper.*

LARGE-FLOWERED TECOMA, (*T. grandiflora.*) (Fig. 59.) This is one of the most showy and magnificent of all our climbers, and like the common trumpet creeper, it has the habit of attaching itself to walls. While it is not quite so strong a grower and is less luxuriant in foliage, the flowers far exceed the former in brilliancy and splendor; they are usually about three inches in diameter, and a large number are often seen fully expanded on the same raceme. We have frequently seen these clusters a foot in length. An additional value is its lateness in flowering, commencing about midsummer and frequently continuing several weeks. The color is a rich-orange or orange-scarlet, marked inside with brighter streaks. It has but one drawback—it is not perfectly hardy in the more northern states. We have generally found it

advisable to detach it from its support on the approach of winter, and lay it on the ground where it may receive a light covering of leaves or evergreen boughs; or in places where much snow falls no covering will be necessary. Where the winters are not quite so severe, a covering of evergreens without laying down may be sufficient. We have known the plants to grow and flower without any protection, as far north as 43° of latitude, but they were lessened in luxuriance and beauty by the cold.

Fig. 59.—*Large Flowered Tecoma.*

The figures of both these species represent them about one-fourth the natural diameter. They are very easily propagated by layers.

PERIPLOCA.—A very hardy climber of strong growth, desirable for its dark rich foliage, rather than for its flowers, which are brown or purple. It is easily propagated by layers, and will rapidly cover any surface on which it is trained, or form festoons on supports or trees.

THE CLIMBING HONEYSUCKLES are among the finest ornaments of this class. The Scarlet Trumpet Honeysuckle, (*Lonicera sempervirens,*) is perhaps the most showy of all—its scarlet tubular flowers contrasting finely with its dark-green shining leaves, and continuing in bloom throughout the summer into autumn. When grown with the Yellow Trumpet Honeysuckle, (*L. flava,*) which much resembles it, except in its yellow flowers and lighter foliage, the two form a beautiful intermixture of colors. The Woodbine (*L. periclymenum,*) has pale-yellow flowers, which appear early in summer; remarkable for their fragrance. There are several varieties, one of which blooms all summer and another blossoms early in spring.

BITTERSWEET, (*Celastrus scandens,*) is a well known native climber, valued chiefly as a winter ornament—the orange-colored seed vessels bursting open and displaying brilliant crimson seeds. The flowers are white in panicled clusters and not remarkable for their show.

THE PRAIRIE ROSES are unexcelled by any other climber in the magnificence of their display when in bloom. There are many varieties, among the more commonly known of which, the Queen of the Prairies and Baltimore Belle, stand preeminent. When growing together and covering pil-

lars or other supports, the intermixture of white and red flowers forms a most brilliant display. The varieties known as Superba, Pallida and Perpetual Pink, as well as several others, are beautiful ornaments. The Ayrshire roses are luxuriant growers and great ramblers, but are not always perfectly hardy. Some of the Boursalts should not be omitted, for although not strictly climbers, they are vigorous growers, and may be trained to a considerable height on proper supports. Like the Prairie roses they form handsome pillars. The common purple Boursalt, which is so strong a grower and so hardy under all circumstances as to have become very widely known, is one of the finest of the whole class. We have counted more than two thousand blossoms on a single bush at a time.

CHINESE WISTARIA,* (*Wistaria chinensis.*) (Fig. 60.) Loudon says that this plant may be truly considered the most magnificent of all our hardy deciduous climbers. It is a native of China, and is sufficiently hardy to endure winters except in the extreme north. As far south as New-York city it flourishes finely. Its flowers, which are light purple, are borne on long drooping racemes, hundreds of which often grow on a single plant. It blooms during the first days of summer; but a second crop of blossoms may be freely obtained a month or two later, by taking off the leaves immediately after the first blooming and cutting back the shoots within a few inches of the old stem. New shoots are thrown out which produce the second blooming. The process may be again repeated and a third crop obtained early in autumn. This process is successfully performed only on well established plants; and if often repeated would probably injure their vigor. The Wistaria is easily propagated by layers or cuttings of the root.

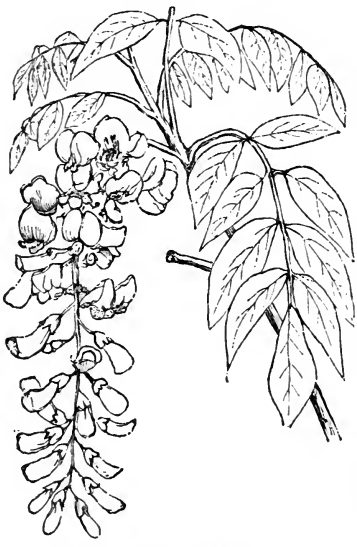


Fig. 60.—*Chinese Wistaria.*

THE AMERICAN WISTARIA (fig. 61,) is less showy than the Chinese, and is distinguished from it by the darker purple of the flowers, and by the horizontal instead of drooping position of the racemes. It also flowers a month or two later. A new variety called the Magnifica, has been pro-

* Named from Dr. Wistar, but often misspelled Wisteria.

Fig. 61.—*Large American Wistaria.*

duced in France, which flowers more profusely, and which is represented in the above engraving at one-half the natural diameter.

Evergreen Shrubs.

Most of the desirable evergreens cultivated in this country are trees and not shrubs. Many of them, however, may be easily kept in a small or compact shape by pinching or pruning back, not shearing. Among the evergreens that are strictly shrubs, one of the finest is the tree box, which, although growing quite slowly, or only a few inches annually, will ultimately attain a height of 10 or 12 feet. The trunk grows to a diameter of six or eight inches, and the wood is commonly used for wood engraving. It is mostly brought for this purpose from the east, and sells from twenty-five to seventy dollars a ton. The tree box has been much used for shearing into stiff and fantastic shapes. When allowed to assume its natural growth, it has less formality than most evergreens, and may be made into beautiful screens. The common box edging is a small variety of the same species. Both are propagated by cuttings and layers.

Dwarf Pine, (*Pinus pumilio* or *P. montana.*) A European species, perfectly hardy in this country, and although growing with much vigor when young, never attains a height of more than ten or twelve feet, although spreading and forming a broad rounded mass of dense deep-green foliage.

The Common Juniper, (*J. communis,*) grows four or five feet high, and if properly shaped when young, may be made to form a free handsome evergreen shrub. The Savin, (*J. sabina,*) as commonly seen is four or five feet high, with a straggling or spreading growth, but by training will grow higher and assume a better shape.

The Kalmias and Rhododendrons are strictly evergreen shrubs; but as

they are cultivated for their brilliant display of flowers and not for their foliage, they have been placed under the head of other flowering shrubs.

CONTRIVANCES IN RURAL ECONOMY.

Bag-Holders.

FARMERS WHO HANDLE much grain and who cart off many hundred bushels annually, would find it a matter both of convenience and economy, to provide a simple stand to hold each bag while it is filled with the scoop shovel—instead of the more frequent practice of taking the time of a man or boy to do this work. These bag-holders are made in various ways. One mode is to drive a few sharp nails into the top of a light barrel open at both ends; hitch the top of the bag on these nails while it hangs within the barrel resting on the floor with its mouth open ready for filling. When filled, it is tied and the barrel lifted off. A better way is to provide a board about a foot wide and eighteen inches long, (fig. 62,) which serves as a base, and on which

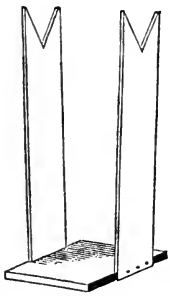


Fig. 62.—*Bag-holder of forked Boards.*

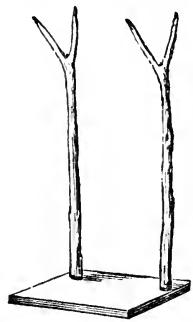


Fig. 63.—*Forked-stick Bag-holder.*

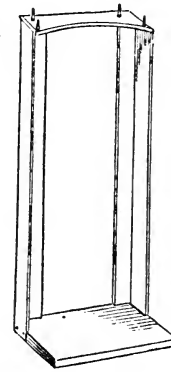


Fig. 64.—*Board Bag-holder.*

the bag stands. Uprights or standards with sharp points at the top hold the bag open until it is filled. These uprights are variously constructed. One mode is to take a piece of two inch plank for the bottom, and bore two holes or one at each corner on the same side, and insert upright or forked sticks firmly into these holes as shown in fig. 63. Another mode is to nail thin boards on the opposite sides of the plank base, sawing a fork in the top of each, so as to form sharp points for holding the mouth of the bag. If these boards are so nailed on to the base that they shall spread a little towards the top, and being thin enough to have some spring

to them, they may be slightly bent inward when the bag is attached, and springing out again will hold it the more firmly. One of the best, firmest and most convenient supports, admitting the ready removal of the filled bag, is represented in fig. 64. It has a board bottom, on two corners of which, upright boards are nailed as shown in the cut, connected and braced by a horizontal board at the top. Through this board are driven nails, projecting upwards and to which the bag is attached. This support is light and the uprights being braced, are not easily broken off. By first measuring the height of a full bag, the right dimensions may be obtained. (The cut is defective in not showing the top board cut away enough to let in the bag sufficiently.)

Snow-Plow.

The deep snow throughout the country the past winter, made a great deal of hard labor in shoveling by hand. A simple snow-plow may be made by any farmer in an hour or two, and will open paths by means of a single horse, with ease and rapidity. The height of a plow may vary with the depth of the snow, which being very uncertain, it should be sufficient. A foot will answer for nearly all cases. Take two pieces of plank or thick board a foot wide and about five feet long, more or less, dress off one end of each in a wedge form on one side, so that when these two dressed faces are placed together, the two pieces will diverge like a letter > (fig. 65.) A width of three feet behind will be usually sufficient, and a board may be placed within, extending across so as to form a brace by nailing. Sometimes a joint is made at the forward end and cross pieces of different lengths keyed in to make the plow wider or narrower as may be desired. A hook is attached to the forward end for the whiffletree, and a box seat placed on the top for the driver. By increasing or diminishing the distance between the hook and whiffletree, the forward end will run high or low as the nature of the snow may require. The driver has only to keep the horse in the right place, slightly guiding the plow by throwing his weight left or right. This plow may be used around the house, to front gate, to barns and other out buildings, along village streets and elsewhere. A finishing touch may be given to these paths by hand when desirable.

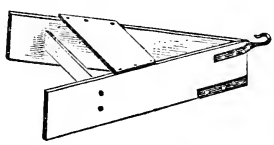


Fig. 65.—*Snow-Plow.*

Fastenings for Ox-Bows.

Every one who has yoked a pair of oxen has experienced the difficulty of holding up one end of a heavy yoke while inserting the bow and keying it in. The labor is much lessened by attaching a spring snap or catch to the bow, so that when simply thrust through the hole in the yoke, (fig. 66,) it fastens itself without any other attention. This is effected by inserting a large unannealed wire, so that it shall act on each side in a manner similar to the catch of an umbrella. A small iron plate with a

hole in it as large as the bow, should be secured to the top of the yoke for these springs to rest upon.

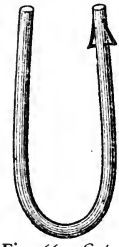


Fig. 66.—*Catch for Ox-Bow.*

Another mode of fastening the bow without employing a spring, is shown in fig. 67. A common butt or small door hinge is used for this purpose and is screwed on to the top of the yoke, so that its movable part may cover about one-fourth or one-fifth of the hole. A notch is cut into the bow to correspond with this projecting edge of the hinge. On inserting the bow, this half of the hinge is thrust upwards, but drops and secures it as soon as it reaches the notch.

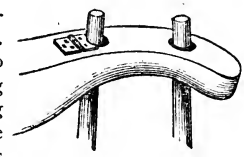


Fig. 67.—*Latch for Ox-Bow.*

Self-Shutting Gate.

Various contrivances have been resorted to, for causing gates to shut of their own accord. When they are large and heavy, this may be accomplished by hanging them, according to the mode described on page 278 of the second volume of Rural Affairs. In windy places, it is sometimes necessary to give additional force by means of a weight suspended to a cord, which runs over a wheel or pulley. For small or light gates we have never found anything equal to the spring represented in the accompanying figure. (Fig. 68.) One, which has been in use over ten years, appears to be as good as on the day it was put on. The different parts are shown more distinctly in fig. 69,

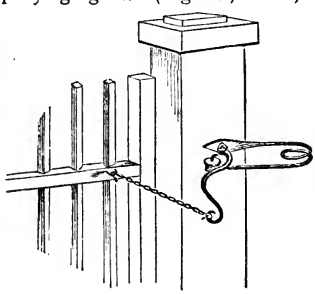


Fig. 68.—*Spring for Shutting Gate.*

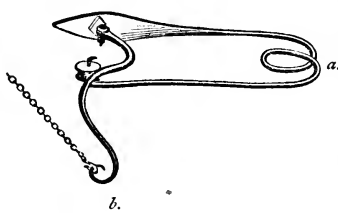


Fig. 69.—*The Same, enlarged.*

where *a* represents a spring which is screwed on to the gate in a horizontal position as is shown in fig. 68, having a small wheel at its outer end, in which the bent lever *b*, moves in opening and shutting. In the outer end of this lever a small chain is hooked, connecting with the gate. When opened, the spring is bent as shown by the dotted line. In constructing this contrivance, the great point is to form the curve in the lever, in such a manner that there shall be a continued and uniform pressure upon the

spring, at whatever distance the gate is opened. The form represented will nearly accomplish this purpose, its length being about equal to the distance between the post and small wheel on the end of the spring. This contrivance was patented many years ago and retailed at $1.50, the spring and lever being simply made of steel rod. The patent has probably long since expired.

Iron Gate Latch.

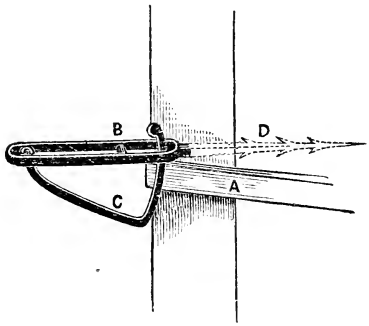


Fig. 70.—*Iron Gate Latch.*

A correspondent in Talbot county, Md., sends the following description of an iron gate latch, (fig. 70,) which he has found cannot be opened by mischievous mules or horses. The straight portion is made by bending a rod double and welding the ends to a sharp point, which is driven into the gate post D. The latch C, is of iron and plays in the space between the sides of this straight piece. The cross-pin at B. prevents the latch from flying entirely out, when the gate is shut forcibly. The gate is held shut by the pressure of the latch against cross-bar A, which may be a projection of the horizontal part of the gate, or a bar of oak, nailed or screwed to the stile.

Weeding Hoe.

A correspondent of the Country Gentleman, gives the following description of an efficient implement for cleaning crops of carrots, onions, &c. (Fig. 71.) Take about eighteen inches of pretty good old scythe, cut the back off, and five inches from each end, bend the blade up to a little more than a right-angle. Punch a couple of holes in each end and nail in a narrow head, six inches long. Put an old rake-stale in for a handle. The blade should stand about two inches outside of a right-angle from the handle. To use it—reach out about three feet and draw it towards you, letting it run about an inch deep. It will cut every thing clean and run close to the row. There is nothing like it for killing small weeds, and it will accomplish more than double the work of an ordinary hoe. If you have an old scythe, a

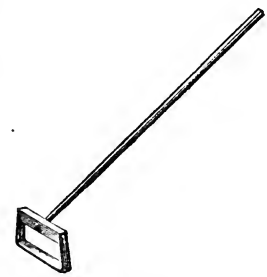


Fig. 71.—*Weeding Hoe.*

chisel and a punch, you can make one in an hour, and next summer when your onions, &c., get weedy you will not be sorry.

Withdrawing a Cork.

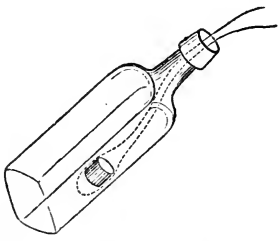


Fig. 72.—*Withdrawing Cork from Bottle by doubled Wire.*

The common operation of extracting by means of a corkscrew, the cork which has been firmly driven into the mouth of a bottle, is well known. Not unfrequently, however, they are driven entirely within the bottle, from which they are sometimes withdrawn by throwing the loop of a cord or thread around them. This, however, requires a good deal of dexterity as well as patience, and is not always successful. A much easier and better way, is to take a piece of quite small annealed wire, which should not be larger than the thirtieth of an inch in diameter—smaller would be better—make a loop just wide enough to hold the cork, and thrust this into the bottle and over the cork, which is then easily drawn out. (Fig. 72.) The spring of the wire will be sufficient to allow it to enter the mouth and yet take in the cork.

Fastening Open Barn-Doors.

Good barns are always supplied with fastenings to hold the doors while shut; but very few owners ever think of securing them while open, and as a consequence, strong winds often blow them about, slamming them against the walls or other obstructions, injuring or splitting them, and sometimes breaking them down from their hinges. Different modes are adopted for securing them while open. Doors which are merely fastened by a hook and staple, are easily fastened open by inserting another staple at the place where the edge of the door strikes, to receive the hook and hold it fast. Another mode, (described in the American Agriculturist,) is to prop the door open by means of a stick provided for the purpose an inch or more in diameter and three or four feet long, (fig. 73,) which is fastened to the outer edge of the door by an eye and staple, the other end resting horizontally in a hook when not in use. This end has a sharp iron point, to prevent it from slipping on the ground or ice. When the door is opened the stick is placed in the position of a prop by a single movement of the hand; and when

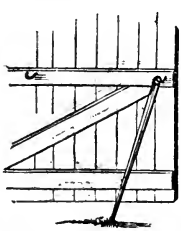


Fig. 73.—*Propping open Barn Door.*

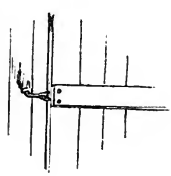


Fig. 74.—*Fastening open Barn Door.*

again shut, it is lifted and laid in the hook. A third mode, which may be adopted where a common latch is used on the door, is to place a second catch at the outer edge of the door, which may receive and hold the latch while the door is open. This is better or easier to manage than either of the others, the latch being self-fastening in both positions.

Simple Farm Gate.

A correspondent of the Country Gentleman, sends a description of a simple farm gate which we have represented in figs. 75 and 76. It has no hinges, but operates like a set of bars, with the exception that the bars are all fastened together as in one piece, made light enough to handle readily and to be removed at a single operation. Such a gate never gets open by swinging, nor out of order by sagging. Each end of the fence at the opening is finished as in fig. 75, the extra post being placed at one side from the other at a distance of a little more than the thickness of the boards—each end being on opposite sides of the post. The short cross-pieces hold up the ends of the gate. The gate is first placed where it is wanted and these cross-pieces are then nailed under the projecting ends o the boards. To open the gate, push it back a little and swing it around as far as at right-angles, if desired, or remove it altogether.

Fig. 75.

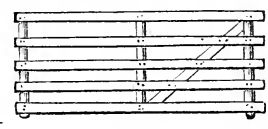


Fig. 76.

Bin eor Coal.

House cellars, which have smooth floors of hydraulic cement, as all such cellars should have, are often disfigured by the loose coal, which is thrown in a heap upon them,and often scattered about loosely, in a general way. Neat housekeepers use large boxes or bins for the coal, (fig. 77,) which is shoveled out with considerable inconvenience, at the top. A better way is to place the coal in a large box or bin, having an opening at the bottom, ten inches or a foot wide and several inches high, varying with the size of the coal, which at this place rests upon the floor. It is thus easily shoveled up into the scuttle, or into the hot-air furnace in the same apartment. As fast as the coal is thus removed a fresh supply falls down from above until the bin is exhausted.

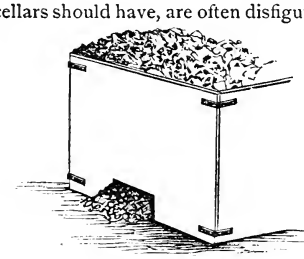


Fig. 77.—*Coal Bin.*

Shovel for Coal.

Fig. 78.—*Coal Shovel.*

A good shovel for filling coal scuttles or furnaces, (fig. 78,) is made by taking a common iron or steel scoop shovel to a blacksmith, who will bend up the sides at right-angles to the bottom, of such a width as will be suitable for filling the scuttle or passing the furnace door.

Door-Fastening.

Travellers who stop at third-rate hotels often find their lodging rooms destitute of locks. The following simple fastening may be carried in their travelling bags, and will secure them from intrusion during the night. Take a piece of large wire about four or five inches long, bend it in a loop like the letter **U**, but narrower, then heating the points red-hot, bend them at right-angles, and flatten the points like sharp wedges—the whole being similar to the form represented in fig. 79. In fastening the door, place the sharpened points of this loop against the door-post or frame, and then by slamming the door slightly against it, the points will be driven in and hold it fast. It should be so placed that the loop may project about half an inch into the room; then take a short piece of iron and thrust it through the loop as shown in fig. 80. This iron will extend across both door-frame and door, and prevent the latter from being opened while it remains in the loop. There is usually space enough between any door and the door-post for the wire loop. A small bar of strong wood will answer as well as iron, if the loop is large enough. Instead of wire, a piece of thick sheet iron, or still better, a thin plate of steel, may be bent as shown in fig. 79, with a hole through the end for receiving the bolt—which may be a large nail, if nothing else is at hand.

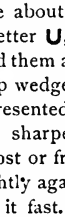


Fig. 79. —*Door-Fastening.*

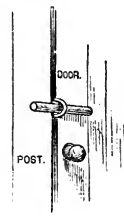


Fig. 80. —*Door-Fastening.*

Sharp Feet for Ladders.

Fig. 81.—*Sharp Feet of Ladder.*

Ladders are nearly always made with blunt, rounded, or square ends; and as a consequence, when placed upon a smooth surface, especially if frozen or icy, there is danger of their slipping or falling. The lower ends should always be sharp or wedge form, (fig. 81.) If much used, they should be shod with iron—the simplest mode of doing which, is to take an iron strap, bend it, by heating in the fire or forge, to a sharp angle in the middle, so as to fit the wedge form of the feet, and then nail it on through holes punched for the purpose.

Thistle Digger.

X. A. Willard describes in the Country Gentleman, a useful implement much used in England, for extirpating thistles and similar weeds from grass lands. It is easily made, cheap and lasting. A. (fig. 82.) is the handle; B. the claws, between which the thistle is received; the curved iron C, is the fulcrum by means of which a purchase is obtained for extracting the root. D. is an iron rod or bar, upon which the foot is placed to thrust the claws into the ground. In case the root of the thistle breaks, while endeavoring to extract it, the implement is inverted and the curved blade E, which has a chisel-like end, is thrust into the ground in order to cut off the root some inches from the surface, and thus prevent it from vegetating. When the ground is a little moist or loose, this implement, in the hands of an active man, will take out a large number of plants. It makes sure work, and when the land is not overrun with the weed, it is the cheapest way to get rid of it. Boys like the sport of prying up the plants, and the implement should be made light and handy, so as to give them a play at "the thistle business," whenever they feel inclined.

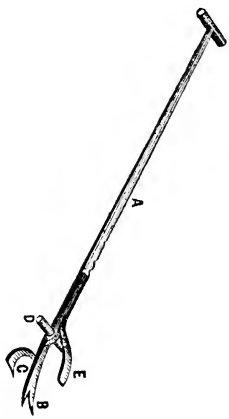


Fig. 82.—*Thistle Digger.*

A Horse Cleaner.

In muddy weather, the legs and bodies of horses frequently become covered and encrusted with the hardened mud, which, for the comfort of the animal as well as decent appearance, should be scraped off and the hair brushed clean, dry and smooth. A currycomb is too harsh a tool for scraping off the mud, especially around the angular parts of the legs. A much better thing is a very cheap and simple scraper, made for the purpose, either of wood or sheet iron, and which has been in use many years. Fig. 83 represents a wooden one, which may be made of a thin piece o hard board or the stave of a barrel. One end is rounded so as to be held comfortably in the hand, and the other sloped to an edge. Fig. 84 is a sheet-iron scraper, which is quickly made by any tinker. It is similar in form to the other, but a portion is rolled up at one end to form a handle. In addition to scraping off mud, this sheet-iron blade is useful in hot weather for removing perspiration from the horse's back and sides.


Fig. 83.—*Wood Horse-cleaner.*


Fig. 84.—*Sheet-iron Horse-cleaner.*

Horses Drawing on the Halter.

Various contrivances have been made to prevent horses from pulling at the post; some of which by producing pain and subsequent soreness on the top of the head, effect permanent injury to the animal. A better way is to use the following contrivance, (fig. 85,) which by pinching the jaw and pressing the mouth closely together, is very apt to cause the animal instantly to desist. Instead of connecting the two side rings of a common halter, by a third strap to which the long strap is fastened, let these side rings be connected by a strong flexible cord, as shown in the accompanying figure, and fasten the hitching strap to the outer part. Whenever the horse pulls at his halter, the inner part of the cord is drawn forcibly against his jaw, and the powerful tourniquet movement is rather more severe than the animal is willing, voluntarily, to endure. A strap is sometimes used instead of a cord, but it is less decisive and efficient.

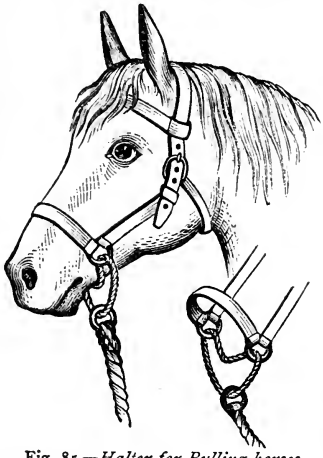


Fig. 85.—*Halter for Pulling-horses.*

Propping Stacks.

A well and evenly built stack of hay, straw or cornstalks, will keep its place and stand perfectly erect. But bunglers often build stacks which settle to one side—a result which is almost sure to occur if the load is always driven on the same side in building; or if the builder is not careful to place regular tiers of forkfulls, while he ascends, like the tiers of brick in building an edifice. Stacks made in this way in a short time begin to nod, and make obeisance in some particular direction; and the next step is to thrust rails, in the form of props, against the lower side, to prevent further settling or upsetting. The points of these punch into the stack and very little good is done. A better way, well-known to some of our readers, is first to place a plank, slab or broad rail, against the side of the stack, against which the prop may be set, (fig. 86.) A slight notch may be cut, to prevent sliding. One prop thus inserted, is worth half a dozen placed in the common way.

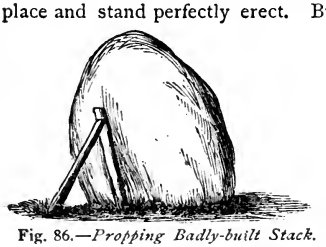


Fig. 86.—*Propping Badly-built Stack.*

Wood Carrier.

A correspondent sends us a description of a frame or barrow for conveying wood by hand from the wood-house to the fire. It obviates the necessity of piling the sticks on the arm, one by one, and then carrying them into the house, the wood being placed at once upon the frame where it is not lifted until the frame is filled, (fig. 87.) When wood has been dusted or covered with snow, it is easily knocked off by striking two sticks together before placing upon the frame. It is made in a manner quite similar to the common saw-buck, the sides being not quite so wide apart and longer above the round that holds them together. It consists of four strips of hard wood, one inch thick, four inches wide, and four feet long—crossed eighteen inches from the lower ends, nailed and clenched with wrought nails. An auger-hole, an inch and a fourth in diameter, is bored through at the crossings and a round connecting rod, fifteen inches long, inserted.

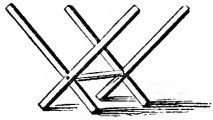


Fig. 87.—*Wood Carrier.*

Drawing out Old Posts.

When an old fence or gate-way is to be removed, it is often quite a task to draw the old posts from the ground. The common way is to dig away the earth for a foot or two downward, and then pass a chain around the post and around a stout rail or a large lever, which is used for drawing out the post. In some instances the insertion of the point of a crowbar into the side of a post is sufficient for lifting it. Both these modes are slow; a more easy and rapid one, using ox power instead of human strength, which has long been in use in some places, is to attach a sufficient amount of chain to the oxen at one end and to the post at the other, place a stout prop between with its top inclining towards the post, and then let the animals draw—(fig. 88.)

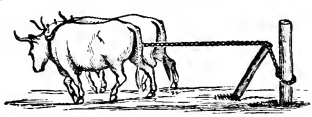


Fig. 88.—*Drawing Posts.*

Sagging Doors.

When a new house is built, the doors commonly work well for a time, or in the words of the owner, "they shut beautifully." As time elapses, one of them begins to strike the sill at the outer corner; another "gets stuck" against the lintel; a third strikes the side piece, and a fourth cannot be shut at all. The various slammings, pullings, jerkings, and vain or difficult efforts to open or shut the door, twist, crack or injure it, deranging the knob or lock, and rattle down the adjacent plastering. The carpenter is called in, and by sawing or planing off the painted edge, succeeds in effecting a remedy for the present time. In nearly all such instances, either the building has settled out of shape, or the hinges have

become worn or loosened. When the latter is the case, some times a slight replacement or even screwing up of the hinge will answer the purpose. If the iron on which the hinge turns has been worn small, a remedy may be applied in the form of a small washer, which may be a tube of tin or thin sheet-iron slipped over it. If the building has settled, (and a very slight settling will derange all the doors,) the use of a jack-screw with thin hard wood wedges, may be made to remove all the difficulty.

When a door sticks against the base or lintel, the difficulty of opening and shutting may be removed temporarily, by pressing firmly on the door knob in the direction *from the adhering part.* For instance if the door sticks at the top, press downwards—if at the bottom, lift upwards,—and it may be readily opened or as readily shut.

Corn-Markers.

The Prairie Farmer describes a corn-marker which appears to have much to recommend it, to the description of which we add the accompanying cut. (Fig. 89.)

It is made by putting a short axle in the forward wheels of a wagon, and a long one in the hind ones; couple them together by a six feet stick pinned on to the center of each axle, with two braces pinned on the hind axle, and running to the center of the coupling; the wagon tongue can be put on the front axle by two small iron bolts put through the ends of the hounds and axle; the axles can be made of poles. Put the front wheels four feet apart, and the others twelve feet, though the length of the axle can be made to suit. Sixty acres in a day can be marked with it. It runs light, and makes a good mark, and one that will show after a rain as good as a sled mark.

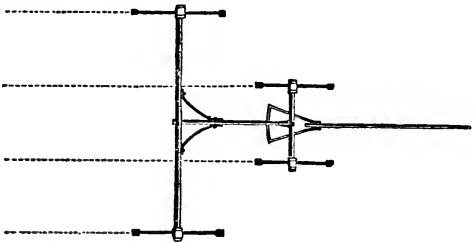


Fig. 89 —*Corn-Marker.*

Hand Glass.—A cheap hand glass is made by taking strips of board three inches wide, run the match plane, that makes the groove, near one edge, saw to such lengths as when nailed together in the form of a parallelogram, it will just admit a pane of glass to slide in the grooves. One end should be lowered to admit the glass to slide over it. When not in use the glass can be taken out and put away. By their use the plants may be easily ventilated by sliding the glass, more or less, according to the temperature. The glass should be at least 8 by 10 inches; larger would be better.—*Rural N. Yorker.*

IRON FURNITURE FOR FARMS.

THE IMPROVEMENT which has been made in various kinds of farm fixtures and furniture of late years, is one of the distinct marks of modern progress. A cast-iron pig-trough, or iron manger, for example, will outlast a dozen made of wood, never need repairs, and are not liable to be gnawed and spoiled by animals. On this account they may be regarded as the most economical. Cast-iron cistern and well pumps work more easily and satisfactorily than the old heavy wooden ones, and are made and sold at low prices. There are several extensive manufactories of this iron furniture in different parts of the country—among which Cowing & Co., and Downs & Co., of Seneca Falls, N. Y., and J. D. West & Co., New-York city, are conspicuous. Cowing & Co. have kindly furnished us with the several cuts for this article. As frequent inquiries are made, we shall doubtless render an acceptable service to our readers, by making them better acquainted with some of these iron articles, and inducing them to procure those superior to what they may have in some instances before possessed.

PUMPS.—These are made of various forms, and for a large number of different purposes. Fig. 90 is an iron cistern-pump, showing the mode of bolting it to the floor or platform, and representing also

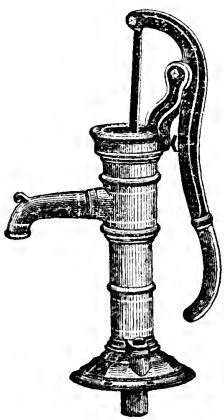


Fig. 90.

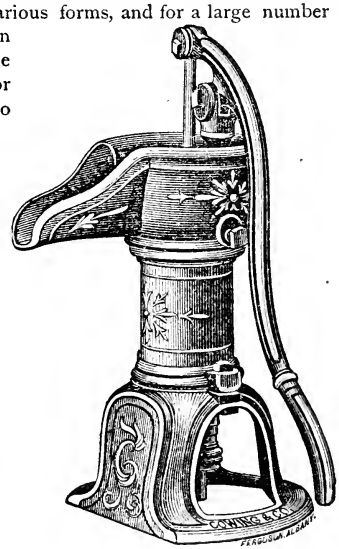


Fig. 91.

their neat and compact form, occupying but little space at one side or in the corner of a kitchen over the cistern. Fig. 91 exhibits a new pump, of

much simplicity and convenience, as we have proved by a full trial. The base is strongly braced, and yet is so short under the spout, that the water is delivered in the center of the pail, and dripping or slopping over the edge of the pail entirely prevented. The ease and rapidity with which it lifts and throws water, we have never found excelled. It is furnished with a contrivance for letting off the water from the tube at pleasure, to prevent freezing.

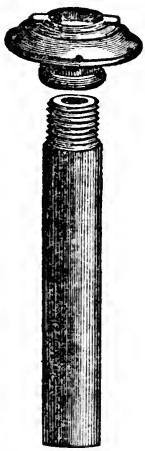


Fig. 92.

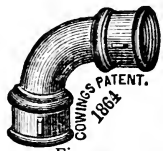


Fig. 93.

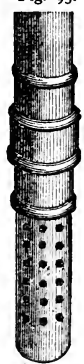


Fig. 94.

Fig. 95.

Although all the working parts of these pumps are made of iron, yet experience has proved that the cheapest, best and most satisfactory material for the tube, is wood. The Tulip tree or "White-wood," is found well adapted to this purpose, and is used by Cowing & Co. When on a visit at their establishment, we found a lathe in operation of their own invention, which rendered three inch square scantling round and smooth, at the rate of eight feet in length per minute, the only attendance required being to lay the wood on the machine, and remove it when finished. It was then placed on another machine which bored these round sticks with accuracy and finish, at the rate of nine feet per minute—the chips flying out of the end, like chaff from the fanning mill. These wooden tubes are connected by means of iron couplings, which are shown in figs. 92 and

93. Fig. 94 shows a cast-iron foot valve, with strainer. Fig. 95 represents a cistern or well pump, so constructed that the working parts are about 20 inches below the platform or base of the pump, and are therefore well adapted for out-door work. If the well or cistern is kept covered tight, the pump will not freeze below the platform. They will succeed in any well not over twenty feet deep, and by means of their various couplings may be made to draw water in a horizontal or inclined position, provided the whole height is not much over twenty feet.

Another form, is the engine well pump, adapted to deep wells and is made by combining the principles of atmospheric pressure, or suction, with the force pump, and having an air-chamber connected, will throw a constant stream. It is adapted to not only the ordinary uses of a well pump, but also to the washing of windows, buildings and vehicles, and the extinguishing of fires. With three feet of hose and a discharge-pipe, water can be easily thrown over a two-story building, or with sufficient hose, carried over the entire premises.

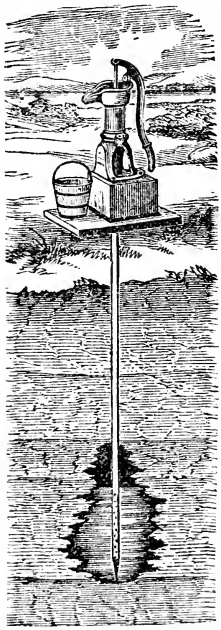


Fig. 96.

Fig. 96 represents the new mode of making wells by simply driving into the earth common iron gas-pipe, pointed at the lower end, and perforated at the sides near the lower extremity for the ingress of water—thus obviating entirely the cost and labor of digging wells. If driven through a subterranean spring, stratum of water, or a wet layer of sand or gravel, it is obvious that the water will immediately flow through the perforations into the pipe; and by attaching a good pump to the pipe, and pumping for a time, all the particles of sand and fine gravel will be drawn out, and the cavity thus formed around the perforations will remain filled with pure water. These tubes and pumps are admirably adapted to localities where large beds of wet gravel exist fifteen or twenty-five feet below; and in fact to all soils where large stones are not abundant. Where these occur, the pipe must be withdrawn and tried in a new place, until success is attained.

An excellent deep well pump is represented by fig. 97—the working part being placed at the bottom of the well, is adapted to any depth of water, the rod working safely within the cylinder. The lower part of the cylinder is furnished with a strainer which is plugged at the bottom to prevent the

ingress of sand and mud. The connecting pipe between the cylinder at the bottom and the standard at the top, is wrought or galvanized iron. The pump of course needs bracing to prevent swinging when worked.

OTHER IRON ARTICLES.—A clothes-line reel is shown in fig. 98, the arms being made of wood and inserted after the cast-iron or central part has reached its destination. The tight square cap, immediately below the reel, fits upon the top of a post set out of doors, conveniently accessible to the wash-room.

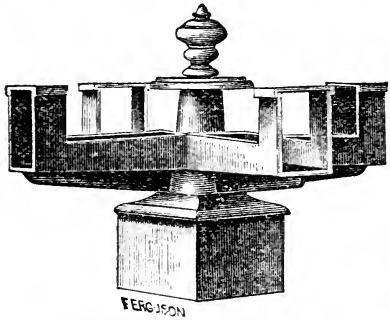


Fig. 98.

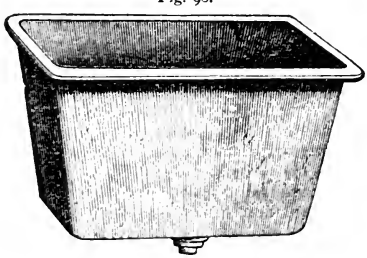


Fig. 99.

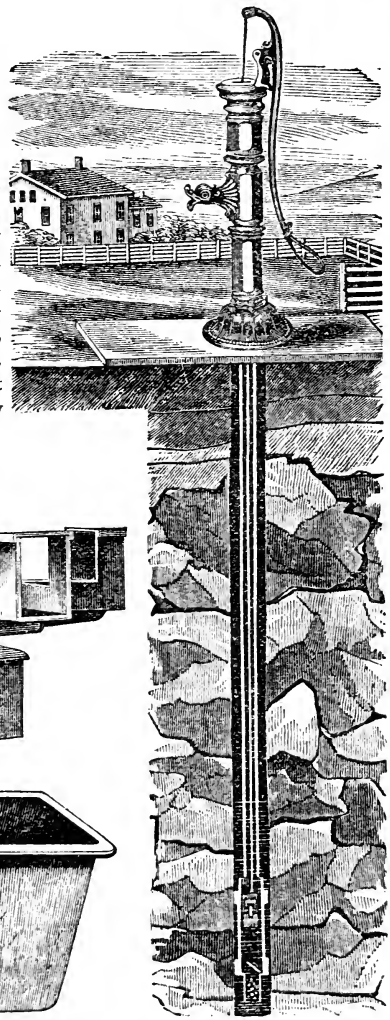


Fig. 97.

Fig. 99 is a slop-sink which needs very little explanation. It will hold

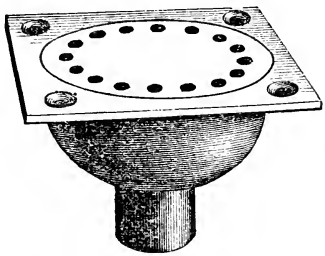


Fig. 100.

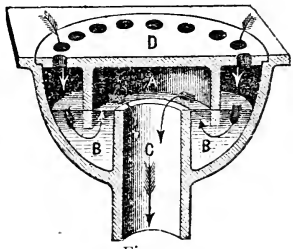


Fig. 101.

a common sized tub of water, and is furnished with a strainer and cess-pool, forming a safety-valve to the drain when set upon it. Figs. 100 and 101 represent the bell-traps alluded to, which prevent the entrance of impure gases or nausious affluvia into dwellings from sewers or drains. Fig. 101 is a section showing the structure of different parts. The inverted bell A. comes below the top of the tube C. into the water B. and thus entirely confines the gas in the top of the inverted bell A. The arrows show the course of the water through the trap into the sewer or drain.

Fig. 102.

Cast-iron jack-screws, shown in fig. 102, are useful for many purposes, such as raising the corners or sides of buildings which have settled out of place, in renewing the under-pinning, &c. The nuts to these screws are made so as to let into a wooden block or timber.

QUANTITY OF HAY CONSUMED BY CATTLE.—The following careful estimate, by a correspondent of the COUNTRY GENTLEMAN, which nearly accords with other experiments, will enable farmers to determine before hand, the amount of hay their stock will consume during a winter: On the 3d of Jan. last, I drew a stack of timothy, blue or June grass, and white clover hay. The top of the stack, 500 lbs., was put in racks in the cattle-yard, and 7,990 lbs. into the loft of the cow-stable. This hay was given to the cattle for the first time at 4 P. M. on the 3d, and the last of it was fed at 7 A. M. on the 14th of Jan. That in the racks was gone by the 10th of Jan. The stock was 22 cows and heifers, and 11 yearlings. The esimated weight of the stock was 26.000 lbs. The 33 head consumed per day, 772 lbs., equal to 23 4-10ths lbs. each. Each 100 lbs. of live weight consumed 32 65-100th lbs, during the 11 days, equal to 2.96 lbs. per day. Two of the cows were in milk, and were fed two quarts of grain each, in addition. The cows average 1,000 lbs.; consequently they consumed nearly 30 lbs. of hay each per day. The heifers are two and three years old, and weigh 800 lbs. each. They consumed 23 68-100th lbs. each per day. The yearlings 600 lbs. each, and consumed 17 76-100th lbs. each per day.

STONE AND GRAVEL ROADS.

WE HAVE URGED on former occasions, the importance of constructing roads of uniformly hard materials, instead of soft earth or muck. The former, if well made, will furnish a fine, smooth, hard track, in all weather; the latter will be cut into mud-holes and ruts from six inches to two feet deep; and sometimes prove nearly impassable. When hard and soft materials are crudely mixed together, as we sometimes witness where large stones are thrown into heaps of muck, the mixture becomes intolerable.

Could we see the immense assemblage of broken and worn-out wagons, mud splashed, injured and broken harness, and sprained and lame horses, (enough to fill any ten acre lot,) which the bad roads throughout the country annually occasion, a strong impetus would certainly be given towards improvement.

Where a uniform, solid hard-pan is found a few inches below the surface, or even at the depth of a foot or so, the cheapest way to make a good road is to scrape or cart the soft top soil to manure the adjacent fields, and then make the denuded surface into a smooth track. But where this cannot be done, an artificial road, made of broken stone or gravel, is usually resorted to. A very common practice is to draw the loose and scattered stones from the fields to form a bed of proper width, and then cover this with gravel; or if gravel cannot be had, with earth. A section of a portion of such road is shown in fig. 103. The stone are heaped up and spread over the surface irregularly, and then a sufficient depth of gravel or earth is placed upon them, to make a uniform surface. This seems to promise well for a time, until the hard corners of the stones, gradually working through the soil or gravel, make it uneven. The jolting of the wheels then begins to loosen the stones more rapidly—many of them work upwards and become partly uncovered; the gravel falls below, and in the course of years the road becomes excessively rough, as shown in fig. 104.

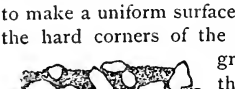


Fig. 103.—*Badly made Stone and Gravel Road.*

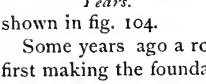


Fig. 104.—*Result in after Years.*

Some years ago a road was carefully constructed at great expense, by first making the foundation of block stone or very thick flagging. On this a coating of gravel was placed, giving it a handsome finish; (fig. 105.) For a time it promised everything that was desired. But three combined causes soon began to operate to injure it. When the earth below became soaked with water, it was too soft to sustain the superstructure. The action of frost increased the difficulty, and the tumbling of heavy wheels above gradually jolted the blocks from their

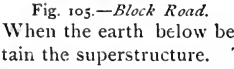


Fig. 105.—*Block Road.*

places. In the course of years the solid bed of block stone became entirely broken up, and some of them were turned on edge, as shown in fig. 106.

Now the question will at once arise, how are these formidable evils to be remedied? There are two ways—one is expensive, the other comparatively cheap. The first is the McAdam road—formed of a deep bed of small broken and angular stones—which, by the rolling of wheels, becomes compacted and cemented together, and forms a solid immovable mass. This road requires a large expenditure of money to construct properly. Many poor ones are made, which do not deserve the name. The other road is the Telford. By using the larger portion of the stones unbroken, much expense is saved. By arranging them as shown in fig. 107, they are held to their places, and do not work to the surface as exhibited in fig. 103. All the rounded and loose stone which are found scattered over farms, (which are better for their removal,) may be used for constructing Telford roads. As none of them are absolutely spherical, and nearly all have a thin and a thick end, being somewhat wedge-shaped, the larger end is placed downward, and the smaller upward, as represented. By selecting them according to their size, the larger ones may be placed in the center of the road, and the smaller ones, by gradual diminution, towards the sides. Coarse gravel, or what is still better, small broken stone, is then rammed between them. The whole surface is then covered with similar but finer material, and the road is finished, as shown in fig. 108. When loaded vehicles are driven over this road, every successive wheel crowds the broken stone more firmly between the stone wedges, and the whole becomes a solid and immovable mass. It is impossible for the stones to work to the surface, the larger ends being down.

Fig. 106.—*Final Result.*

Fig. 107.—*Portion of Telford Road.*

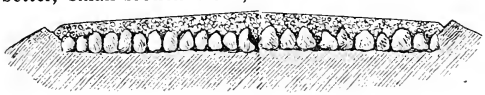


Fig. 108.—*Section of Telford Road.*

If those who employ stone for making road beds, would take the additional care to select and place the stones in this way, instead of throwing them into a careless and promiscuous heap, it would ultimately result in great economy.

TRANSPLANTING RASPBERRIES AND BLACKBERRIES.—For the past two years, says the Horticulturist, we have annually planted out Raspberry and Blackberry plants in July. We prepare our ground, and then go to the rows from which to remove the plants, having a tub or pail with a little muddy water in it, dig our plants, they being the half grown ones of this year, pinch off the ends about 2 inches, set the roots into our pail of muddy water, and from that to their permanent position. We do not often lose a plant, and the next season we get a fair crop of fruit.

CONSTRUCTION OF HAY BARRACKS.

THE OLD FASHIONED BARRACK, as it is called, is built twenty feet square. Four posts of durable timber, twenty-two feet long, four feet to be inserted in the ground. The stick should be sufficiently large to square eight inches—the corners hewn off, making it partly octagon in shape—one and a half inch holes should be bored through the corners of each of these posts, one foot apart, for the bolts that support the roof. They should be made of one and a half inch iron, one foot in length, the outer four inches to be squared and turned up one inch, on which is laid a piece of joist, three feet long, to support the roof. The roof should run to a point from each side, and may be covered with shingle, tin, or thatched with straw.

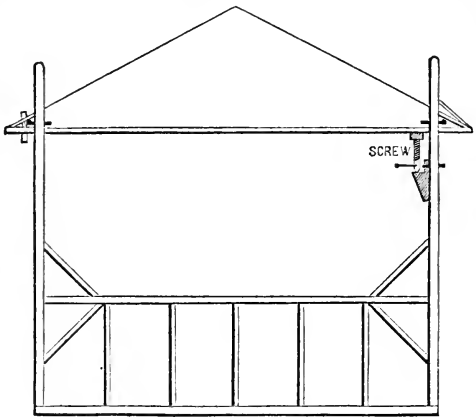


Fig. 109.—*Hay Barrack.*

There are four plates framed together, and braced. The posts pass up through the roof on the inside corners of the plates. The roof is elevated and lowered with a small screw of wood or iron, about two feet long. A wooden screw three inches in diameter will answer. This is used on the inside of the post. One man can raise and lower the roof if it is done as fast as the hay is put in or taken out. Raise each corner of the roof one foot at a time, going regularly around the barrack. The roof will not be likely to blow off, if the above directions are followed in building. The posts, as far as they enter the ground, may be left the full size of the stick.

The best way to build a barrack, is with sills and girts seven feet from the sills, and braced. You can fill it from the ground or hay-poles on the girts, and have shelter under for sheep or cattle. I make a rough sketch of a frame barrack, side view, which is given above.—*J. D. K. in Co. Gent.*

Leaves are the lungs of plants. Probably more than half the food of plants enters the leaves in the form of an invisible gas.

PLAN OF A CORN-HOUSE.

I GIVE YOU a rough sketch of a corn house we built three years ago, and there has not been a rat or mouse in it yet. You will see it is not connected at the bottom—consequently use the gravel for a floor to drive in on—the only way a crib can be built rat and mouse proof. It stands on eight pillars, four on each side. They are eight inches diameter, two feet ten inches long, sixteen inches upper end is tinned—standing on stone blocks two feet square by six inches thick. On top of each post are saddles. It stands as firm as if it were on a wall. The ends are boarded up and down, with small rib slats over each crack. The sides are covered with slats two and a half inches wide, with three-quarter inch cracks. They are put on up and down from the projection to the under corner of the sill. Inside slats run the other way, horizontal. There is a door in the centre of each crib, made of slats, to put corn in, to the depth of five feet. Then it is handed up from the wagon through the scuttle in the centre of the upper floor, which is laid with slats except one end nine feet square, which is a tile floor for a bin to hold shelled corn. The cribs extend up to the roof, with three doors to empty the corn, (three on each side.) Stairs hung with a hinge so as to swing up and fasten; when down the lower end rests on the walk. We cribbed two years ago, eighteen hundred bushels of ears in this corn-house.—*A. K. H. in Co. Gent.*

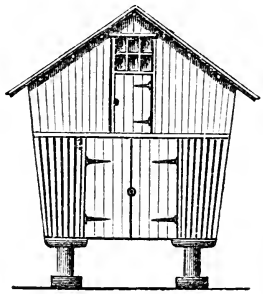


Fig. 110.—*Corn-House.*

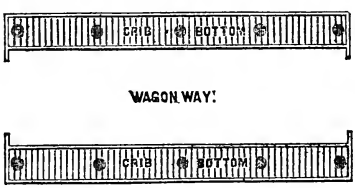


Fig. 111.

POSITION OF FLOWER-BEDS.—It often happens that two different flower-beds may be equally well managed and flourish alike, yet one may be a mass of brilliancy while the other exhibits little or no beauty. There are many flowers which always face the light of the sun; consequently the beds should be so placed that the spectator in the walk or window, should look them *full in the face.* That is, the strongest light and the position of the spectator should always be on the same side of the bed. This will be found particularly necessary with the pansy or tri-colored violet, and some other of the smaller flowering plants.—*Rural N. Yorker.*

ORDER AND SYSTEM.

A WELL CONDUCTED FARM is a beautiful machine. We have seen a steam-engine of fifty horse power, that ran with such perfection that it could not be heard at a distance of twenty feet. We have heard some, much smaller, that gave out a mixed jargon of thumps, rattling of iron, and rushing of steam. At a celebrated trial of agricultural machines, there were two mowers—one could be heard nearly a mile—the other scarcely more than a few rods, and the cutters went through the grass like a hot knife through butter. There were likewise two threshers—one was huge and ponderous, and when in motion trembled throughout, with a noise somewhat like thunder. The other, a two horse tread machine, ran so perfectly that nothing could be heard at ten paces, but the tread of the horses' feet on the rolling platform, and the whistle of the grain and straw as they were shot from the cylinder.

It is precisely so with the machinery of a farm. If well conducted, every part will move on noiselessly but efficiently—all will be promptly done in its season; there will be no confusion, and a great deal will be accomplished. A badly managed farm, on the contrary, if not wholly neglected, will be hurry and disorder, with every thing out of joint, and very little will be done. The farm is a complex machine; and like all other machines made up of many parts, must be perfect at all times, or one small part will suspend the motion of all the rest. A broken cog, a missing bolt, or a bent axle, will derange the whole.

To come somewhat to particulars: The farmer must know at the start what he is going to do. His yearly operations must be distinctly before him. It will not be profitable for him to stop and consider and plan, after a piece of work is partly executed. He must begin at the beginning—must have his fields well laid out—his rotation digested—and the extent of each crop prescribed. If he is a practical farmer he will of course know how much time will be required for the preparation of the land, sowing, cultivating, and harvesting each crop,—to which estimates he should add at least two-fifths for the interruptions of rainy weather and other contingencies. This will prevent him from undertaking too much, which is, next to laziness, the most fruitful cause of all bad farming; of hurried operations and undestroyed weeds.

There are two great requisites in all successful husbandry,—to make the best use of all spare moments; and to be always ready in advance for every emergency. These two essentials work together, for by properly using the spare moments, ample preparations may be made. Slip-shod farmers are too much like the man with a leaky roof; in fine weather no repair was needed, and in rainy he could not do it. It may perhaps be laid down as a universal truth, that success in all enterprises depends on being able to predict beforehand what will be wanted. The need of a

single tool in haying time, may result in arresting the labor of ten men, and in the loss of ten tons of hay by an approaching storm. The want of good implements of tillage may delay the sowing of a crop, till rains may postpone the operations a fortnight. "For want of a nail the shoe was lost, for want of a shoe the horse was lost."

A workshop with tools is indispensable for every farm. The owner should supply himself with a complete list of all implements. A place should be provided for every one, and every one should be in its place; and on every rainy or stormy day, an examination should be made and repairs promptly performed. Tools should be kept constantly in order, as a standing rule, and not be left broken till wanted for use. This is still more important, if they are to be sent to the village mechanic; for if taken in time the errand may cost much less than to wait till the moment required for actual use, and then to take a horse from a plow or from a hay wagon, to send three miles for a trifling but necessary repair.

In order to be able to accomplish farm labor promptly and in season, teams must be healthy and in the best working order. To be healthy, they should be fed with great regularity and uniformity, whether working or not, with good wholesome food and not with musty hay and grain or short pasturage. Their apartments must be clean and pure, and they themselves well curried. Some farmers lose much by giving their horses more work than they can perform comfortably—they are consequently worked too hard, enfeebled and made poor, and prematurely worn out. Not being supplied with sufficient animal force, favorable chances are lost and work allowed to accumulate, and increased labor will be required for its performance, and a waste result from delay. An extra working animal partly pays its way in manure, and sometimes its whole yearly keeping is returned in increased crops from early seeding and prompt cultivation.

Every farmer should carry a memorandum book. It is his compass and log-book combined. A page for each week, by way of assisting the memory, laying out every thing clearly before the eye, and for recording the numerous suggestions for future experiments, which must constantly occur in practice, would prove invaluable another year, and in ten years would develop an inexhaustible fund of facts.

FEEDING VALUES OF GRAIN, ETC.—In answer to an inquiry, the editor of the Irish Farmer's Gazette states that "45 lbs. wheat are equal to 54 lbs. barley, 59 lbs. oats, 54 lbs. rye, 57 lbs. Indian corn, 69 lbs. linseed-cake, 374 lbs. wheat straw, 195 lbs. oat straw, 100 lbs. hay, 276 lbs. carrots, 504 lbs. common turnips, 350 lbs. swedes, 339 lbs. mangels." A table given in Vol. 3d of RURAL AFFAIRS (p. 226) does not differ very widely from these figures, giving for example, 43 lbs. wheat as equal to 56 of Indian corn, 59 of oats, 46 of beans, &c. Farmers in some parts of England are now feeding wheat to their cattle in considerable quantities, as it is relatively cheaper than other material, and the foregoing statement may enable some of our farmers to judge whether they can judiciously follow the example. Meantime have any of our readers tried feeding wheat?—*Co. Gent.*

REMEDIES FOR HOUSEHOLD PESTS.

RATS.—Dr. Godman, the eminent naturalist, says that the rat is one of the veriest scoundrels in the brute creation—occupying the same rank as the crow does among birds—adding that "he is one of the most impudent, troublesome, mischievous wretches that ever infested the habitations of man—a pure thief, stealing not merely articles of food, but substances which can be of no possible utility to him." Dr. G. however, does him the justice to say, that it is a misfortune in him rather than a fault, since he acts solely in obedience to the impulses of nature, and is, therefore, by no means as bad as the scoundrels of a higher order of beings, for whom a similar apology cannot be offered.

The rat is certainly one of the most formidable household annoyances the whole world over. Wherever man goes, rat goes; and we are obliged to resort to ingenious expedients to circumvent him. Traps are frequently used—one of the best of which is an oblong box, one end and cover of which is in one piece, and when set rising above the trap as shown in fig. 112, and held up by a cord passing from the top through a smooth hole in the rear end to the inside, along the corner, around a smooth peg, to where it is attached to the bait and so fastened that it will drop at the first nibbling. A still better form is a trap with both ends thus raised, (fig. 113,) the cords passing through a cross piece in the middle, and arranged so that both ends shall drop at the same instant. These animals being cautious of entering holes or corners, are more easily drawn into a box open at both ends. Another mode of catching them is by means of steel traps, set with suitable baits. Some individuals among them, however, are too cunning to be caught in any trap, and sometimes evince a degree of inteillgence in this direction that seems almost incredible. The writer once made several fruitless efforts to catch an unusually cunning rat. A steel trap was placed in a large tin-pan, and covered with light bran so as to be entirely concealed; and lest the rat should perceive the scent of the hands on the bran, a spoon was used for covering. Pieces of toasted cheese were then scattered over the surface. The next morning the cheese was taken, and little tracks were seen on all parts of the bran except immediately over the trap, which was untouched and unsprung. Trapping rats is a good amusement for ingenious boys; but many would prefer a shorter and easier remedy. Poisoning with arsenic generally succeeds well, but requires great caution, and should never be adopted where there

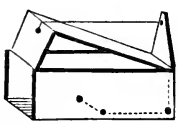


Fig. 112.—*Rat Trap.*

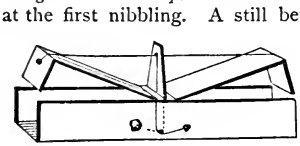


Fig. 113.—*Another Rat Trap.*

are small children, as fatal accidents have sometimes thus occurred. Different modes are adopted for using the arsenic; it may be rubbed with twice its bulk of lard or butter, or sprinkled on small fragments of chicken or turkey, and placed entirely out of the way where rats frequent. Another mode is to use fresh caustic potash, sprinkling it thinly around their holes and on their paths. It corrodes their feet which they then lick and their tongues are corroded. They dislike such treatment and disappear from the premises. The best remedies which we have found after long years of trial, are a few good cats. If not fed so high as to make them lazy nor so low as to dishearten them, they will be sure to clear every rat from the premises where they can have access.

MICE.—Nearly all the preceding remedies are sufficient when used for mice, especially the cats. The small traps sold in shops, answer a good purpose if owners are willing to take the trouble to set them.

SKUNKS.—These animals frequent the vicinity of houses for the purpose of stealing eggs, chickens, &c. On more than one occasion we have had them enter the house cellar through the windows. They are very easily caught in the box traps already described, with an egg or piece of meat for bait—when they may be carried out into the open fields and shot. They are also easily poisoned by breaking the end of an egg, dropping in a little arsenic, and placing it where it will be accessible to them, and beyond the reach of any domestic animals.

HOUSE FLIES.—Various traps have been employed for flies on the decoy principle, but these usually do more harm than good by constantly inviting new comers. We know of no remedy entirely satisfactory. A good deal may be accomplished by keeping rooms dark; or by driving them out and placing frames of mosquito netting in the windows. By not allowing dishes of food to stand long in dining room or kitchen, but placing them speedily in the cellar closets or safes, the tendency to draw flies will be lessened. We have known a dwelling to be kept nearly clear of them for an entire summer by a half grown cat that had a special fancy for catching them. We have also known the owner of a house to keep his rooms almost free from them, by spending a few minutes daily in catching them with his hand. He always struck towards their heads, sweeping his hand against the wall, and scarcely ever failing to make a capture. They were then thrown in a basin of soap suds held in his left hand. One of the best remedies is to poison with cobalt, which may be had at the shops. Make one or more small basins of sheet-iron or rusty tin, by bending up the sides of a piece a few inches square, as in fig. 114, mix the cobalt with water and place it in these basins. The flies eat, drop dead, and are swept up from the floor. The sole reason of using rusty iron for the basins is to render them forbidding in appearance and to prevent accidents. If placed in clean

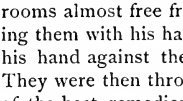


Fig. 114.—*Pan for Fly-Poison.*

porcelain basins, children may be in danger of becoming poisoned by idly partaking of the mixture.

ANTS.—Various modes have been adopted to kill them. Among these is to coat pieces of brown paper with molasses, sprinkle thinly with arsenic, and place them where they will be accessible to the ants, or the rough sheet-iron pans already described may be partly filled with sugar and water and a little arsenic. Such remedies should be carefully kept beyond the reach of children. Another mode of killing them is to wash a sponge freshly, to open its pores, and then sprinkle fine sugar into these pores. The ants will enter in large numbers and may be killed by plunging into scalding water. It may be questioned whether the employment of these remedies will not invite the ants in large numbers as well as kill them; and whether using them out of doors would not be better. It is said that red ants may be repelled from shelves by rubbing with fine salt. A skillful housewife informs us that she can exclude ants with certainty, from cake, sweetmeats and other articles specially attractive to them, only by placing them upon a table, each leg of which stands in a vessel of water. Doubtless the same result might be attained by placing the articles in a pan or other vessel resting on pebbles in another larger one containg water as shown in section in the annexed figure 115.

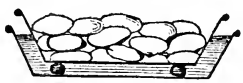


Fig. 115.—*Two Pans, with interposed water, to exclude ants.*

BED-BUG, (*Cimex lectularius.*)—This sometimes proves an excessive annoyance, and has been found by many difficult to extirpate. Travellers (the writer among the number) have sometimes preferred sitting up all night to attempting to sleep in certain badly kept hotels in remote countries. The Irishman consoled himself and his friends after a night of fruitless attempt at sleep—"Indade, I did quite as well as the bugs, for not one of them slept a wink all night." Among the many exterminators proposed for these insects, we have found two that have proved quite efficient. One of these is to dissolve a small quantity of corrosive sublimate in about twenty times its bulk of alcohol, and apply it with a brush to every part of the bedsteads and rooms likely to be infested. Two or three thorough applications usually accomplish the purpose. A more efficient and complete remedy is to beat up quicksilver with the white of an egg until a thorough intermixture is effected. A twentieth part in bulk of quicksilver is sufficient. Apply it throughly with a quill to every crack and crevice. We have never had a failure after the first application. Kerosene has been more recently tried, and we are assured on good authority is a perfect remedy.

MOTHS.—Keep the furs or woolens in trunks or drawers made of red cedar wood. Small pieces of gum camphor rolled in paper and placed among the furs, have proved a good remedy. Moths which have already entered garments or carpets, may be killed by exposure to bright sunshine;

or they may be steamed to death by placing a moistened coarse cloth, as crash towel, upon the substance and passing a hot iron over it.

COCKROACHES are killed or repelled by taking equal quantities of red lead and Indian meal, about the consistency of paste, with molasses, placing it upon iron plates where vermin are thickest. Borax scattered upon the shelves is said to be a good remedy.

EARTH-WORMS OR ANGLE-WORMS, may be prevented from entering wells by digging a trench three feet wide, close to the stone work and down well into the hard-pan, filling it with gravel, which they will not dig through. No top soil should be allowed.

REMEDY FOR MOLES.—Cut apples or potatoes in pieces about the size of a pea, and roll them in strychnine or arsenic. Then make several small holes where the moles run, and drop one or more of the pieces in each hole. In a short time the moles will disappear.

KEROSENE has been recently tried on a number of insects and has generally proved an efficient repellant. It is cheaper and of more ready access than some of the remedies given in this article, and is well worthy of trial in all cases where it can be conveniently applied.

AMOUNT OF BEEF OBTAINED FROM MEAL.

A CORRESPONDENT of the COUNTRY GENTLEMAN states that he purchases good, thrifty three and four years old steers and oxen that are well started, for winter feeding. He gives them the best of care, viz: Good hay fed at short intervals during the day, well carded once at least, and watered twice in the twenty-four hours; stables kept clean and warm, but well ventilated. His feed is usually corn, rye, (or barley) and oats—equal parts by measure, well mixed and ground fine. He feeds lightly at first, afterwards from rwo to eight quarts—feeding twice a day according to size of animal, four quarts each feed to a 1,500 steer or ox. He thinks he has never failed of one and a half pounds, live weight, equal to one pound dressed weight, per day. He adds, "you can make more beef at less expense by taking longer time—the undigested food is wasted." There is no doubt that with animals in poor condition and with neglected management, not one-half of this increase could be obtained. He adds that a little grain increases the appetite for hay, which must be of the best quality, while an excess lessens it and part of the grain passes off undigested.

STEAMED HAY.—E. W. Stewart writes to the American Farmer, that after an experience of more than ten years, he finds two bushels of steamed hay is worth three bushels of unsteamed, and that one quart of corn meal steamed with a bushel of straw. is equal to a bushel of hay.

GARDEN INSECTS.

By Asa Fitch, M. D., State Entomologist, Salem, N. Y.

IN LAST YEAR'S ILLUSTRATED REGISTER OF RURAL AFFAIRS, I commenced an account of our Garden Insects, treating of our most common and important species infesting the Onion, the Beet, Carrot, Parsnip, Radish and Cabbage. In continuing this subject, I have next to remark that the Turnip is so closely related to the cabbage, that most of the insects which depredate upon one of these vegetables attack the other also. Thus the leaves of the turnip and ruta baga are liable to have large irregular holes eaten in them by the same pale green worms, the larvæ of the White Butterfly, which we have already noticed as occurring upon the leaves of the cabbage. The Striped Flea beetle, an amended and more perfect representation of which we here present, (fig. 1,) frequently riddles the leaves of the turnip with small holes, and may always be met with upon these leaves in much the same numbers that occur upon the cabbage. It is of a sparkling black color with two broad wavy pale yellowish stripes, as shown in the accompanying cut, the short line on the right being its natural length. Upon cutting into the root of the turnip, its interior is frequently found to be traversed by one or more worm tracks of a dirty brown or yellowish brown color. These tracks are bored by a smooth cylindrical white maggot which appears to be identical in every particular with that of the Cabbage-fly, *Anthomyia Brassicæ*. If any bristly maggot, like that of the Turnip-fly, *Anthomyia canicularis*, also occurs in the worm-eaten turnip of this country, I have never been able to meet with it.

Fig. 1.—*Striped Flea-beetle.*

When the old roots of the turnip and ruta baga are set out for growing seed therefrom, we may frequently see some of their flower and fruit stalks covered over and crowded through their whole length with mealy plant-lice, which in some instances extend out upon the slender stems of the pods, and sometimes are so numerous as to cover the pods also—these insects thus, to the utmost of their power, exhausting the plant of those juices which should go to swell and perfect the seeds. Mr. Curtis supposed these lice, which thus throng the stalks and pods of the turnip, to be a distinct species which had escaped the notice of previous observers, and he therefore named them the Turnip-flower Aphis, *Aphis Floris Rapæ*. But Mr. Walker is certainly correct in regarding them as a mere variety of the cabbage aphis, which species is about as common upon the leaves of the ruta baga as upon those of the cabbage, and frequently locates itself upon the leaves of the turnip also. This insect we have now to notice.

The CABBAGE APHIS, *Aphis Brassicæ*, is an insect which is much more frequently to be met with than any other upon the cabbage and the ruta baga. Early in June, when the cabbage plants are but three or four inches high, these lice begin to make their appearance upon them. And ere long they become so numerous that they may usually be found upon some of the leaves of almost every plant, at all times from July until the close of the season—either wandering about, solitary or stationary, and crowded together in clusters, wholly covering portions of the surface of many of the leaves. And frequently a spot will be observed upon a leaf, where a mealy powder and numerous white cast-off skins, and often a few plump and swollen pale brown bodies of individuals, which have been killed by internal parasites, show that a flock of these plant-lice has recently been located there, which has been totally destroyed by the lady-bugs, and other enemies of these insects. It is upon the upper surface of the inner leaves, and upon the under surface of the outer leaves, that these stationary clusters of lice are located. Those which are in the former situation, are much the most pernicious, for by sucking the juices from and weakening this part, they cause the plant to head tardily and imperfectly, and if the lice continue numerous for some time upon these upper leaves, they become so exhausted that no head is formed by the plant. And in some instances the cabbage ground is invaded by such a host of these vermin, and they thrive so well and multiply so excessively, as to kill the plants outright. Thus, in the COUNTRY GENTLEMAN of July, 1857, p. 80, J. L. EDGERTON, reports that his patch of cabbages, of 350 fine thrifty plants, were attacked by this aphis just as they were beginning to head, and in three weeks every plant was covered by these vermin, and he lost the whole, neither ashes or salt having any effect upon the enemy. The clusters of these lice are almost wholly composed of wingless females and their young. One of these females is represented in the cut, (fig. 2,) greatly magnified. They are the largest individuals in the cluster and are of a pea-green color, smoothly coated over with a whitish mealy powder. The young or larvæ, are similar to the mature insects in every respect, except that they are smaller in size. The small newly-born larvæ, however, are destitute of the mealy coating, and are more narrow and cylindrical in their form than the larger ones. Standing here and there in the cluster may be seen an individual having wings. Mr. Curtis, in treating of this species, calls these winged lice the males. But this is an error. In every instance I find these winged lice to be pregnant females. I have never been able to discover a male of this species. In the annexed cut, (fig. 3,) is a greatly magnified view of one of these winged females, its natural size being shown in the small figure underneath. They are destitute of the mealy coating

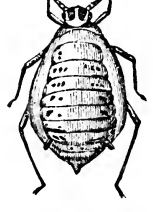


Fig. 2.—*Wingless Female of the Cabbage Aphis.*

of the wingless lice, and are black and shining, with the hind body pale-green, with dark-green or black bands, which are often narrowed or broken asunder in the middle. The natural enemies and destroyers of these insects—the lady-bugs, the larvæ of the Syrphus flies, little blind maggots of a bright yellow color, one or more of which will be seen in almost every group of plant-lice—are so numerous, and so alert and efficient in doing the work for which they were created, that we are usually safe in leaving the destruction of these vermin to them. But when clusters of these lice are discovered to be common upon the upper and inner leaves of the cabbages, I am confident it will be a great benefit to the plants to syringe these infested leaves with a strong solution of soap, as this will kill all the young and more tender lice, and will so invigorate the weakened leaves as to cause some of the plants to head, which will fail of doing so if left uncared for. If my cabbages should at any time become so thronged and overrun with these vermin, as in the case of Mr. Edgerton, rather than suffer them to be totally ruined, I would set short stakes among them, and spread a carpet or a large piece of canvas over as many of the plants as the size of the cloth would cover, and would burn tobacco here and there in cups underneath, till I was certain the smoke had filled the whole of the inclosed space. Hereby every aphis would instantly be smothered. I should then remove the cloth, and wash the plants thoroughly, by sprinkling them with clean water from a watering pot. I should then inclose and treat another portion of the plants in the same way, till I had gone over the whole. Tobacco smoke will cleanse any plant from lice, where it is so applied as to penetrate between the leaves sufficiently to reach every insect upon them. And this is the only certain remedy which is known. Strong soapsuds, so often recommended by writers, will kill all the young tender lice, but will leave most of the mature and old ones alive to found new colonies of these pests.

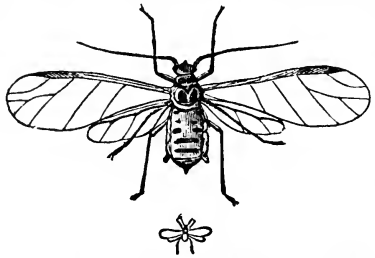


Fig. 3.—*Winged Female of the Cabbage Aphis.*

The CUCUMBER, the SQUASH and the MELON VINES, are so closely alike in their natural characters, that the same insects which depredate upon one of these plants, prey also upon the others, manifesting little if any preference for either one of them over the others. They are attacked by a number of different insects, from some of which they frequently receive great and sometimes fatal injuries. The worst enemy of these vines is the striped yellow CUCUMBER-BEETLE, or "Cucumber-bug," as it is commonly but less correctly termed—scientifically named the *Galleruca Americana* by Gmelin, and afterwards *G. vittata* by Fabricius. This beetle, in

its larva state is a worm living in the roots, and in its perfect state it gnaws the tender stalks of the young vines, frequently destroying the plants in one or the other of these ways. Early in the season, upon our first planting of cucumbers, melons and squashes, it frequently happens that the seeds do not sprout so to make their appearance above the ground, these cucumber-beetles lurking in cracks under the surface and nipping the young shoots as they protrude from the seeds, thus totally destroying them. And in other instances, when the seeds have sprouted nicely, we are sometimes surprised to find, a few days afterwards, that every plant in some, if not all, of the hills has disappeared—these beetles having discovered and destroyed them, secreting themselves in the crevices of the ground around them. Finally, when our vines have escaped these calamities to which they are liable in their infancy, and are growing thriftily and maturing their fruit, a particular plant is sometimes discovered to have its leaves drooping and wilted through the whole length of the vine and its branches, and, in a day or two after, it is found to be faded, dry and dead. Ere long, another vine in the same hill follows it, and then perhaps others, till in some instances all the cucumber and melon vines in the garden are perished. No wound or other injury is visible upon the stalks or leaves of the drooping plant, and we thus are led to suspect the malady is seated in the root; and, on coming to inspect this part, we immediately discover the cause of the disaster. The root is found to be irregularly eaten in spots and pierced with small holes, and its central pith more or less consumed and spongy, with one or more worms, the authors of the mischief, lurking within it. The accompanying fig. 4 represents a root of the cucumber or melon of the natural size and form, with its bark eroded in irregular spots by these worms, one of which is shown in the annexed cut, fig. 5, of the natural size, and on the right hand side greatly magnified. It is a soft, slender, cylindrical worm, of a dull white color, with the head and the last joint of its body black. It has three pairs of short, robust legs, placed anteriorly upon the breast, and a short, thick proleg at the tip of the body. When crawling it moves curiously, the fore part of its body advancing slowly but continuously, whilst the hind part alternately halts and hitches forward suddenly, step by step. In other words, the six legs upon the breast are constantly in motion, carrying the anterior end of the body along without any pause, whilst the hind end is held

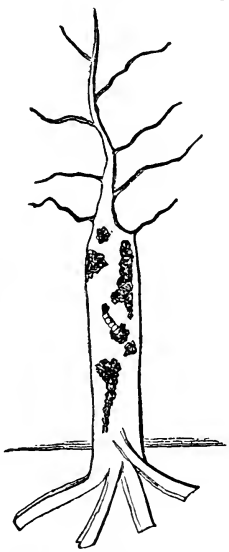


Fig. 4.—*Cucumber root as bored by larvæ of the Cucumber-beetle.*

by the single proleg, and only advances when the body becomes stretched, when it makes a long stride forward and again halts. The worm, when it is done feeding, forsakes the root and forms a little cavity in the ground, by turning itself around and around in the same place, and crowding the dirt outward until it becomes compacted upon every side of it, forming a little lump of such firmness that it will not crumble or break asunder from any motion given to the earth around it by the hoe or the plow. Inside of the cell which it thus forms, the worm throws off the larva skin and becomes a pupa, appearing as represented in fig. 6, the small figure on the left showing its natural size. It remains in this form about two weeks, lying doubled together in its cell, without moving, and as though it were asleep. It then casts off its skin again, and thereupon acquires its perfect form, but is at first very soft and flaccid, and of a white color. To enable the superabundant fluids of its body to evaporate, and its several parts to acquire suitable solidity and strength, it remains in its cell without any motion or symptom of life for some days, when suddenly, as if touched with a shock of electricity, it awakes into full life and vigor, and with its feet and jaws briskly attacks the walls of its prison, breaking an opening through them, and scrambles upward out of the earth and runs fleetly away, joyously exulting in its newly acquired life and liberty. It now has the form and parts shown in the accompanying fig. 7. It is glossy and shining, of a bright pale lemon-yellow color, with the head and three stripes on the wing-covers black. These beetles come forth from their winter retreats and begin to appear abroad as early as the commencement of May. They continue through the whole season, and are among the last insects which withdraw in the autumn, some of them remaining into the month of October. They manifestly prefer those plants which are most young, tender and succulent. After the stalks are so grown that they begin to shoot out into running vines, they are so robust and vigorous that they withstand the wounds which they continue to receive from these insects. Hence it is only when the plants are young and small that they require to be protected. The beetles are so shy and timorous that any new and unusual appearances about the cucumber hills may cause them to forsake them in some instances, when at other times they will have no effect. Hence, many of the remedies which have been proposed are of but slight efficacy and quite unreliable.

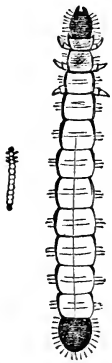


Fig. 5.—*Larva of the Cucumber-beetle.*

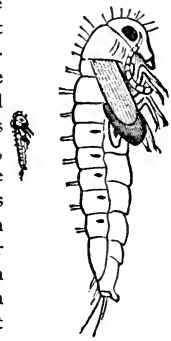


Fig. 6.—*Pupa of the Cucumber-beetle.*

Fig. 7. — *Cucumber-beetle.*

Inclosing the hills in boxes, open at the bottom and top, ample experience has shown to be one of the securest protections of the many which have been proposed.

Next to the Cucumber-beetle, our worst enemy, particularly to the squash and pumpkin vines, is the SQUASH-BUG, *Gonocerus tristis*, which is represented in the annexed cut, fig. 8. This is a true "bug"—it being of a soft, leathery texture, dull in its colors, slow in its motions, fetid in its smell, flattened in its form, and it is greatly to be regretted that in this country we are so much accustomed to give this same name to insects so very different from this as are the hard shelled, shining and brisk-motioned "beetles." This Squash-bug is of an obscure, dark brown or blackish color, and on its under side dull yellowish, varied with black points and freckles. It begins to find and attack the plants when they are first sprouting from the ground, puncturing them with its sharp, needle-like beak, and sucking their juices, thus causing them to wilt down and die—hiding itself under the loose surface-dirt or in the cracks of the surface immediately around the plants. About the middle of June it commences depositing its eggs, gluing them to the under side of the leaves in clusters of ten, twenty or more. They are white, changing to yellowish brown, and hatch in about a fortnight, producing small wingless bugs of an ash gray color, which remain together in a flock upon the under surface of the leaf, casting their skins as they increase in size. This is the larva state of these insects; and when they are grown to half an inch in length they acquire two small oval scales, which are placed one upon each side of the fore part of the back, the bug being then in its pupa stage, and with the next change of its skin it obtains its perfect form and its full size. So common are these Squash-bugs in every garden in our country that they are well known to every reader of these pages, and he is sufficiently aware of their pernicious character, and that if they are not combatted and checked in their career some of the vines will frequently be destroyed by them. From the time the seeds begin to sprout until midsummer the plants should be examined and freed from this enemy, more or less frequently as it is found to be more or less common in particular years. The bugs are so large and so dark colored that the eye readily perceives them, and they are so stolid and sluggish in their motions that they are easily picked from the leaves, dropped to the ground and crushed beneath the sole of the boot. And during the latter half of June the eggs should also be repeatedly searched for upon the under side of the leaves. They may be destroyed by pressing and cracking them between the thumb nails, or those clusters which are near the margin of the leaf may be torn out and effectually trampled upon or taken to the house and thrown into the fire.

Fig. 8.—*Squash-bug.*

The SQUASH COCCINELLA, or Spotted Squash-bug as it has been called, (*Coccinella borealis*,) feeds upon the leaves of the squash, eating in them

large circular holes. We are so accustomed to regard the Coccinellas, or Lady-bugs, as insects of the highest utility, feeding as they do upon the plant-lice and everywhere freeing our vegetation from these vermin, that we view it as a singular anomaly that a member of this group should sustain itself upon vegetation. The remarkable habits of this Squash Coccinella were communicated to me several years since by Mr. A. O. Moore of New-York, who gives a valuable account of it, with illustrations, in the COUNTRY GENTLEMAN of April 1, 1858, p. 210. I have no knowledge of this insect as occurring anywhere north of the Highlands upon the Hudson River, but have met with it as a common species in Southern New-York and Connecticut, from whence its geographical range extends south, over the continent and into Brazil. We learn from Mr. Moore that the beetles begin to appear around New-York early in June, feeding upon the squash leaves and depositing their eggs in irregular groups on the under side of these leaves. The larva is armed with branching thorn-like spines, symmetrically placed in rows. A side view of this larvæ, its natural size, is given in fig. 9, and a magnified representation of its appearance when seen in front, and showing the formidable spines with which it is protected, is presented in fig. 10.

Fig. 9.—*Larva of Squash Coccinella.*

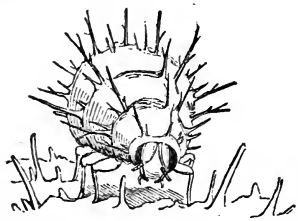


Fig. 10.—*Front view of the larva, magnified.*

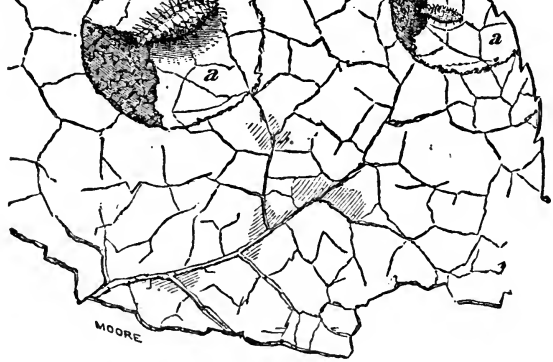


Fig. 11.—*a. a. Circular marks cut on leaves by the Squash Coccinella and its larva.*

It eats voraciously and grows rapidly. Both the larva and the perfect insect have the curious habit of first nibbling a curved line upon the surface of the leaf, marking out a circle or semi-circle, sometimes of great regularity, inclosing the portion of the leaf on which it is about to feed, as represented in the preceding cut, fig. 11. The larva, after attaining its growth, crawls to some sheltered place upon the under side of the leaf or upon the stem, where it securely fastens itself, and changes to a pupa inclosed in the dried and thorny skin of the larva. It remains dormant in its pupa state somewhat over a week, when the beetle in its perfect form crawls out from the thorny case. It is now of a hemispherical form, as shown in the cut, fig. 12, and of a dull yellow color, with five black spots in a transverse row on the fore part of its closed wing-covers, five more spots in another row across the middle, and two larger spots back of these, near the tip. The only efficacious remedy yet found for these insects, is hand-picking, or brushing them from the leaves into a cup partly filled with strong brine, which should be done when they first appear in June, before they have commenced laying their eggs.

Fig. 12—*Squash Coccinella.*

The little black Flea-beetles which infest the cucumber and melon leaves, perforating them with numerous small holes, are mostly the PUNCTULATED FLEA-BEETLE, *Psylliodes punctulata.* They are closely like the kind which occurs upon potato leaves, hereafter to be noticed, but when carefully examined with a magnifying glass their differences are sufficiently evident. Those which occur upon the cucumber leaves are brassy-black, with the surface of their bodies finely punctured, and their shanks, feet, and the first joints of their antennæ pale obscure yellowish. The remedies already mentioned for the Striped Flea-beetle are equally efficacious for this and the several other species of flea-beetles.

The ASPARAGUS in this country has been remarkably exempt from injury by insects, until some eight or nine years ago, when the ASPARAGUS-BEETLE, *Crioceris Asparagi*, long noted in Europe as being most pernicious to this plant, began to be met with by insect collectors in the vicinity of New-York, it having then in some manner found its way across the ocean; and in 1862 it had become so excessively multiplied and was overrunning the asparagus in such countless millions as to threaten to kill the plants and put an end to their cultivation in the market gardens in the neighborhood of that city, where this was a crop of such very great value. These beetles and their larvæ feed upon the asparagus through the whole summer season. The following cut, fig. 13, gives a view of this insect in its different stages. The beetle is seen its in natural size and shape at *a*. It is of a deep green-blue color, very bright and shining, and prettily ornamented with yellow spots. It places its eggs on the leaves of the plant as seen represented at *b*, the magnified eggs being seen at *c*. From these hatch a larva of a dull olive or ash gray color, which is represented young at *d*, full grown at *e*, and magnified at *f*. Its pupa state is passed under

the ground. In a visit made to Long-Island in the autumn of 1862, to examine this insect, in company with D. K. YOUNG, Esq., of Matinnecock, who had furhished information for an interesting notice of it in the COUNTRY GENTLEMAN, vol. XX, p. 81, we discovered these beetles in their winter retreats, every crevice under the loose scales of bark upon the trees, in the cracks in fence rails and under the clapboards of buildings, being crowded with them; and we found that fowls ate these insects with such avidity that we could confidently recommend the keeping of them upon the asparagus grounds as the best mode of subduing this enemy. The beetles came out from their winter quarters in full force, towards the middle of May the following year; but some atmospheric or other change unfavorable to them, arrested their career, and they became greatly diminished in numbers before the close of that season, and have so continued since, whereby they have ceased to be objects of such deep anxiety as they temporarily were at that time.

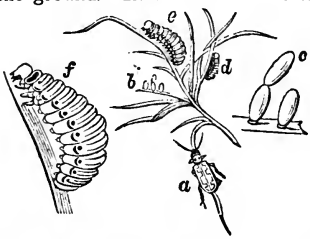


Fig. 13.—*Asparagus-beetle, its eggs and larva.*

The TOMATO in all our gardens is infested with a very large thick bodied green worm, with oblique white streaks along its sides, and a curved thorn-like horn at the end of its back, as represented in the accompanying cut, fig. 14, which shows the appearance of this worm when it is grown to about half its full size. Between thirty and forty years ago, when the tomato was first beginning to be extensively cultivated in our country, this worm appearing upon it was an object of much terror, it being currently regarded as poisonous and imparting a poisonous quality to the fruit if it should chance to crawl upon it. Now that we have become familiarized with it these fears have all vanished, and we have become quite indifferent towards this creature, knowing it to be merely an ugly-looking worm which eats some of the leaves of the tomato, and which is chiefly interesting to us in consequence of its being about the only insect enemy belonging to this plant. As the worm, however, is so common and well known, every one feels curious to know also its history and the insect which produces it. We therefore here present a short account of it, with figures illustrating its appearance in the different stages of its growth.

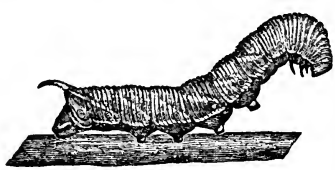


Fig. 14.—*Tomato-worm.*

It is currently supposed that these worms belong exclusively to the tomato. They, however, occur upon the vines of the potato also. And in those neighborhoods where the tobacco is cultivated, they invade that plant likewise, causing much injury by the holes they eat in the leaves,

whence they are the worst enemy with which the tobacco grower has to contend. Thus it is one and the same insect which is popularly named the Tomato-worm, the Potato-worm and the Tobacco-worm, as it occurs upon one or the other of these plants. The annexed cut, fig. 15, represents the moth or miller which is the parent of these worms, diminished to half its natural size. It is of a gray color, with numerous irregular and obscure black marks upon its wings, and a row of five round ochre-yellow spots along each side of its hind body, from which it has received its scientific name, *Sphinx quinque-maculata*, or the FIVE-SPOTTED HAWK-MOTH as it is termed in books. These moths come abroad one after another through the whole summer and autumn, but are most numerous in July. During the day time they remain at rest, hid from view, and come out in the evening to feed and lay their eggs. Their sole food is the honey of flowers, for obtaining which they are furnished with a remarkably long slender tongue, which, when not in use, is coiled up like a watch-spring and concealed between the palpi or feelers at its base. When hovering around flowers and extracting the honey from them the moth resembles a humming-bird in its motions and also in the sound made by its wings. The tongue is fully extended at such times, and being five or six inches in length, the moth is poised on its wings at a distance of some inches from the flower from which it is sucking the honey. The eggs are probably placed on the under side of the leaves of the plants on which the worms occur. The worms are voracious feeders, consuming a large quantity of foliage and growing rapidly. When they have attained their full size they leave the plants on which they have fed and root downwards into the ground to the depth of some inches, and there become quiescent, and casting off the larva skin, they appear in their pupa form, represented in fig. 16, diminished one-half in size. The pupa is covered with a hard crustaceous shell of a glossy bright chestnut color, and is particularly curious from having its forward end prolonged on one side into a long slender limb, which is bent backwards, reaching to the middle of the body, where its end touches, and is firmly soldered to the surface, thus forming a kind of loop, resembling the handle of a pitcher—this being the sheath in which the tongue is enclosed, which becomes developed to such

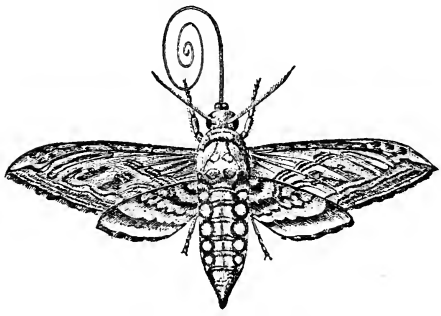


Fig. 15.—*Tomato-worm Moth.*

Fig. 16.—*Tomato-worm Pupa.*

a remarkable length in the perfect insect, as we have above observed. The insect remaining in this pupa form through the winter and spring, its internal parts growing and becoming developed, until the shell at length cracks open and the moth withdraws itself from it, crowds upwards through the ground, and comes forth in its perfect form.

To the south of us a worm occurs which is almost identical with this in every respect, and feeding upon the same plants. This SOUTHERN TOBACCO-WORM, or, as it is termed in its perfect state, the CAROLINA HAWK-MOTH, *Sphinx Carolina*, may be distinguished by the markings of its hind wings. In the moth of our Northern worm will be seen four black bands crossing the hind wings, whereof the two middle ones are very angular and zig-zag, often much more so than is indicated in the cut, fig. 15. But in the moth of the Southern worm, instead of these two angular bands we see a single broad band, which is smooth along its edges. And the same measure is resorted to for subduing both these worms. The leaves of the tomato and potato being of no economical value, we disregard the small injury they do those plants. But the whole value of the tobacco rests in its leaves; hence every meal which one of these worms makes upon that plant is an important injury. Consequently "worming" of the tobacco fields, as it is termed, is an indispensable measure, forming a regular part of the tobacco culture. Notwithstanding the closest scrutiny some of the worms will elude notice at each search which is made; and new moths are coming out and depositing their eggs, night after night, whereby a succession of these enemies are appearing. Thus it becomes necessary to repeat the search daily, in order to secure the destruction of every worm while it is yet young and small.

The POTATO usually is the least molested by insects of any important vegetable we cultivate. Recently, however, an enemy to it has appeared which threatens to annihilate our growing of this esculent. This is the TEN-LINED POTATO-BEETLE, *Doryphora 10-lineata*, a figure of which is presented in the accompanying cut. This beetle is of a regular oval form, very convex above and flat beneath, of a hard crustaceous texture, smooth and shining, of a bright straw yellow color, with ten black stripes upon the back of its closed wing covers. It is upwards of 40 years ago that this insect was first noticed, upon the upper Missouri and Arkansas Rivers, some hundreds of miles west of the Mississippi. It has no doubt always existed in that region, living upon some wild plant growing there, very probably the stramonium, and it was never known to attack the potato until the year 1861, when, in different places in Kansas and Western Iowa, it suddenly fell upon this crop, in such immense numbers as to literally cover the vines, eating from them every vestige of their leaves, and leaving the stalks perfectly bare. It also consumed the leaves of the tomato with equal avidity. The next year it re-appeared early in the season, soon after the potatoes

Fig. 17.—*Ten-lined Potato-beetle.*

were sprouted from the ground, and in a short time commenced scattering its eggs everywhere upon the leaves and stalks, the young filthy worms from which also fed upon the leaves in company with the parent beetles, keeping them so eaten down that no tubers, or at least none of sufficient size to be of any value, were formed upon the roots. And it has since continued to appear, multiplying and extending itself each year, advancing eastward at the rate of seventy or eighty miles annually. It has already crossed the States of Iowa and Illinois, and has probably penetrated a considerable distance into Indiana. It has thus traveled some five hundred miles from its original haunts, and has traversed nearly half the distance from thence to us. Should it continue to progress at the same rate it has hitherto done, six or seven years will bring it to us here in Eastern New-York. We cannot but hope that before that time elapses some atmospheric change or other influence will occur to arrest its advance, like that which we have noticed in the case of the Asparagus-beetle, or that some easy mode for effectually destroying it will be discovered. In reply to the numerous letters of inquiry for a remedy for this beetle which have been sent me, I have only been able to say that hand-picking or brushing and shaking the insects into a pan or basin of water held under the vines, was the only measure I could confidently recommend, and this "bugging the potatoes," as it has come to be termed, is much resorted to upon a small scale in the gardens, with a fair degree of success, it being only by perseveringly gathering these beetles from the vines and destroying them that any potatoes are grown in those places where this insect is present in full force.

The THREE-LINED POTATO-BEETLE, *Crioceris trilineata*, is an insect related to the preceding, which has always been common upon the potato vines, feeding on the leaves both in its larva and its perfect state. The accompanying cut will give the reader a correct idea of its form and general appearance. It has a considerable resemblance to the yellow striped cucumber-beetle which we have already noticed, being of a bright lemon-yellow color with three black stripes upon its closed wing-covers, but it is larger than the cucumber-beetle, and easily distinguished from that insect by having a yellow instead of a black head. Probably not a year occurs that this Three-lined Potato-beetle is not to be found on the potato vines in every neighborhood throughout our country; but it is much more abundant some years, and when unusually numerous, fears are frequently excited by it. It is also common upon the stramonium, which is probably the plant upon which this insect chiefly sustained itself before the potato began to be cultivated here. This latter now furnishes it such extensive feeding grounds that its numbers are no doubt much greater now than they could have been originally; and in the course of time it may become so increased as to be a serious evil.

Fig. 18.—*Three-lined Potato-beetle.*

These beetles pass the winter in any dry and sheltered situation which they find, under boards, masses of fallen leaves, &c. They begin to be seen abroad the latter part of May. They are shy and timorous, taking wing as you come near them, and flying a few yards away. When annoyed or in distress they make a creaking cry by rubbing the tip of the body up and down against the hind end of the wing-covers. When the potatoes are well up they gather upon them, eating large irregular holes in the leaves, and ere long commence depositing their bright yellow eggs, gluing them to the leaves in clusters of from six to ten in number. They hatch in a fortnight, and the larvæ from them continue together in a flock upon the undersides of the leaves. They are wet, slimy, slug-like worms of a most filthy and disgusting appearance, coating themselves over with their excrements, probably to protect them from being devoured by birds. When they have attained their growth they descend into the ground to pass their pupa state. Should these insects anywhere become so multiplied as to do any severe injury to the potato crop, the readiest mode to diminish their numbers I think will be to search out the little flocks of the larvæ by passing along the rows of the potato vines, and break off the leaves on which they occur, dropping them upon the ground and trampling upon them.

The STRIPED BLISTERING-FLY, already noticed as feeding on the leaves of the beet, at times appears in immense multitudes in one district of the country and another, eating the potato vines bare of their leaves. Other kinds of these blistering-flies also feed upon the potato leaves, and are liable to be quite numerous at times. They are similar in size and form to the striped species, being cylindrical and about half an inch in length, but are readily distinguished by their colors. Much the most common kind here at the north is the BLACK BLISTERING-FLY, *Cantharis Pennsylvanica*, which is of a deep black color throughout, and without spots. We occasionally meet with the ASH-EDGED BLISTERING-FLY, *Cantharis cinerea*, also, this being black like the preceding, but having its wing-covers edged with ash-gray from fine short hairs of this color. Another species is the ASH BLISTERING-FLY, *Cantharis Fabricii*, which is wholly coated over with short, ash-gray hairs. Each of these insects becomes more common to the south of us, where still other kinds of these flies are associated with them, whereby the potato crop there suffers more frequently from them than it ever does with us. The large green TOMATO-WORM, *Sphinx quinquemaculata*, as already stated, is somewhat common upon the potato also, eating its leaves. The potato leaves are also much infested with little black flea-beetles, perforating them with small holes, frequently in such immense numbers that they cannot but be a detriment to the crop. The species which is most common upon this plant is the HAIRY FLEA-BEETLE, *Haltica pubescens*. This is slightly inferior in size to the Striped Flea-beetle already spoken of, and is not at all glossy. It is black and thinly coated with short whitish hairs, its antennæ and legs being dull yellow. It is abundant in the garden from early in May till the frosts of autumn drive it into its winter retreats. It attacks several plants in addition to the

potato. To the petunia it is the most injurious of any insect in my experience, the young seedling plants becoming thronged and ruined by it unless they are closely watched. It is also apt to be a serious evil to the young tomato plants, which are weakened and retarded in their growth from the numerous wounds they sometimes receive from these insects before their presence is observed. The remedies for this are the same as already mentioned for the Striped Flea-beetle.

Among the worst pests to our garden crops and to our field crops also, are the WIREWORMS, so-called from their having some similarity in their form, their smoothness and hardness, to a piece of wire. They are remarkably long, slender, cylindrical worms, of a whitish or tawny yellow color, with a very tough, smooth and glossy skin. They are the larvæ of the Elater group of beetles, which are known to every one from their curious manner of recovering their upright posture when they chance to fall upon their backs. Their legs being too short to enable them to turn over, they have the faculty of giving a sudden snap or spring, whereby they bound upward several inches, and in falling usually alight right side up, or if they fail of doing so, they repeat this spring again and again, until they succeed, with each spring making a loud click, similar in sound to the ticking of a clock. They have hence come to be designated in this country by the name of "Snapping-bugs," although they are beetles and not bugs in the correct sense of those terms. These Elaters or Snapping-beetles are an extensive group of insects and there are consequently numerous kinds of wireworms. They live underground and feed on the roots of grass and other vegetation, and on planted seeds which are beginning to germinate. They are known to attack potatoes, turnips, cabbages, beets, carrots, onions and lettuces in our gardens, and also strawberries, pinks, carnations, dahlias, lobelias and numerous other flowers, but the greatest losses are from their destruction of the field crops, Indian corn, wheat, rye, barley and oats. They bore everywhere around through the bulbous and other thick roots of some plants, and cut off the slender thread-like roots of others. And it is not till the plants begin to wither and turn yellow that their presence is suspected, when the plants are usually so badly injured as to be beyond recovery. It has not been known hitherto which were the particular species of Snapping-beetles which produced the wireworms which in this country injure our crops. As one of our species bears a very close resemblance to the European beetle which has been most noted for the destructiveness of its larva, it has been conjectured that the wireworm which this species produced would be one of our most injurious kinds. This is the TRUNCATED SNAPPING-BEETLE, *Agrates truncatus*, erroneously named *obesus* in Dr. Harris' Treatise. Among the insects of

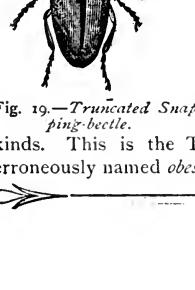


Fig. 19.—*Truncated Snapping-beetle.*

this group this is a species which is remarkably short and thick, as represented in the preceding cut, fig. 19, the smaller one on the right hand side showing its natural dimensions. It is of a dark brown color, with the wing covers a shade paler than the fore part of the body. And a side view of the wireworm which my observations indicate to be the larva of this beetle, is given in the accompanying cut, fig. 20, the line underneath showing the full length to which it grows. This worm has no impressed line along the middle of its back, and the last joint of its body is nearly twice as long as broad, ending in a somewhat acute angular point, and having on its upper side towards the base two conspicuous dots, resembling breathing pores. As this beetle and worm have occurred to me only in situations where the land is never plowed, but remains permanently in grass, it is not probable that this is a species which attacks our cultivated crops. The Elater, which is most frequently found in our gardens is the *Crätonychus communis*, or the COMMON SNAPPING-BEETLE, which is represented in the annexed cut, fig. 21, the outline figure on the right being its natural size. It is of a dark chestnut color, covered over with short, fine, prostrate ash-gray hairs, its wing-covers having rows of punctures resembling the stitches in a garment, and its forebody showing an impressed line in the middle. This species is well entitled to the name it has received, it occurs so plentifuliy in such a variety of situations in all parts of the United States. During the months of April, May and June it is most abundant. Its numbers then diminish, and it nearly or quite disappears in August, but is again met with in September and till the close of the season. A corner of my garden having been unoccupied a few years, became overgrown with quack grass, and in April a perfect swarm of these beetles were there gathered, basking in the warm sunshine, having hatched from wireworms, I suppose, which had fed upon the roots of this grass. They occur quite frequently also in strawberry beds, and similar places where the dense foliage furnishes a hiding place for them. The wireworms which I meet with in the garden are nearly all of one particular kind, and I hence have little doubt they are the progeny of these beetles. A magnified view of the back of these wire worms is given in the cut, fig. 22, the straight line

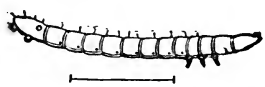


Fig. 20.—*Wireworm of the Truncated Snapping-beetle.*

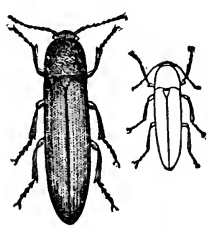


Fig. 21.—*Common Snapping-beetle.*

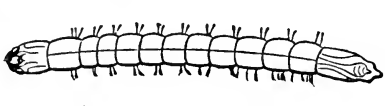


Fig. 22.—*Common Wireworm.*

below showing the length to which they grow. This garden wireworm has a strongly impressed line along the middle of its back, and is particularly distinguished from other wireworms by having three obtuse teeth-like projections at the end of its body, the middle one being much larger and more conspicuous than the lateral ones. It is to be regretted that no certain and efficacious remedy for the wireworm has yet been discovered. Every worm of this kind which is turned up to view in cultivating the garden should be destroyed. The small young worms, less than a fourth of an inch in length, which occur the most common in autumn, it is especially important to kill. As the wireworms are particularly fond of the potato, it was long ago recommended to employ slices of this tuber as a trap with which to capture them. Several of the contributors to the London Gardener's Chronicle concur in this as being the best mode of freeing the garden, at least, from these troublesome visitors. Mr. Adan says it is his practice to place near any infested plants, half a potato, with the eyes cut out to prevent its growing, running a pointed stick through it and pegging it into the ground, covering it over with about an inch of loam, and in a day or two, he states, he has pulled out from fifteen to twenty wireworms, bored into one of these slices of potato. Turnip, carrot, beet, apple, &c., are reported to answer the purpose equally well as the potato. This remedy was proposed so long ago that I am surprised it has not come into more general use, if it is as successful as the accounts of it represent it to be. These worms are also reported to be so fond of rape-cake that if this be applied to the ground as a manure, they will forsake everything else to feed upon it. If this be the fact, this substance is worthy of more attention than it is receiving.

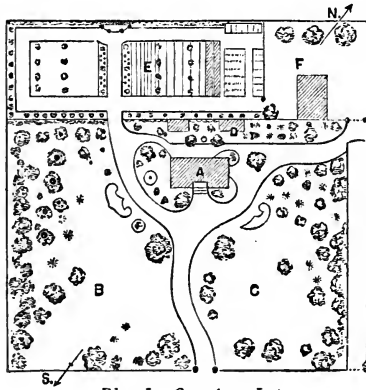
Having now completed a review of our most common and important insects which infest garden vegetables, I propose, in a future number of the REGISTER, to present an account of those which injure the small fruits which are cultivated in our gardens—the strawberry, raspberry, blackberry, currant and gooseberry. Those who wish for more full information upon any of these insects than is here given, will find most of them treated of at length in my latest Reports on Noxious Insects, published in the recent volumes of Transactions of the N. Y. State Agricultural Society.

VALUABLE CEMENT.—Professor Edmund Davy lately read a paper to the Royal Dublin Society on a cement which he obtains by melting together, in an iron vessel, two parts by weight of common pitch with one part of gutta percha. It forms a homogeneous fluid, which is much more manageable for many useful purposes than gutta percha alone, and which, after being poured into cold water, may be easily wiped dry and kept for use. The cement adheres with the greatest tenacity to wood, stone, porcelain, ivory, leather, parchment, paper, hair, feathers, silk, woolen, cotton, linen fabrics, &c. It is well adapted for aquariums.

PLANS OF GROUNDS.

AS I HAVE spent a large part of my life in the improvement of country and suburban homes, I flatter myself that these plans will be found practical, as I have always not only designed, but also executed, my plans in facto. According to my experience, it is of no great benefit to give very special instruction as to the kind of ornamental trees and shrubs to be planted, as the selection has generally to be made from what may be found in local nurseries, or the local forest growth. The latter has always been my main source of supply. The same difficulty I found in naming any special kind of Apples, Pears, etc., to be planted; each section of country has its favorites. In the planning of garden and cultivated lots, I mostly kept home-consumption in view, with a few hints where it should be desirable to raise fruits, etc., for marketing.

PLAN I.—A SQUARE ACRE LOT.—A, the dwelling-house, with surrounding plots of ground; a good shade tree in front, (Sugar or Norway Maple,) one ditto to the west, (Maple or Sweet Gum Liquidambar,) farther on in the centre of the walk an Oak, with rustic seat. To the east and north plant small clumps of Magnolia glauca; an Oak to the north in the centre of the roads. At the southeast there is a circular flower bed, with an evergreen shrub or a Magnolia purpurea for centre, as also a few choice shrubs, as Weigela, Philadelphus, Pyrus japonica, &c., as single specimens.



Plan I.—One Acre Lot.

B. Along the southwest boundary there is an irregular belt of forest trees and shrubs, as Euonymus, Fringe, Sourwood, Andromeda, Black Hawthorn, Viburnum, Wild Plum, Sassafras, Spice Bush, Cratægus, etc. The space at the west corner of the lawn may be occupied by a dozen standard Pear and Cherry trees of handsome growth. To the front of these a few evergreen and large growing flower shrubs towards the garden walk; there is also a larger bed for smaller flower shrubs and roses, and a small circle for Petunias, etc., with a Magnolia or other choice tree as centre. The shade tree to the front of the house, a fine Sugar Maple; for

planting along the public road, European Larch, Winged Elm, Scotch Elm, Hornbeam, Purple Fringe, Red-bud, &c.

C. There is a stable road along the northeast boundary, screened by an irregular plantation of forest trees with shrubs as undergrowth ; at the angle of the stable roads plant a sturdy Oak, an Ash-tree and evergreens, to break the north winds. East of the house there is another bed for choice shrubs and larger flowering perennials ; and east of that a choice Weeping tree ; to the front of the house a fine Sugar Maple ; in the bend of the road a Tulip tree and two deciduous Magnolias.

D. A space occupied by out-houses, gardener's cottage and cistern, with shade trees, evergreens, &c., as shelter against the northwest winds. Back of the cistern, between the out-houses, plant two Lombardy Poplars, with two Elms or Maples in front, which will make a spirited background for the residence.

E. The garden, with currants and gooseberries in the southeast and southwest borders ; grapevines along the northwest border, with a neat, cosy grape arbor at the terminus of the middle garden walk ; hot-beds in north corner. There are twenty-two dwarf Pears planted at considerable distances through the garden, so as to interfere but little with the raising of vegetables. The northeast square is mostly occupied by strawberries, raspberries, blackberries, and two asparagus beds ; in front of hot-beds, two large borders for salading, seed beds, sweet herbs, &c.

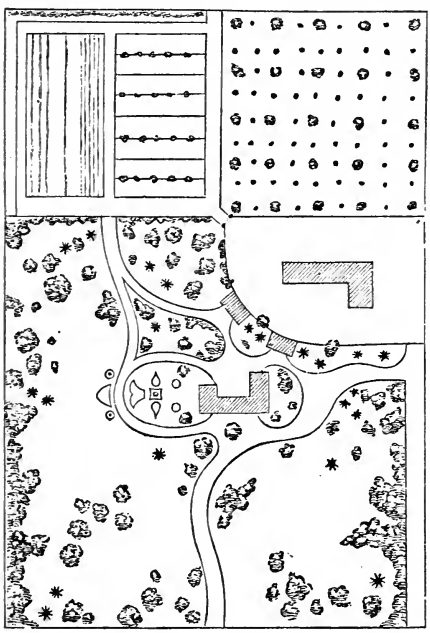
F. Stable yard with cistern near garden gate, and a few Elms and Oaks for shelter ; well protected against the stock while young.

PLAN II.—A Three Acre Lot.—This is designed for a place whose owner is a lover of flowers and shrubbery, as well as of choice forest and shade trees. The flower garden south of the house is stocked with choice, low-growing roses, bedding plants and annuals, with a vase or statue in the centre ; two neat-growing specimen shrubs, (Tree-box, Weigelas, Spireas ;) the adjoining shrubbery bed to be filled with evergreen shrubs, (Mahonia or Pyracantha.) The bed in the angle of the walks to the garden, plant with Spireas ; the one to the south of the garden walk with Roses, Calycanthus and purple Magnolia, with a few Snowballs, Lilacs and Philadelphus scattered on the lawn as single specimens.

The large irregular half circular bed in the rear of the house plant closely with a variety of low flowering trees, such as double-flowering Cherries, Peaches, Thorns, Viburnums, Laburnums, Euonymus, Dogwood, Redbud, with Spireas, Privet, Lonicera, Cornus sanguinea.

The bed on the northwest of the house plant with roses and larger perennial flowers, with a few purple Magnolias or Calycanthus in the centre to produce a heavier foliage, with Pyrus japonica, Barberry, Lonicera, double flowering Altheas, etc., as specimens scattered along the roads in front, and among the forest trees. One or two Copper Beeches, or the Purple Filbert, or Purple Barberry often produce a fine effect. The larger bed in front might be planted with Magnolia glauca, and a few Sassafras. The

boundaries of the lawn south and north are concealed by irregular plantations of forest trees, with a heavy undergrowth. For this purpose I would particularly recommend the Dogwood, Redbud and Blackhaw, which is always beautiful in flower and leaf, particularly so in its splendid autumn coloring; then also the Hazel, the Service, (June-berry,) Mountain Ash, Wild Plum, Euonymus, Hornbeam, Winterberry, etc. These will, with now and then a few evergreens and the sheltering, larger shade trees, form a fine scene of landscape in spring, summer and autumn. Protect the house to the northwest by a plantation of Pines and Firs, with Oaks and Elms. The space on either side of the walk to the garden might be planted with twelve to fourteen standard Pear and Cherry trees of good growth. Along the garden fence there might be trained flowering vines, or, if preferred, grapes.



Plan II.—Three Acre Lot.

At the west end of the garden there is a small tool-room, with vine covered seat in front. The west border is planted with choice grapes, as Delaware, Concord, Hartford Prolific, etc.

One half of the vegetable garden is devoted to the cultivation of small fruits, and one or two Asparagus beds. On the other half are planted two dozen dwarf Pear trees; the ample space between them is devoted to vegetables.

The orchard is to the west of the stable-yard, and planted mainly with Apple trees, the row next the garden to be standard Pear or Cherry trees. Between the Apple trees might be planted Peach trees, or, if preferred, dwarf Pears; or the space between the Apple trees might for a number of years be cultivated to raise root crops.—[S. SCHULER, *Louisville, Ky.*

RAIN GAUGE.

THE SIMPLEST RAIN GAUGE is a square or cylindrical vessel, open at top, with a scale marked inside to show the depth of the water as the rain falls. The depth of rains may be nearly measured by simply placing out, on an open piece of ground, a tin pail with parallel sides, and then measuring the depth with a small, thin rule. It is more common, as well as convenient and accurate, however, to make the top of the gauge somewhat in the form of a hopper, throwing the rain together down a graduated tube. The depth being thus multiplied, the amount fallen can be more perfectly measured. If, for example, the tube is one-tenth the area of the hopper, a fall of one inch will show ten inches in depth; or if the tube is a hundred times smaller than the hopper, a tenth of an inch of rain will give a ten inch column. In all gauges of this kind, which multiply the depth, it is safest to have a small cylindrical vessel attached to the side of the instrument to show the fall in case of a great storm, which might more than fill the narrow tube. There are various modifications of rain gauges—one is made by using a funnel placed in the mouth of a jug or bottle, into which all the water immediately runs. It is then poured into a graduated tube and accurately measured. If the quantity will more than fill the tube, it may be measured by successive portions. The most convenient way of placing this gauge, is first to sink a small barrel into the ground, cover it with a wooden board so made as to throw the rain from the centre, where a hole is made just large enough to receive the funnel. The bottle or jug for holding the water is placed in the barrel below the funnel. In the accompanying figure, *a* represents the barrel, *b* the board cover, *c* the funnel, *d* the bottle, and *e* the graduated glass tube, which may be kept when not in use within the barrel.

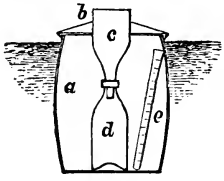


Fig. 1.

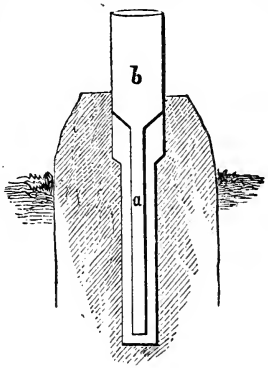


Fig. 2.

Fig. 2 represents a *modification* of the gauge already spoken of, having the tube, *a*, attached to the funnel, *b*, both of which may be made of brass or tin plate. A convenient mode for setting this guage is to set a short wooden post into the ground, projecting a few inches above it, and then

bore a hole in the top of the post the size of the funnel, an inch or two downward to receive it, and then another hole, a little smaller, deep enough to receive the tube. The depth of the water in the tube is accurately measured with a thin whalebone scale. This should be divided by experiment, by placing equal and successive quantities of water in the tube, which will correct any inequalities in the bore. If a heavy rain should more than fill the tube, the excess should be poured off and afterwards measured.

In placing the rain gauge, an open piece of ground should be selected, where buildings or trees will not affect the quantity when blown by side winds, and it should be within a few inches of the surface of the ground, where the fall is less affected by currents.

CUTTING FODDER FOR HORSES.

OBSERVING RECENTLY the fine condition of the working horses belonging to E. W. HERENDEEN of Macedon, N. Y., who employs a number in his extensive nursery, we inquired his mode of feeding, in compliance with which he furnishes the following statement. It is the more valuable from being the result of accurate weighing and measuring, and not, as nearly always happens in such cases, founded on mere guessing and vague opinion:

I have tried cutting feed, by using a cylinder rawhide machine, cutting the straw about an inch long. I kept a team on the oat straw, (which was a fair crop,) which grew on less than three acres of land, from the last of August to first of April, without using a pound of hay. It was mixed with about three quarts of corn meal and bran, in equal proportions, by weight, to each horse three times per day, feeding about a bushel of cut feed at night, and a little over half a bushel in the morning and at noon.

I find that 2,500 pounds of corn meal and bran, mixed in equal quantities by weight, will last a pair of hard-working horses, and keep them in first rate condition, for three months. The hay or oats are cut rainy days and stored in a bin, and enough is always thus kept on hand to have an abundant supply.

The meal is kept in tight bins and locked, so that each teamster knows that no one but himself is using the feed, and a regular entry is made of the amount each teamster uses. I am fully satisfied, from a careful record of the amount fed teams, that the expense of feeding a team of working horses on cut feed and corn meal and bran, mixed as before mentioned, is less than two-thirds of the expense of keeping them on dry hay and whole grain. Corn meal alone, especially for summer use, is not as good for the health of horses as when mixed with bran, and, better still, with ground oats. Horses subject to the heaves, are either very much relieved, or entirely cured, while using the cut feed.

The power of digestion seems to be greatly increased by the straw or hay being cut and mixed with meal before feeding, as every part is then acted upon by the stomach; not so when thrown into that organ in a concentrated mass, which, before being half digested, is passed out.

No doubt one of the reasons why oats are so valuable as whole grain, to feed, is that the husk which surrounds the seed itself acts as a distender, so to speak, and keeps the particles of meal separated so that they are better acted upon by the gastric juices of the digestive organs. A horse working hard, uses about thirteen pounds of meal and bran per day.

MAKING BUTTER IN WINTER.

THE FOLLOWING EXCELLENT MODE is described by E. C. K. of Cape Vincent, N. Y. In adopting it we would recommend caution in using a large amount of pea-meal as a quite moderate feeding often succeeds best:

I have seen and read much in your papers about butter-making in winter, but think I have a better way than any I have yet seen. I make as much butter in winter, and of as rich color, as in the best butter times of summer. I stable my cows all cold and stormy days, (of course nights;) have plenty of water in the yard; feed them three times a day and grain once, which is done in the morning after they have eaten their fodder. I feed ground black-eye marrowfat peas, scalded with hot water and stand three or four hours before feeding. I feed about two quarts at a time, mixed with hot water about as thick as thick gruel, and after standing three or four hours it will be as thick as corn meal pudding, and measure four quarts. Peas fed this way, especially marrowfats, are worth double the amount of any other grain you can feed, and will make cows give more milk. Well, I have told you the feeding and care of the gentlemen's department, and will now say a little about the care and management of the cream and milk in the ladies' department, which is quite as essential as any. Strain your milk, and not fill your pans more than half full, for if filled it takes too long to get sour. Then set them on a stove with a slow fire and heat them well through; the cream will rise and the pans will be fit to skim two days sooner than though they were set away cold. The cream will rise quick and sweet; therefore you will have rich and sweet butter. Generally the cream rises quick, and is not sour enough to churn, but will sour enough in your cream pail by churning time. Before you churn set your pail by the stove and heat it well through, and the butter will come half an hour sooner than though it was churned cold; and before churning scald your churn with hot water. I have tried this way of making butter until I am confident there is no better way.

PROTECTING CUCUMBERS, MELONS, &c.

AFTER TRYING VARIOUS modes for protecting melons and cucumbers from the striped bug and other insects, we find the following superior to any other. Two small twigs of osier or other slender wood, about a foot and a half or two feet long, are bent over the hill of young plants and the ends thrust in the ground, as represented by fig. 1. A newspaper is then placed upon these curved sticks covering the whole, and the edges are fastened down all around by a covering of earth as shown in fig. 2. This constitutes the whole contrivance, and affords complete protection from all insects; the paper being thin and porous, admits a sufficient supply of air and light, at the same time sheltering from cold winds. Plants thus protected have grown twice as fast as those fully exposed. Another advantage of this mode is the protection it affords from night frosts, rendering it admirably adapted to plants which have been early removed from the hot-bed. Lastly and not least, is its cheapness. A gardener will apply it to a dozen hills in as many minutes by the watch, the material costing nothing to any one who takes a political newspaper.

Fig. 1.

Fig. 2.

Fig. 3.

Unless the paper is very thin and fragile, heavy rains will not break it. Strong plants sometimes burst through; but a better way, when they become large, is to tear a hole in the top, as shown in fig. 3, the remaining paper at the sides still affording some protection, although plants of this size are usually safe from injury.

We obtained the suggestion from some paper, but improved upon it as above described.

STEAMING CORNSTALKS.—A correspondent of the COUNTRY GENTLEMAN steams his cornstalks in a cheap manner, by first cutting them up in a machine, and then placing them in a bin which holds 300 bushel baskets. Over every three baskets he throws ten quarts of cold water, and then covers up the whole for twelve hours. Fermentation begins in six hours, and the food steams itself.

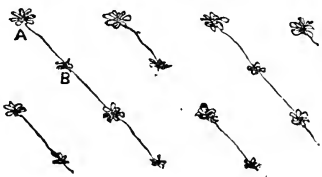
FRUIT DRYING HOUSE.

SEVERAL PORTABLE fruit-drying houses have been patented and constructed, one of which is represented in the annexed figure. The

others are made on the same principles, and are similar in form. They are about three feet square and four feet high, but may vary according to convenience. The fruit, when the fire is made, is covered with sheet-iron, to prevent danger from taking fire. The fruit is placed on shelves, and is thoroughly and completely dried in a few hours, whether the weather be rainy or not. The cost of these houses is some $30 or $40. They are easily moved to any part of the orchard. Any one can make a portable house for this purpose, by making a small, light board house, furnished with sliding sieves as shelves, a ventilator at the top, a small stove with pipe passing around near the bottom, and double doors for access.

RENEWING STRAWBERRY PLANTATIONS.

FIRST DECIDE on the year you wish to remove the old plants. As soon as the runners have attained a length of a foot or more, select the strongest from each hill, place the end of it in the centre of the square formed by four hills, of which the hill to which the runner in question is attached forms one of the corners.



As shown in the annexed cut, A is the old hill, B the new. When the end of the runner is placed in position, sprinkle a little dirt on it, so that it will be more certain to take root. Four weeks from this time the runner will have formed a new plant, with from six to eight leaves, and a myriad of strong, healthy roots. It is best now to sever the runner, as the new plant has sufficient roots to keep it in a growing condition. Late in the fall pull up the old plants, and place them over the new ones, with a small handful of dirt on each one, to keep the elements from removing them during the winter.—*L. D. Snook.*

TRANSPLANTING EVERGREENS.

WHEN YOUNG EVERGREENS have their branches spreading out, down to the surface of the ground, as all evergreens should to look well, it is often quite difficult to dig them up for transplanting, these spreading prostrate branches impeding the work of the spade. Again, when they are set out, the same difficulty occurs in placing them properly in the hole, and filling in the earth. Having recently had occasion to set out a large number from the nursery rows, we found the work could not only be much better done, but in about one-half the time, by drawing the lower branches upwards, pressing them against the tree, and securing them in this position by passing around and tying a cord, as shown in fig. 2, the common appearance of the tree being represented by fig. 1. The ease with which the operator could now work was remarkable. Nurserymen, who have many such trees to dig, would find it to their advantage to provide a number of small straps to buckle around the trees during the operation of removal.

Fig. 1.—*Tree before digging.*

Fig. 2.—*Tree dug up.*

AMOUNT OF PORK FROM A BUSHEL OF CORN.

OUR READERS may have observed the published statement of the experiments of J. B. LAWES, who obtained 100 pounds of pork from seven bushels of corn, or one pound of pork from 4½ pounds of corn. The grain was ground and moistened with water before feeding. This is regarded as successful management. At the rate of five cents per pound, the corn would be worth 71 cents per bushel for fattening pork. This estimate is based upon the supposition that the manure pays for the grinding and feeding.

The experiments of NATHAN G. MORGAN of Union Springs, published in the ANNUAL REGISTER for 1864, present much more favorable results. As a mistake occurred in one part of that published statement, we here repeat his mode and its results in a corrected form. He always commences fattening in spring, at which time a bushel of corn is more valuable in its results than in autumn, and continues a regular course of feeding throughout the season. The corn is ground and 90 pounds of hot water poured on every 16 pounds of meal, and after standing 12 to 18 hours, the whole mass becomes thick feed. He finds by measured experiment that the

value of the corn is fully doubled by this process, as compared with corn fed in the ear, and fifty per cent. better than meal merely mixed with cold water. One bushel of corn thus prepared, after deducting ten per cent. toll for grinding, and leaving only 54 pounds for the bushel, will give 20 pounds of pork—or at the rate of 2 2-8 pounds of corn for each pound of pork. When pork is five cents per pound he obtains at the rate of $1 per bushel for his corn.

A coincidence will be observed between these experiments and those of Lawes as above stated. While Morgan obtains, by scalding the meal, one pound of pork from 2⅜ pounds of corn—he gets 50 per cent. less, or at the rate of one pound of pork to 3¾ pounds of meal, when mixed merely with cold water, which is within less than half a pound of the quantity of meal required in Lawes' experiments, when the same kind of feed was used.

Breeds and management will of course vary the results; in the many trials made by N. G. Morgan, he had every advantage of good sound corn, comfortable quarters, cleanliness, regularity of feeding, and quality of breed. It may be well to state that he has found the best sound corn double the value of a great deal that is used when badly grown or imperfectly ripened or more or less mouldy.

SHELTER FOR ANIMALS.

EVERGREEN SCREENS, (fig. 1,) if planted in time, form excellent shelter for animals. Nothing is better than Norway Spruce, and if the trees are planted as near as two or three feet apart, on good soil kept mellow, will make a screen twelve or fifteen feet high in five years. As the trees become older, cut off the lower branches on the side from the wind, up to a height of six or seven feet, and allow the branches above to extend outward in the form of a shed roof. By tying them down when young, they may be made to assume a drooping position, and throw off rain handsomely, like a sloping roof.

Fig. 1.

Living sheds made in this way will continue a long time, but some protection may be needed at the bottom, both for the trunks and for the foliage on the opposite side.

MISCELLANEOUS FARM NOTES.

CULTIVATING CORN.—Young corn should be cultivated as early as possible both to push on the crop and to kill the young weeds when they are small and feeble, and have not injured the young plants. An excellent mode of performing this work is to take a Shares' harrow, fix handles to it like those of a cultivator, and take out the middle tooth. Two horses will draw it, working two rows at a time, pulverizing the soil perfectly and running close to the plants without throwing the earth upon them. This is especially adapted to corn on inverted sod, which Shares' harrow pulverizes in the best manner, without tearing up the turf, as it operates like the roller and harrow combined.

ADVANTAGES OF DRILL MARKS.—The lines made by drilling in wheat, if straight and carefully and regularly made, will be useful in marking out the spaces for sowing grass seed, as well as in picking stone, sowing plaster or applying top-dressing, as they remain visible a long time afterwards. Every farmer should therefore place the drill in the hands of a driver who knows how to lay a straight furrow.

TESTING GRASS SEED.—It is of great importance in seeding down to grass, to cover the whole ground with a dense coating of herbage, with no bare spots. To do this the seed must be good. It may have been injured by age or mouldiness, or have been imperfectly ripened. Hundreds of dollars may be lost by not knowing good from bad seed. To test it, count a given number of seeds, and sow them regularly in a pot or box of fine earth, covering them a fourth or half an inch deep, according to size, by sprinkling on fine earth. Keep them moist and warm and count the number that grow, or they may be sprouted between folds of moist cotton.

RAISING CLOVER SEED.—W. Strong gives in substance in the COUNTRY GENTLEMAN the following method for raising clover seed. Top-dress with manure in the autumn previously, and plaster in spring, as ripening seed draws hard on the soil. The early or first crop must be taken as soon as in blossom; the second, for seed, should become nearly all ripe. Cut with a mowing machine with a platform, graduated to a proper height, raking off the bunches opposite to each other at every passing, so that they can be taken in a row when loading on the wagon. If rain threatens, draw in immediately, as the ripe straw will not hurt the seed, and this will prevent the loss resulting from turning over for drying afterwards in the field. This is found to be much better and to be attended with far less waste than cutting by hand or raking into heaps, or using a pitcher. Thresh in cold, frosty weather in winter.

HOOKING CATTLE.—A correspondent of the COUNTRY GENTLEMAN prevents the injurious results of cattle hooking each other, by sawing off, with a fine sharp saw, an inch or two of their horns, and says this is as good as brass knobs, and much cheaper.

FEEDING SQUASHES TO COWS.—A correspondent of the COUNTRY GENTLEMAN found that his cows gave four quarts of milk more per day, with the seeds taken out, than when left in—three pecks being daily fed to two cows. Another cow fattened more rapidly on three pecks of squashes cut into small pieces, than on six quarts of scalded cob-meal. The squashes made more milk and butter when the seeds were taken out than carrots; and about the same when the seeds were left in. The variety was the Boston Marrow, with some Hubbard, both very rich kinds. The cross was thought to be better for the purpose, and to keep longer than the Marrow alone.

CURE FOR FOOT ROT.—J. W. C. says, in the COUNTRY GENTLEMAN, that the best and simplest remedy that he has tried consists in washing the feet perfectly clean, paring off the bad parts, and then dipping the foot for a few seconds into a small vessel of gas tar—a tin cup four inches deep, and three or four wide, will answer.

PACKING VEGETABLES FOR WINTER.—There are two ways in which farmers usually deposit their vegetables in the cellar for winter, one of which, we are sorry to say is too common, is to take them up without much care, and with what earth happens to be adhering to them, and to throw them into a pile in one corner or other part of the cellar, where they remain till wanted for family use. We here allude to such vegetables as beets, carrots, parsnips, turnips, &c. If the cellar happens to be damp, many of them decay or lose their flavor; if it chances to be a dry one, a portion of them become shrivelled and too dry for use. The heaps are overhauled repeatedly to find such as are good enough for the table, and these confused and scattered heaps present anything but a tidy appearance, while the decaying ones produce an unhealthy air.

We have adopted another way, which we like much better. A few bushels of fine clean moss is obtained from dense woods or from swamps. Clean barrels or smooth-planed boxes, are taken to the garden, (a dry day being selected for the occasion,) and the vegetables being taken up, well cleaned, topped and trimmed, are placed in the barrels or boxes, with alternating layers of soft, damp moss. When filled, the handcart or wheelbarrow conveys them to the cellar. The moss keeps them clean and sufficiently moist, preventing the accumulation of water on the one hand, and the drying and shrivelling of the roots on the other. They are always fresh and ready for use, and are taken out from under the moss without the least difficulty. As the barrel is successively emptied, a portion of the moss is taken off and placed in another one for future use.

There are very few places where good moss cannot be obtained from the woods, within a reasonable distance; but if beyond reach, clean, moist sand may be substituted for the purpose of retaining the moisture. It is, however, heavier and more difficult to handle, and the vegetables do not come from it so clean and fresh as from the moss.

HOT-AIR FURNACES.

HOT-AIR FURNACES FOR BURNING WOOD have been used to some extent by country residents; but formidable objections have existed in the amount of labor and attention required to feed and regulate them, and in their liability to become choked by the accumulations of soot. When this soot has accidentally caught fire, it has endangered the building, unless special precaution has been taken to remove every combustible substance from the pipes and flues, in its erection. The use of anthracite coal is not attended with these objections; the ashes and dust are confined to the furnace room in the basement. The combustion is steady and long continued, and is thus easily regulated. and no soot being formed, the furnace is easily cleaned, and is not attended with danger by taking fire. Where it is desired to occupy several apartments of the house, it is decidedly more comfortable, as well as economical, to use a hot-air furnace for burning coal.

In order that such of our readers as may desire to erect furnaces, or to know how to manage them, may understand their mode of operation, we give the accompanying sketch of the section of one of the best for burning coal now in use. The place for the fire is shown at *a*, fig. 1, and is easily filled with coal through the door immediately above, while the ashes are taken out through the door of the ash-pit below. The smoke passes through the pipe *b*, into the chimney — the whole being made of cast-iron, except the pipe. This heating apparatus is enclosed in a brick air-chamber made with double walls, and from it the hot-air pipes, *c*, *c*, *c*, pass into the different rooms above, the supply of heat to each room being regulated by registers placed on a level with the floor, or sometimes in the side walls. A space four or five inches wide, between the double walls, admits the cold air to the lower part of the furnace. This air enters through an opening or window in the cellar wall, passes through the large wooden tube, *d*, into the upper part of the air space in the walls of the air-chamber, and immediately descends by its weight, as already stated. A brick floor or shelf surrounds the lower part of the furnace, and approaches within a few inches of it, so as to throw the cold air more immediately into contact with the heated iron. This shelf is supported by bricks standing on end, as shown by the upright

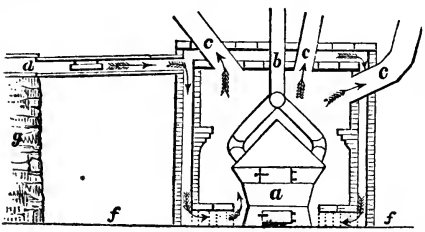


Fig. 1.—*Hot-air Furnace—a, furnace; b, smoke pipe; c, c, c, hot-air pipes; d, cold-air tube; f, f, cellar floor; g, cellar walls.*

dotted lines. Projecting brick shelves about half way up again throw the ascending air against the sides of the furnace. The man-hole door for entering the air-chamber in case of necessity, and for filling the water pan, (employed to render the air more humid,) is placed on the rear side. It is made of sheet-iron, lined within with sheet-tin, with an enclosed air space about two inches thick, to render it a non-conductor.

Fig. 2 represents a portion of the cold-air tube with a sliding board, *a*, to cut off the admission of air from the outside in time of high wind, or to prevent the hot air from being driven outward through it when strong winds prevail on the opposite side. When thus closed, the door, *b*, should be opened for the entrance of air from the furnace room or basement. The cold-air pipe should always be placed on the side toward the prevailing winds; and when these winds are strong, it will be necessary to partly close the tube by the sliding board *a*. It will also be desirable to close this tube in part, when in mild weather the fire is moderate or small.

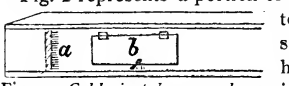


Fig. 2.—*Cold-air tube on a larger scale—a, slide for cutting off or admitting air from without; b, door for admitting air from cellar to furnace, on windy days, when necessary.*

As a furnace must necessarily be placed in a basement, attention should be given to make it easily accessible from above, unless in charge of an attendant occupying the same floor.

DRAWING SAND FOR GARDENS.

A LARGE PORTION OF THE SOILS devoted to gardens in this country, would be improved and rendered lighter by an admixture of sand. In all those regions where clayey soils prevail, gardens thus treated would be rendered more readily friable, and could be worked earlier in spring. A coating of two or three inches, spread over the surface and gradually intermixed by cultivation, would, in many instances, effect a great improvement. A great advantage which this mode of treatment possesses, is the *permanent* character of the improvement. When a soil is merely enriched with manure, it gradually loses its richness as the manure disappears, but the sand, applied artificially, does not disappear, but remains for centuries. The best garden soil we have ever cultivated, was made by drawing sand on a strong or heavy loam. Soils that are naturally light, sandy or gravelly, frequently do not possess sufficient strength to retain long the manure applied to them. A proper admixture of the two ingredients is always the best.

At the present season of the year—or in the depth of winter, when teams would otherwise be standing idle,—this work may be done to advantage. In clay regions, beds of sand may be generally found within a reasonable distance. After breaking through the frozen crust, the sand may be easily shovelled out for drawing. A few bundles of straw, thrust in at the mouth of the open pit, on the approach of severe nights, will prevent severe freezing until the next day.

ITEMS IN DOMESTIC ECONOMY.

Leaks in Roofs—May be stopped by a cement or paste made of white lead paint thickened with fine clean sand. If not exposed to the sun, larger cracks may be stopped by a mixture of gas tar and sand.

Cisterns.—A couple of live fish thrown into cisterns will clean them of worms and dirt.

Filter.—A cheap temporary one may be made by taking a large sized flower-pot, or any other earthen vessel which has a hole in the bottom. First place in the bottom a layer of pebbles, another of smaller ones, and then one of coarse sand, and lastly a layer of charcoal, broken into fine grains, but not powder. A piece of clean flannel extending up the sides of the pot, should cover the charcoal. More complete and permanent filters are figured and described on page 106 of RURAL AFFAIRS, vol. III.

Lamp Explosions.—Many of these may be prevented by trimming the wick daily. When burned for several evenings without trimming, the wick becomes blacked, clogged, and incapable of supplying the oil clearly and uniformly, and the chimneys are sometimes filled with flame and smoke, to the embarrassment and alarm of those present. Some explosions would be prevented by never blowing out the lamp down the chimney—for if the wick happens to be too small, the flame may be driven down into the oil. The best way is to turn it down with the button until extinguished.

To Wind a Watch—Turn the hole downward, and let the point of the key point upward. This will allow any little particles of metal or dust to drop out, and the watch will not need cleaning so often.

Buckwheat Cakes, as every one knows, are best when taken hot and fresh; but sometimes they remain, become cold, and are thrown away. These cold cakes may be rendered excellent by taking a suitable quantity of milk, and adding to it say one-twentieth part of its bulk in butter, and heating the two together over the fire till hot, but not scalding; and then laying in the cakes and turning them over.

Fire in Chimneys may be arrested in a great measure by throwing salt on the fire below, which partly extinguishes the flames; stopping the chimney at the top arrests the current and contributes to the same result. It should be constantly impressed on the mind of every person that whenever a dwelling takes fire, every door should be kept closed to prevent the flames from spreading.

Stair Carpets may be preserved a much longer time by placing strips of paper nearly as wide as the carpet and five or six inches broad, over the edge of each stair, which prevents the wearing at that place.

Cleaning Knives.—A correspondent of the COUNTRY GENTLEMAN says: A small, clean potato, with the end cut off, is a very convenient medium of applying brick dust to knives, keeping it at about the right moisture, while the juice of the potato assists In removing stains from the surface. We can get a better polish by this method than by any other we have tried, and with less labor.

Hair Brushes are best cleaned by washing them in saleratus or soda water, which removes all the oily coating.

Kitchen Odors.—Meat which has been slightly tainted may be restored to perfect sweetness, and the odor arising from it while boiling entirely prevented by throwing into the pot a few pieces of charcoal contained in a small bag. The odor of vegetables slightly affected, may be prevented in the same way. Red pepper, and even black pepper, produces a similar but less perfect result.

Rancid Butter, boiled in water with a portion of charcoal, (say a tenth part,) will be entirely divested of its rancidity and may be used for cooking purposes, although its fine flavor will not be restored for the table.

Wall Paper may be readily cleaned by rubbing it with dry Indian meal on a cloth. Pieces of bread are commonly used for this purpose, but the Indian meal is obviously cheaper and easier.

Pegged Shoes, made of light or thin material, often have the soles crack off at the concave part before the shoes are half worn out. This is owing to the pegs becoming dry and shrinking. To prevent it, avoid thrusting them against stoves, or standing on hot-air registers; at the same time keep them somewhat moist, by occasionally walking on wet ground. If this is not a sufficient remedy, drive a few copper tacks at the place of the pegs and clinch them inside. They may be bought at hardware stores, and kept for this use—a half dozen will do for each shoe.

A Self-Holder for a Spoon, when temporarily filled with any liquid, or for dropping medicine, may be made in the simplest manner possible, by thrusting the handle between the leaves of a shut book lying on the table. If not high enough, one book may be piled upon another. Both hands may then be used in dropping from a bottle or making any desired mixture.

Cleaning Dinner Plates.—Every dish-washer is familiar with the process of scraping adhered portions of gravy, etc., from the surface of the plates preparatory to washing. The rounded edge of a common table knife does the work imperfectly. Skillful housekeepers inform us that long, straight, flexible blades, like the spatula of druggists, perform this work more rapidly and perfectly. A task which has to be done three times a day, or more than a thousand times annually, should have every appliance for rendering it easy and perfect.

A Valuable Remedy.—Dissolve *chlorate of potash*, at the rate of a teaspoonful in a tumbler of water. It is an admirable remedy for any kind of sore throat, particularly ulcerated sore throat, if taken as a gargle. Will speedily cure chapped hands, or other skin disease. A few grains taken into the mouth and dissolved slowly, answers about as well as a gargle.

To Clean a Clock.—When the clock stops, don't take it to the repair shop till you have tried as follows: Take off the pointers and the face; take off the pendulum and its wire. Remove the ratchet from the *tick* wheel and the clock will run down with great velocity. Let it go. The increased speed wears away the gum and dust from the pinions—the clock cleans itself. If you have any pure sperm oil, put the least bit on the axles. Put the machine together, and nine times in ten it will run just as well as if it had been taken to the shop. In fact this is the way that most shopmen clean clocks. If, instead of a pendulum, the clock has a watch escapement, this latter can be taken out in an instant without taking the works apart, and the result is the same. It takes about twenty minutes to so clean a brass clock and saves a dollar.—N., *in the Country Gentleman.*

To Prepare Bees' Wax.—To obtain wax, boil the combs in a strong muslin bag, in a saucepan, with water enough to keep it from burning; and whilst boiling, continue to press the bag with a wooden slice or spoon, to extract the whole, as you skim off the wax. Drop the wax into cold water, where it will swim on the surface. The wax thus obtained will still want refining, to effect which place it in a clean sauce-pan, and melt it over a slow fire. Then pour off the clean wax into proper vessels, and let it cool. To whiten it, make it in thin cakes, and expose it to the sun.—*N. Y. Coachmakers' Magazine.*

Cooking the Cauliflower.—Put a good sized cauliflower in just enough *boiling* water to cover it, with a large teaspoonful of coarse salt, and a piece of carbonate of soda the size of a moderate green pea, and boil for twenty-five minutes; then dish and drain out all the water, and put two ounces of butter on top of the cauliflower, and cover close.

Pickling the Cauliflower.—A correspondent of the COUNTRY GENTLEMAN says: Have a kettle of boiling water, and put in one at a time, with top down, unless the kettle is large enough for more, and boil it until tender. Have ready a jar of cold vinegar, with cloves and mace; drain the cauliflower well and put into the vinegar while hot. Cover tightly, and it will be ready for use in a week or ten days.

Another correspondent gives the following directions: Take those that are very tender; *break* in pieces the size desired (not cut;) sprinkle with salt on an earthen dish, and in four hours remove to jars of strong, cold, spiced vinegar, previously prepared.

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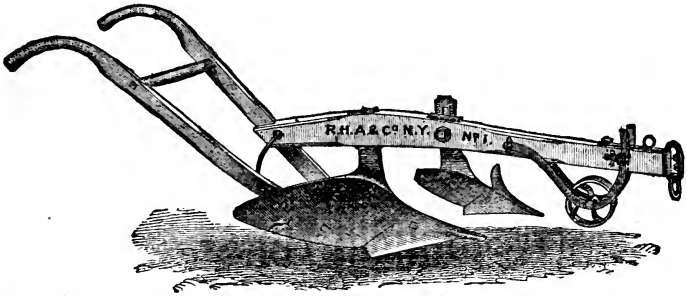

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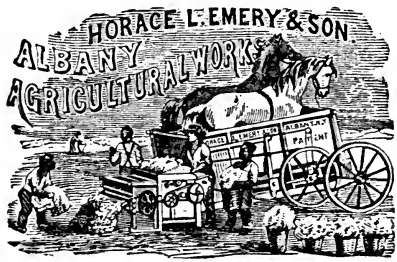

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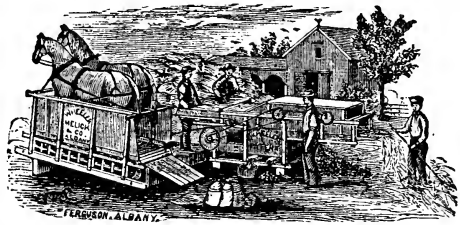

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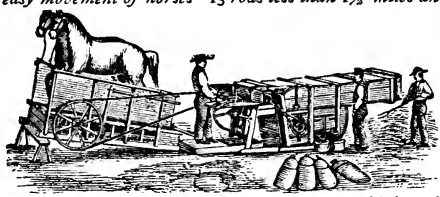

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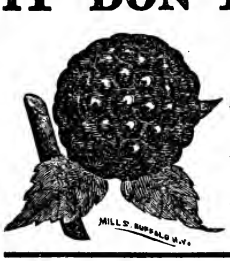

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CELEBRATED

AMERICAN WORM SPECIFIC OR VERMIFUGE.

No diseases to which the human body is liable, are better entitled to the attention of the philanthropist, than those consequent on the irritation produced by *worms in the stomach and bowels.* When the sufferer is an adult, the cause is very frequently overlooked; and, consequently, the *proper remedy* is not applied. But when the patient is an infant, if the disease is not *entirely neglected*, it is still too frequently ascribed, in whole or part, to some other cause. It ought here to be particularly remarked, that although but few worms may exist in a child, and howsoever quiescent they may have been previously, no sooner is the constitution invaded by any of the *numerous train of diseases* to which infancy is exposed, than it is *fearfully* augumented by their irritation. Hence it too frequently happens that a disease otherwise easily managed by *proper remedies*, when aggravated by that cause, bids defiance to treatment judicious in other respects, but which entirely fails in consequence of worms being overlooked. And even in cases of greater violence, if a *potent and prompt remedy* were possessed, so that they could be expelled without loss of time, which is so precious in such cases, the disease might be attacked by proper remedies, even handed and *with success.*

Symptoms which cannot be mistaken.—The countenance is pale and leaden-colored, with occasional flushes, or a circumscribed spot on one or both cheeks: the eyes become dull; the pupils dilate; an azure semi-circle runs along the lower eyelid; the nose is irritated, swells, and sometimes bleeds; a swelling of the upper lip; occasional headache, with humming or throbbing of the ears; an unusual secretion of saliva: slimy or furred tongue; breath very foul, particularly in the morning; appetite variable, sometimes voracious, with a gnawing sensation of the stomach, at others entirely gone; fleeting pains in the stomach; occasional nausea and vomiting; violent pains throughout the abdomen; bowels irregular, at times costive; stools slimy, not unfrequently tinged with blood; belly swollen and hard; urine turbid: respiration occasionally difficult, and accompanied by hiccough; cough sometimes dry and convulsive; uneasy and disturbed sleep, with grinding of the teeth; temper variable, but generally irritable, etc.

Whenever the above symptoms are found to exist, DR. M'LANE'S VERMIFUGE

MAY BE DEPENDED ON TO EFFECT A CURE.

The universal success which has attended the administration of this Preparation has been such as to warrant us in pledging ourselves to the public to RETURN the MONEY in every instance where it should prove ineffectual: "Providing the symptoms attending the sickness of the child or adult should warrant the supposition of worms being the cause." In all cases the medicine to be given *in strict accordance with the directions.*

We pledge ourselves to the public, that *Dr. M'Lane's Vermifuge* DOES NOT CONTAIN MERCURY in any form; and that it is an innocent preparation, *not capable of doing the slightest injury to the most tender infant.*

DIRECTIONS.—Give a child from two to ten years old, a teaspoonful in as much sweetened water every morning, fasting; if it purges through the day, well but if not, repeat it again in the evening. Over ten, give a little more; under two, give less. To a full grown person, give two teaspoonfuls.

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The LIVER PILLS have the name stamped on the lid of the box in red wax.

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FOR THE CURE OF

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DR. M'LANE'S LIVER PILLS are not held forth or recommended (like most of the popular medicines of the day) as universal cure-alls, but simply for *Liver Complaints*, and those symptoms connected with a deranged state of that organ.

DISEASES OF THE LIVER.

The Liver is much more frequently the seat of disease than is generally supposed. The function it is designed to perform, and on the *regular execution* of which depends not only the general health of the body, but the powers of the *stomach, bowels, brain*, and the whole nervous system, shows its vast and vital importance to human health. When the liver is seriously diseased, it in fact not only *deranges the vital functions of the body*, but exercises a powerful influence over the mind and its operations, which cannot easily be described. It has so close a connection with other diseases, and manifests itself by so great a variety of symptoms, of a most doubtful character, that it misleads more physicians, even of great eminence, than any other vital organ. The intimate connection which exists between the liver and the brain, and the great dominion which I am persuaded it exercises over the *passions* of mankind, convince me that many unfortunate beings have committed acts of deep and criminal atrocity, or become what fools term hypochondriacs, from the simple fact of a *diseased state of the liver.* I have long been convinced that more than one-half of the complaints which occur in this country are considered as having their seat in a *diseased state of the liver.* I will enumerate some of them; *Indigestion, stoppage of the menses, deranged state of the bowels, irritable and vindictive feelings and passions*, from trifling and inadequate causes, of which we afterwards feel ashamed; last, though not least, more than *three-fourths* of the diseases enumerated under the head of CONSUMPTION have their seat in a diseased liver. This is truly a frightful catalogue.

Symptoms of a Diseased Liver.—Pain in the right side, under the edge of the ribs, increasing on pressure; sometimes the pain is in the left side; the patient is rarely able to lie on the left side; sometimes the pain is felt under the shoulder-blade, and it frequently extends to the top of the shoulder, and is sometimes mistaken for a rheumatism in the arm. The stomach is affected with loss of appetite and sickness, the bowels in general are costive, sometimes alternative with lax; the head is troubled with pain, accompanied with a dull, heavy sensation in the back part. There is generally a considerable loss of memory, accompanied with a painful sensation of having left undone something which ought to have been done. A slight, dry cough is sometimes an attendant. The patient complains of weariness and debility; he is easily startled; his feet are cold or burning, and he complains of a prickly sensation of the skin; his spirits are low; and although he is satisfied that exercise would be beneficial to him, yet he can scarcely summon up fortitude enough to try it. In fact, he distrusts every remedy. Several of the above symptoms attend the disease, but cases have occurred when few of them existed, yet examination of the body, after death, has shown the *liver* to have been extensively deranged.

Ague and Fever.—*Dr. M'Lane's Liver Pills, in cases of Ague and Fever*, when taken with Quinine, is productive of the most happy results. No better cathartic can be used, preparatory to, or after taking Quinine. We would advise all who are afflicted with this disease to give them a *fair trial.*

DIRECTIONS.—Take two or three Pills on going to bed every second or third night. If they do not purge two or three times by next morning, take one or two more; but a slight breakfast should invariably follow their use. The *Liver Pills* may be *used where purging simply is necessary.* As an anti-bilious purgative, *they are inferior to none*, and in doses of two or three, they give astonishing relief in *Sick Headache*, also in slight derangements of the stomach.

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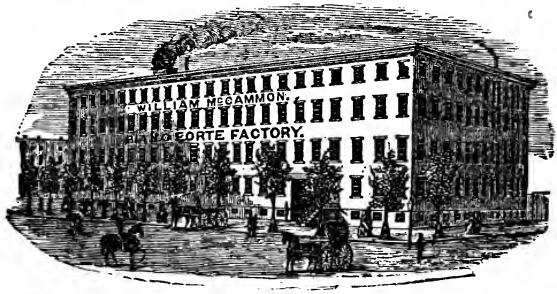

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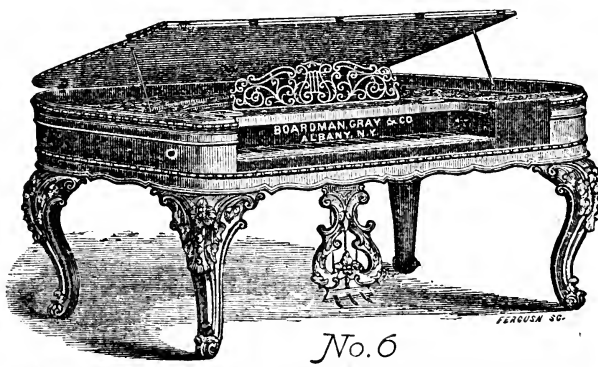

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To that far greater blessing, health?
What's house or land, or dress, or wine, or meat,
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Nor go about in comfort? Here's the question—
What's all the world without a good digestion

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If you have a Sick Headache, TRY THEM.

If you are Low Spirited, TRY THEM.

If your Breath is Bad, TRY THEM.

If you Feel Drowsy, TRY THEM.

THEY ONLY COST 25 CENTS A BOX—TRY THEM.

Giddiness of the head, watery and inflamed eyes, coated tongue, pain in the side, and the whole class of bilious diseases, are quickly relieved by their use. Purchasers are requested not to confound the name of Herrick with those who manufacture Pills—too many of which are made to sell, rather than a benefit to the sick. Herrick's Pills are purely Vegetable; no change of diet or business is necessary while using them. Each box sells for 25 cents.—*Hartford Daily Times.*

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