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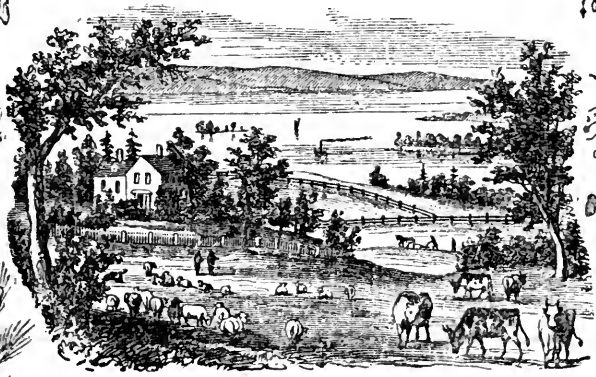
# Annual Register

OF

AGRICULTURE

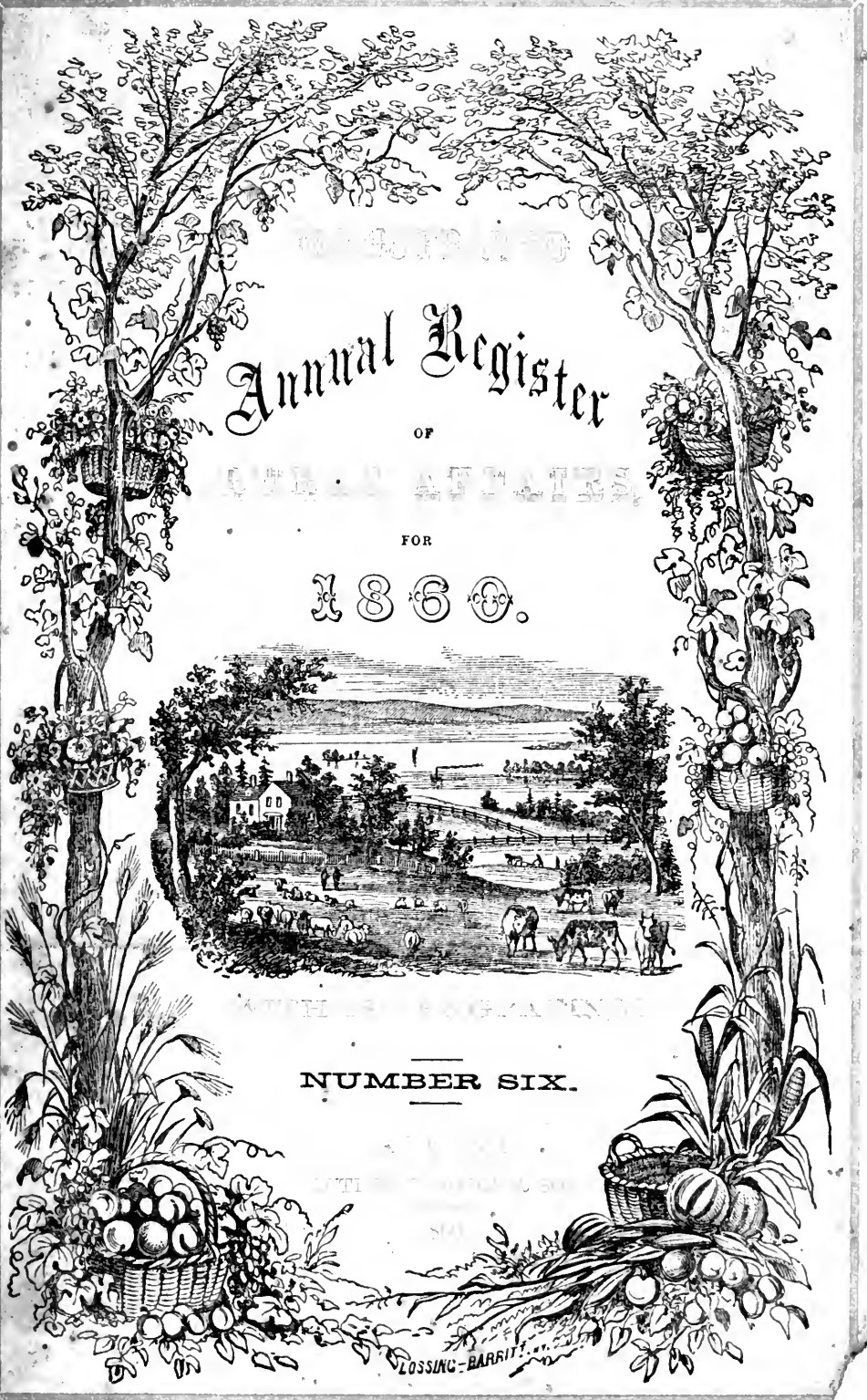
FOR

## 1860.



NUMBER SIX.

LOSSING-BARRIT



# RURAL PUBLICATIONS

TO  
Record, Impart,  
AND  
ILLUSTRATE  
THE BEST  
PRACTICE;  
TO  
Advancement



IN  
Rural Economy  
AND  
RURAL TASTE;  
TO  
IMPROVE  
THE  
Soil and the Mind.

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THE  
ILLUSTRATED ANNUAL  
REGISTER OF RURAL AFFAIRS

AND  
CULTIVATOR ALMANAC,  
FOR THE YEAR 1860,

CONTAINING PRACTICAL  
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INCLUDING HOUSES, FARM BUILDINGS, IMPLEMENTS,  
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BY J. J. THOMAS,  
AUTHOR OF THE "AMERICAN FRUIT CULTURIST," AND "FARM IMPLEMENTS,"  
ASSOCIATE EDITOR OF THE "COUNTRY GENTLEMAN" AND "CULTIVATOR."

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ALBANY, N. Y.:  
LUTHER TUCKER & SON, 397 BROADWAY.  
NEW-YORK: A. O. MOORE & CO., 140 FULTON ST.

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## PUBLISHERS' ADVERTISEMENT.

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THE Publishers of the ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS, in presenting to the public the Sixth Number in the Series, consider it proper to refer again very briefly to its general design, as well as to the particular features of the issue for 1860.

THE ANNUAL REGISTER is not made up from any other periodical or work, but its contents are prepared by the Author especially and originally for publication in its pages. The successive Numbers from year to year, are calculated to be continuous with each other, so that when bound together they may constitute connected volumes, enriched by the most abundant illustration, and not only embracing a wide variety of subjects, but also eminently practical in treating them. The circulation of the work thus far, has been sufficiently extensive to warrant the most liberal expenditure in any direction in which money was thought capable of adding to its attractiveness and interest. The Publishers as well as the Author, have therefore exerted their utmost to maintain the character it has acquired from the first, and more than this to effect any improvement suggested by experience, and available within the compass of the book.

The following pages are illustrated by a still larger number of ENGRAVINGS than any previous issue, although it is thought that they do not encroach at all upon the practical utility of the matter they accompany, but that on the other hand, they may serve to draw the attention of new readers to our Rural Literature, and at the same time disseminate by the means of the eye as well as mind, the seeds of wholesome Rural Improvement. Reference is made to the Index and to the different chapters themselves, to show the degree of success attained in accomplishing the objects designed.

All or any of the previous Numbers of the ANNUAL REGISTER, may be had by enclosing 25 cents per copy to the Publishers at Albany. The six Numbers are also issued in two volumes, printed upon larger paper of very superior quality, with the omission of Calendar pages and Advertisements, and with new and full Indexes—price \$1 each, sold separately or together as may be desired. These two volumes contain no less than 886 Illustrations, and no others are known devoted to RURAL AFFAIRS, equally comprehensive in design and complete in execution, offered at so low a price.

18-25-31

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## PREVIOUS NOS. OF THE REGISTER.

It has been already stated that Complete Sets of the ANNUAL REGISTER, or any Number separately, can always be obtained from the Publishers. The next pages contain a brief summary of the Contents of the first three Numbers, for 1855, '56, and '57. The following table will give a general idea of the others :

**The Register for 1858.**

A COMPLETE COUNTRY RESIDENCE— Grounds, &c., fully described, 28 Eng.
BEEES AND BEE-KEEPING—A Practical Treatise, .....
COUNTRY HOUSES, with full Plans—Eleven Designs, .....
NOTES ON FRUITS AND FRUIT CULTURE ; Tools for Orchard Work, 21 Engrav's.
LISTS OF THE BEST KINDS OF FRUITS.
ANNUAL FLOWERS—Lists and Culture, 8 Engravings.
THE KITCHEN GARDEN—Management and Lists of Vegetables, ... 3 Engravings.
GARDEN STRUCTURES—the Vinery and Green-House, .....
FARM BUILDINGS—the Carriage-House, Barn, Granary, Wagon-House, &c., 10 Engravings.
AGRICULTURE—Tillage, Domestic Ani- mals, &c., .....
FEEDING ANIMALS—RURAL ECONOMY— DOMESTIC ECONOMY—STEAMING FOOD— WEIGHT OF GRAIN—VETERINARY RE- CEIPTS—ROOT CROPS—CHEAP FENCES VENTILATION—GOOD AND BAD MAN- AGEMENT, &c., &c., ... 14 Engravings.

**The Register for 1859.**

FARM MANAGEMENT—A Full and Practi- cal Essay, including Laying-out and After Management, ... 18 Engravings.
COUNTRY DWELLINGS—Eight Designs, with Plans Complete, ... 25 Engravings.
IRON, for Furniture and Rural Struc- tures, .....
WIRE FENCES, .....
UNDERDRAINING—Very Full and Practi- cal—embracing both the Principles In- volved and their Application, 29 Engravings.
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FARM WORK SHOPS.
STREET TREES, .....
HILDRETH'S GANG PLOW, ... 1 Engraving.
HILDRETH'S HORSE POWER, 2 Engravings.
CUTTING GRAFTS.
VARIOUS NOTES AND ITEMS.



## “RURAL AFFAIRS”—Volume One.

THE care with which the Contents of the successive numbers of the ANNUAL REGISTER OF RURAL AFFAIRS have been prepared, the expense laid out upon the Illustrations they contain, and the universal favor with which they have been greeted,—induce the Publishers to issue a new edition of the three numbers previous to 1858, in one volume, under the above simple and comprehensive title. The Calendar pages and Advertisements of each year, have been omitted, the quality of the paper greatly improved, and the whole subjected to careful revision. The New Volume is offered as the most comprehensive, attractive, and valuable work of its size that has yet appeared upon Rural subjects. It contains FOUR HUNDRED AND FORTY ILLUSTRATIONS, among which are the following :

Designs and Plans of Country Dwellings, .....	44	Engravings.
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Out-Buildings—Barns; Stables; Carriage, Poultry, Dairy and Smoke Houses; Piggery, &c., .....	36	“
Rustic Structures; Rock Work, &c., .....	25	“
Laying Out the Grounds of Farms, Gardens, Orchards, &c., .....	35	“
Figures of the Best Fruits of all kinds, .....	71	“
Various Processes in the Care and Culture of Fruit, .....	77	“
Trees and Ornamental Plants, .....	20	“
Improved Implements and Machines, .....	63	“
Animals of Good Breeds, and Adjuncts in their Management, ...	28	“

The remainder include Engravings on miscellaneous matters connected with the Farm or Farm-House—illustrative of processes in the Dairy, Drying Fruits, Lightning Rods, Wind Mills, Injurious Insects, Packing Trees, Shocking Grain, &c., &c.

The subjects of the above Engravings will give some idea of the contents of the work itself—of which, however, a more complete, although a very much condensed summary, may be of interest :

### Country Dwellings.

Under this head we have Fifteen Designs accompanied with Plans, in many instances of several floors, and ranging in expensiveness from the Working Man's or Tenant Cottage, at a cost of \$200, to Gothic and Italian Structures of several thousands—including Farm and Village Residences, aiming rather at neatness and taste, than mere display—at convenience and comfort within, as well as an attractive exterior. Also General Rules for Building, and Remarks on the Art of Planning a House.

### Laying Out

A Farm, Garden or Orchard, in an economical way, is a very important matter. We have four Articles on Laying Out Farms, with two general Plans,—two on Grounds around Houses and Flower Gardens,—eight on different Modes of Planting, and the Trees and Shrubs to be employed.

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**Farm Buildings.**

Eight Plans for Barns, Carriage Houses and Stables, are here presented, with Designs also for Piggery, Poultry Houses, Ashery and Smoke House,—mode of Cistern-building, of putting up Lightning Rods, &c., &c.

**Farm Implements.**

Here we have Twenty-three articles, embracing much serviceable information—including the best Mowing and Reaping Machines, Plows, Planters, &c., together with more or less about nearly all the Implements the Farmer uses; illustrated chapters on Wind Mills, Stump Machines, Steam Engines, and many other inventions of interest.

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Tables for reference are here given, including Length and Distance, Specific Gravities, Contents and Size of Cisterns, Velocity of Wind, &c.

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THE  
CULTIVATOR ALMANAC  
FOR 1860.

ASTRONOMICAL CALCULATIONS IN EQUAL OR CLOCK TIME.

ECLIPSES FOR THE YEAR 1860.

There will be four Eclipses this year, as follows:

I. An annular Eclipse of the Sun, January 22, invisible in America. Visible at and about the South Pole.

II. A partial Eclipse of the Moon, February 6, in the evening. Visible. Size 9.744 digits on the northern limb. See the annexed table for the *times*.

TABLE OF THE ECLIPSE OF THE MOON, FEBRUARY 6TH.

Principal places.	Begins.	Largest	Ends.	Principal place.	Begins.	Largest	Ends.
	H. M.	H. M.	H. M.		H. M.	H. M.	H. M.
Halifax, N. S.,	8 49	10 15	11 41	Charleston, S. C.,	7 43	9 9	10 35
Portland, Me.,	8 22	9 48	11 14	Savannah, Ga.,	7 39	9 5	10 31
Boston, Mass.,	8 19	9 45	11 11	Detroit, Mich.,	7 31	8 57	10 23
Quebec, C. E.,	8 18	9 44	11 10	Columbus, Ohio,	7 31	8 57	10 23
Providence, R. I.,	8 18	9 44	11 10	Lexington, Ky.,	7 26	8 52	10 18
Concord, N. H.,	8 17	9 43	11 9	Tallahassee, Fla.,	7 25	8 51	10 17
Montpelier, Vt.,	8 13	9 39	11 5	Indianapolis, Ind.,	7 19	8 45	10 11
Hartford, Conn.,	8 13	9 39	11 5	Nashville, Tenn.,	7 16	8 42	10 8
Montreal, C. E.,	8 9	9 35	11 1	Chicago, Ill.,	7 13	8 39	10 5
Albany, N. Y.,	8 8	9 34	11 0	Tuscaloosa, Ala.,	7 12	8 38	10 4
New-York,	8 7	9 33	10 59	Madison, Wis.,	7 5	8 31	9 57
Trenton, N. J.,	8 5	9 31	10 57	New-Orleans, La.,	7 3	8 29	9 55
Philadelphia, Penn.,	8 3	9 29	10 55	Jackson, Miss.,	7 3	8 29	9 55
Baltimore, Md.,	7 57	9 23	10 49	St. Louis, Mo.,	7 2	8 28	9 54
Washington, D. C.,	7 55	9 21	10 47	Iowa City, Iowa,	6 56	8 22	9 48
Richmond, Va.,	7 53	9 19	10 45	Little Rock, Ark.,	6 55	8 21	9 47
Raleigh, N. C.,	7 48	9 14	10 40	Oregon City, Or.,	4 59	6 25	7 51
Pittsburg, Pa.,	7 43	9 9	10 35	San Francisco, Cal.,	4 53	6 19	7 45

III. A total Eclipse of the Sun, July 18th, in the morning. In the United States this will only be a *partial eclipse*, except at Astoria and the north-western part of Washington Territory, where it will be total. The line of central and total eclipse begins in the Pacific ocean, south-west of the mouth of Columbia river, in lat. 45° 40' N. and long. 125° 55' W. of Greenwich; from thence it runs easterly and northerly through British America and Hudson's Bay, then bends southerly, crosses the Atlantic, runs through Spain and the Mediterranean sea, then into Africa, and ends by the side of the Red sea, in lat. 15° 48' 2" N. and long. 39° 47' E. of Greenwich. Its size in the Northern States will be from 6 to 7 digits, and in the South from 3 to 5 digits.

The partial Eclipse begins on the Earth in the northern and unsettled part of Texas, lat. 34° 40' 4" N., long. 25° 22' 8" W. of Washington, at the instant of sunrise. See the annexed table of this Solar Eclipse.

TABLE OF THE ECLIPSE OF THE SUN. JULY 18TH, IN THE MORNING.

PLACES.	Begins.		Ends.		PLACES.	Begins.		Ends.	
	H	M	H	M		H	M	H	M
Portland, Me., .....	7	27	9	35	Buffalo, .....	6	48	8	49
Boston, .....	7	24	9	29	Charleston, .....	6	46	8	8
Providence, .....	7	20	9	24	Detroit, .....	6	28	8	24
Hartford, .....	7	16	9	17	Cincinnati, .....	6	22	8	10
New-Haven, .....	7	14	9	16	Lexington, .....	6	23	8	4
Albany, .....	7	11	9	13	Nashville, .....	6	13	7	51
New-York, .....	7	10	9	9	Chicago, .....	6	8	8	3
Trenton, N. J., .....	7	7	9	6	Augusta, .....	6	36	7	58
Philadelphia, .....	7	3	8	59	New-Orleans, .....	6	1	7	20
Baltimore, .....	6	58	8	47	St. Louis, .....	5	57	7	37
Washington, .....	6	56	8	45	San Francisco, .....	{ Sun rises }		5	29
Raleigh, .....	6	51	8	24	Portland, Or., .....	{ eclipsed. }		5	39

IV. A partial Eclipse of the Moon, August 1st, at 17 minutes past 12, (noon,) Washington time; hence invisible in America, but visible to our antipodes.

## TIDE TABLE.

The Calendar pages of this Almanac exhibit the time of high-water at New-York and Boston. To find the time of high water at any of the following places, *add to, or subtract from*, the time of high-water at New-York, as below. (There is a great deal of uncertainty about the tides, in consequence of the direction and *strength* of the winds.)

	H	M		H	M		H	M			
Albany, .....	add	6	34	Machias, .....	add	1	54	Portland, .....	add	3	12
Amboy, .....	sub.	0	39	Marblehead, .....	add	1	49	Portsmouth, .....	add	3	10
Annapolis, Md., .....	add	8	25	New-Bedford, .....	sub.	0	16	Providence, .....	sub.	0	41
Annapolis, N. S., .....	add	1	49	New-Haven, .....	add	3	3	Richmond, .....	add	8	15
Baltimore, .....	add	10	20	New-London, .....	add	1	15	Salem, .....	add	3	0
Bridgeport, .....	add	2	58	Newport, .....	sub.	0	28	Sand's Point, .....	add	3	0
Cape Split, .....	add	2	0	New-Rochelle, .....	add	3	9	Sandy Hook, N. J., .....	sub.	0	44
Eastport, .....	add	2	9	Norfolk, .....	sub.	0	41	Sunbury, .....	add	0	19
Hellgate, .....	add	1	41	Oyster Bay, .....	add	2	54	Throgg's Neck, .....	add	3	7
Holmes' Hole, .....	add	3	30	Plymouth, .....	add	2	19	Windsor, .....	add	2	49

## MORNING AND EVENING STARS.

Venus will be Evening Star until July 18th, then Morning Star the rest of the year. Mars will be Morning Star until July 17th, then Evening Star the rest of the year. Jupiter will be Morning Star until January 10th, then Evening Star until July 29th, then Morning Star the rest of the year. Saturn will be Morning Star until February 11th, then Evening Star until August 22d, then Morning Star the rest of the year.

## OCCULTATIONS.

Venus will be eclipsed by the Moon on the 24th of April, visible generally throughout the country. The planet will disappear behind the Moon at 8h. 33m. in the evening, and reappear at 9h. 3m., Washington mean-time.

Jupiter will also be eclipsed by the Moon north of lat. 43° on the 26th of April, at about an hour before the Moon sets.

## EQUINOXES AND SOLSTICES FOR 1860.

Vernal Equinox, ...	March	<sup>D</sup> 20	<sup>H</sup> 3	<sup>M</sup> 57	Autumnal Equinox, .	Sept.	<sup>D</sup> 22	<sup>H</sup> 2	<sup>M</sup> 44	e
Summer Solstice, ...	June	21	0	35	Winter Solstice, ...	Dec.	21	8	43	m

NOTE.—The Sun's declination is given, in the monthly tables, for the *instant* his center is on the meridian of Washington.

MOON'S PHASES.		Boston.	N. York.	Wash'g't'n	Sun on Meridian or Noon Mark.		
	D	H M	H M	H M	D	H M S	A
FULL MOON,.....	8	10 39 m	10 27 m	10 15 m	1	12 3 43	
THIRD QUARTER,.....	15	2 15 m	2 3 m	1 51 m	9	12 7 17	
NEW MOON,.....	22	7 33 e	7 21 e	7 9 e	17	12 10 18	
FIRST QUARTER,.....	31	0 27 m	0 15 m	0 3 m	25	12 12 34	

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

DIFFERENCE OF TIME.—When it is 12 o'clock at noon in New-York city, it is forenoon at all places west of New-York, and afternoon with all places east; as by the following table:

	A. M.	P. M.
Philadelphia,.....	11 55 52	12 28 6
Buffalo, N. Y.,.....	11 56 32	4 33 40
Charleston, S. C.,.....	11 36 40	4 55 42
Cincinnati, Ohio,.....	11 16 18	5 46 3
New Orleans, La.,.....	10 55 40	7 17 24
Oregon City,.....	8 46 40	10 49 56
Honolulu, Sandwich Islands,.....	6 24 8	12 1 44
Lubec, Me.,.....		
St. Helena,.....		
London, Eng.,.....		
Rome, Italy,.....		
Jerusalem,.....		
Calcutta,.....		
Montreal,.....		

MOON'S PHASES.				Boston.	N. York.	Wash'ton	Sun on Meridian or Noon Mark.		
	D	H	M	H	M	H	D	H	S
FULL MOON.....	6	9	51 e	9	39 e	9	27 e	1	12 13 51
THIRD QUARTER, .....	13	2	7 e	1	55 e	1	43 e	9	12 14 29
NEW MOON, .....	21	2	54 e	2	42 e	2	30 e	17	12 14 17
FIRST QUARTER, .....	29	3	11 e	2	59 e	2	47 e	25	12 13 21

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

DIRECTIONS FOR FINDING THE TRUE TIME.—The Sun is on the meridian at 12 o'clock on four days only in the year. It is sometimes as much as 10½ minutes before or after 12 when its shadow strikes the noon-mark on the sun-dial. On each calendar page of this Almanac, is shown the exact time when the Sun reaches the meridian or the shadow the noon-mark; and in order to set a clock or watch correctly, it must, when it is noon by the sun-dial or noon-mark, be set at the time indicated in the Almanac. Thus, on the 25th of January, when the Sun is on the noon-mark, the watch must be set 12 minutes and 34 seconds past 12, which will be the true time. The practice of setting time-pieces by the rising or setting of the Sun or Moon, is not strictly correct; as the unevenness of the Earth's surface and intervening objects, such as hills and forests, near the points of rising and setting, occasion a deviation in every place, from the time expressed in the Almanac, which time is adapted to

MOON'S PHASES.		Boston.	N. York.	Wash'g't'n	Sun on Meridian or Noon Mark.		
	D	H M	H M	H M	D	H M	S
FULL MOON,.....	7	8 0 m	7 48 m	7 36 m	1	12 12	27
THIRD QUARTER,.....	14	4 25 m	4 13 m	4 1 m	9	12 10	34
NEW MOON,.....	22	9 11 m	8 59 m	8 47 m	17	12 8	19
FIRST QUARTER,.....	30	2 9 m	1 57 m	1 45 m	25	12 5	54

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

a smooth, level horizon. The only means of keeping correct time is by the use of a noon-mark or a meridian-line.

DURATION OF THE SEASONS, &c.—

	D	H	M		D	H	M
Sun in Winter Signs, .....	89	1	2	Tropical Year, .....	365	5	48
Sun in Spring Signs, .....	92	20	38	Sun North of the Equator, ..	186	10	47
Sun in Summer Signs, .....	93	14	9	Sun South of the Equator, ..	178	19	6
Sun in Autumnal Signs, .....	89	17	59	Difference, .....	7	15	46

LEAP-YEAR.—Every year, the number of which is divisible by 4 without a remainder, is a leap-year, except the last year of the century, which is a leap-year

MOON'S PHASES.		Boston.	N. York.	Baltimore	Sun on Meridian or Noon Mark.		
	D	H M	H M	H M	D	H M S	
FULL MOON, .....	5	5 16 e	5 4 e	4 52 e	1	12 3 45	
THIRD QUARTER, .....	12	8 50 e	8 38 e	8 26 e	9	12 1 25	
NEW MOON, .....	21	1 0 m	0 48 m	0 37 m	17	11 59 23	
FIRST QUARTER, .....	28	9 52 m	9 40 m	9 28 m	25	11 57 46	

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

only when divisible by 400 without a remainder. Thus the year 1900 will not be leap-year.

To ASCERTAIN THE LENGTH OF THE DAY AND NIGHT.—At any time of the year, add 12 hours to the time of the sun's setting, and from the sum subtract the time of rising, for the length of the day. Subtract the time of setting from 12 hours, and to the remainder add the time of rising next morning, for the length of the night. These rules are equally true for apparent time.

A GERMAN astronomer, Schwabe, observing for 30 years the spots upon the sun, discovered that they passed through certain phases of increase and decrease every 11 years; and that there was an intimate connection between these phases and the magnetic state of the earth.



MOON'S PHASES.	Boston.			N. York.			Wash'gt'n			Sun on Meridian or Noon Mark.		
	D	H	M	H	M	H	M	D	H	M	S	
FULL MOON,.....	5	2	18 m	2	6 m	1	54 m	1	11	56	53	
THIRD QUARTER,.....	12	2	32 e	2	20 e	2	8 e	9	11	56	12	
NEW MOON,.....	20	2	2 e	1	50 e	1	38 e	17	11	56	9	
FIRST QUARTER,.....	27	3	21 e	3	9 e	2	57 e	25	11	56	42	

DAY OF MONTH.	DAY OF WEEK.	Sun's declens. N.	CALENDAR For Boston, N. England, New-York State, Mi- chigan, Wiscon., Iowa and Oregon.				CALENDAR For N. York City, Phi- ladelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				CALENDAR For Washington, Mary'ld, Virg'a, Kent'y, Miss'ri, and California.			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	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
1	T	15 17 43	4 54	6 59	2 38	7 56	4 59	6 55	2 38	4 42	5 26	52	2 37	
2	W	15 35 35	4 53	7 0	3 2	8 53	4 58	6 56	3 3	5 39	5 16	53	3 4	
3	T	15 53 8	4 51	7 1	3 28	9 47	4 57	6 57	3 30	6 33	5 06	54	3 33	
4	F	16 10 27	4 50	7 2	3 59	10 37	4 56	6 58	4 0	7 23	4 59	6 55	4 4	
5	S	16 27 30	4 49	7 3	rises	11 23	4 55	6 59	rises	8 9	4 58	6 56	rises	
6	S	16 44 16	4 48	7 4	9 16	ev. 13	4 54	7 0	9 10	8 59	4 57	6 56	9 4	
7	M	17 0 47	4 47	7 5	10 17	1 4	4 53	7 1	10 11	9 50	4 56	6 57	10 4	
8	T	17 17 0	4 46	7 6	11 7	1 53	4 52	7 2	11 1	10 39	4 55	6 58	10 55	
9	W	17 32 56	4 45	7 7	11 47	2 41	4 51	7 3	11 42	11 27	4 54	6 59	11 36	
10	T	17 48 35	4 44	7 8	uorn	3 33	4 50	7 4	morn	ev. 19	4 53	7 0	morn	
11	F	18 3 55	4 43	7 9	19	4 23	4 49	7 5	14	1 9	4 52	7 1	10	
12	S	18 18 58	4 42	7 10	44	5 11	4 48	7 6	41	1 57	4 51	7 2	38	
13	S	18 33 45	4 41	7 11	1 6	6 2	4 47	7 7	1 4	2 48	4 50	7 3	1 2	
14	M	18 48 8	4 40	7 12	1 26	6 51	4 45	7 8	1 25	3 37	4 49	7 4	1 24	
15	T	19 2 15	4 39	7 13	1 47	7 38	4 44	7 9	1 47	4 24	4 48	7 5	1 47	
16	W	19 16 3	4 38	7 14	2 5	8 23	4 43	7 10	2 7	5 9	4 47	7 6	2 8	
17	T	19 29 31	4 37	7 15	2 28	9 11	4 42	7 11	2 30	5 57	4 46	7 7	2 33	
18	F	19 42 39	4 36	7 16	2 51	9 56	4 41	7 12	2 55	6 42	4 45	7 7	3 1	
19	S	19 55 27	4 35	7 17	3 21	10 41	4 40	7 13	3 26	7 27	4 44	7 8	3 31	
20	S	20 7 55	4 35	7 18	sets	11 26	4 39	7 14	sets	8 12	4 44	7 9	sets	
21	M	20 20 2	4 34	7 19	8 48	uorn	4 38	7 15	8 42	9 1	4 43	7 10	8 35	
22	T	20 31 48	4 33	7 20	9 45	15	4 37	7 16	9 39	9 51	4 42	7 10	9 33	
23	W	20 43 13	4 32	7 21	10 33	1 5	4 36	7 17	10 28	10 39	4 42	7 11	10 22	
24	F	21 54 17	4 31	7 22	11 14	1 53	4 35	7 18	11 9	11 30	4 41	7 12	11 4	
25	F	21 4 59	4 30	7 23	11 48	2 44	4 35	7 19	11 44	morn	4 40	7 13	11 41	
26	S	21 15 19	4 29	7 24	morn	3 38	4 34	7 20	morn	24	4 40	7 14	morn	
27	S	21 25 17	4 28	7 25	16	4 34	4 33	7 21	13	1 20	4 39	7 14	11	
28	M	21 34 53	4 28	7 26	41	5 30	4 33	7 22	40	2 16	4 38	7 15	40	
29	T	21 44 7	4 27	7 27	1 5	6 27	4 32	7 23	1 6	3 13	4 38	7 16	1 6	
30	W	21 52 58	4 26	7 28	1 30	7 28	4 31	7 24	1 32	4 14	4 37	7 16	1 34	
31	T	22 1 26	4 26	7 28	1 56	8 23	4 31	7 25	1 59	5 9	4 37	7 17	2 2	

MEASURES OF SPACE.—A circle contains 360 degrees; a degree 60 minutes; a minute 60 seconds, &c.; consequently a semicircle contains 180 degrees; a quadrant, 90 degrees; a sextant, 60 degrees; and an octant, 48 degrees; a right angle contains, or is measured by, 90 degrees, and two right angles by 180 degrees. The circumference of a circle is nearly 3 1-7 times its diameter, or more accurately, 3 1416 times; in other words, this number is the circumference of a circle, whose diameter is unity; consequently the diameter of a circle is nearly 7-22, or more accurately, .31831 of its diameter. In France the circle is frequently divided into 400 degrees, a degree into 100 minutes, and a minute into 100 seconds, &c. The latter is called the centesimal system, and the former the sexagesimal; consequently, 1 centesimal degree contains

MOON'S PHASES.				Boston.	N. York.	Baltimore.	Sun on Meridian or Noon Mark.		
	D	H	M	H	M	H	D	H	M
FULL MOON, .....	3	0	2 e	11	50 m	11	38 m	1	11 57 35
THIRD QUARTER, .....	11	8	20 m	8	8 m	7	56 m	9	11 58 59
NEW MOON, .....	19	0	40 m	0	28 m	0	16 m	17	12 0 39
FIRST QUARTER, .....	25	7	52 e	7	40 e	7	28 e	25	12 . 2 23

DAY OF MONTH.	DAY OF WEEK.	CALENDAR For Boston, N. England, New-York State, Michi- gan, Wisconsin, Iowa and Oregon.								CALENDAR For N. York City, Phi- ladelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.								CALENDAR For Washington, MaryPd, Virg'a, Kent'y, Miss'ri, and California.									
		Sun's declens. N.		SUN rises	SUN sets.	MOON sets	H. W. Bost.	SUN rises	SUN sets.	MOON sets	H. W. N. Y.	SUN rises	SUN sets.	MOON sets	H. W.	SUN rises	SUN sets.	MOON sets	H. W.								
		o	'	"	H	M	H	M	H	M	H	M	H	M	H	M	H	M	H	M							
1	F	22	9	3	4	25	7	29	2	28	9	22	4	31	7	24	2	33	6	8	4	36	7	18	2	37	
2	S	22	11	14	4	24	7	30	3	6	10	18	4	30	7	25	3	12	7	4	4	36	7	19	3	17	
3	M	22	24	33	4	24	7	30	rises	11	6	4	30	7	25	rises	7	52	4	35	7	19	rises				
4	M	22	31	28	4	23	7	31	8	58	11	58	4	29	7	26	8	52	8	44	4	35	7	20	8	46	
5	T	22	37	59	4	23	7	32	9	42	ev.	48	4	29	7	27	9	37	9	34	4	35	7	20	9	31	
6	W	22	44	8	4	23	7	33	10	18	1	34	4	28	7	27	10	13	10	20	4	34	7	21	10	8	
7	T	22	49	52	4	22	7	33	10	45	2	16	4	28	7	28	10	42	11	2	4	34	7	21	10	38	
8	F	22	55	13	4	22	7	34	11	9	2	59	4	28	7	28	11	7	11	45	4	34	7	22	11	4	
9	S	23	0	9	4	22	7	35	11	30	3	42	4	28	7	29	11	29	ev.	28	4	34	7	22	11	27	
10	S	23	4	41	4	22	7	35	11	49	4	25	4	28	7	29	11	49	1	11	4	34	7	23	11	49	
11	M	23	8	48	4	22	7	36	morn	5	9	4	28	7	30	morn	1	55	4	34	7	24	morn				
12	T	23	12	31	4	22	7	37	10	5	55	4	28	7	30	10	2	41	4	31	7	25	11			11	
13	W	23	15	50	4	22	7	37	30	6	44	4	28	7	31	32	3	31	4	34	7	25				34	
14	T	23	18	44	4	22	7	38	52	7	37	4	28	7	31	55	4	23	4	34	7	26				58	
15	F	23	21	13	4	22	7	38	1	21	8	31	4	28	7	32	1	25	5	17	4	33	7	27		1	29
16	S	23	23	18	4	22	7	38	1	54	9	25	4	28	7	32	1	59	6	11	4	33	7	27		2	4
17	S	23	24	58	4	22	7	39	2	35	10	20	4	28	7	33	2	41	7	6	4	33	7	28		2	47
18	M	23	26	13	4	22	7	39	3	26	11	9	4	28	7	33	3	32	7	55	4	33	7	28		3	39
19	T	23	27	3	4	23	7	39	sets	morn	4	29	7	34	sets	8	48	4	33	7	28	sets					
20	W	23	27	28	4	23	7	39	9	10	2		4	29	7	34	9	5	9	39	4	34	7	28		9	0
21	T	23	27	28	4	23	7	39	9	48	53		4	29	7	34	9	45	10	26	4	34	7	28		9	40
22	F	23	27	4	4	23	7	40	10	18	1	40	4	29	7	34	10	16	11	13	4	34	7	29		10	13
23	S	23	26	15	4	23	7	40	10	45	2	27	4	29	7	35	10	44	morn	4	31	7	29		10	43	
24	S	23	25	1	4	24	7	40	11	10	3	17	4	30	7	35	11	10		3	4	35	7	29		11	10
25	M	23	23	22	4	24	7	40	11	34	4	7	4	30	7	35	11	36		53	4	35	7	29		11	38
26	T	23	21	19	4	24	7	40	11	59	5	1	4	30	7	35	morn	1	47	4	35	7	29	morn			
27	W	23	18	51	4	25	7	40	morn	5	58	4	30	7	35	2	2	44	4	35	7	29				5	
28	T	23	15	58	4	25	7	40	29	7	0		4	31	7	35	33	3	46	4	36	7	29			37	
29	F	23	12	42	4	25	7	40	1	4	8	2	4	31	7	35	1	9	4	48	4	36	7	29		1	14
30	S	23	9	0	4	25	7	40	1	48	9	5	4	31	7	35	1	52	5	51	4	36	7	29		1	58

54 sexagesimal minutes; 1 centesimal minute, 32.4 sexagesimal seconds; 1 centesimal second, 324 of a sexagesimal second; and also 1 sexagesimal degree contains 1 1-9 centesimal degree; 1 sexagesimal minute, 1.85185 centesimal minute; and one sexagesimal second, 3 08641 centesimal seconds. A mean sexagesimal degree of the terrestrial meridian measures 69.045 imperial inches.

MEASURES OF TIME AND MOTION.—A Mean Solar day is the mean apparent time of one revolution of the earth on its axis; and it is divided into 24 hours; an hour into 60 minutes; and a minute into 60 seconds, &c.; hence the mean daily apparent motion of the sun is 15 degrees per hour, or 1 degree in 4 minutes of time. A Sidereal day is the real and invariable period of the diurnal rotation, and contains 23 hours, 56 minutes, 4 1-10 seconds of mean solar time. A Tropical year is the period

MOON'S PHASES.	Boston.			N. York.			Wash'g't'n			Sun on Meridian or Noon Mark.		
	D	H	M	H	M	H	M	D	H	M	S	
FULL MOON,.....	2	11	23 e	11	11 e	10	59 e	1	12	3	35	
THIRD QUARTER,.....	11	1	14 w	1	2 m	0	50 m	9	12	4	56	
NEW MOON,.....	18	9	36 m	9	24 m	9	12 w	17	12	5	51	
FIRST QUARTER,.....	25	0	56 m	0	44 m	0	32 m	25	12	6	13	

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

of one revolution of the earth in its orbit, and contains 365 days, 5 hours, 48 minutes, 49.19 seconds of mean solar time. The seconds' pendulum makes 86,400 vibrations in a mean solar day at the same place on the earth's surface.

VEGETABLE PRODUCTS OF THE UNITED STATES.—The official statistics show that the crop of Indian corn amounted in 1855 to 600,000,000 bushels, valued at \$360,000,000. The crop of wheat is 165,000,000 bushels, valued at \$247,500,000. Oats, 170,000,000 bushels, value \$65,000,000. Potatoes, 110,000,000 bushels, value \$41,250,000. Rice, 200,000,000 lbs., value \$101,000,000. Cane sample sugar, 580,000,000 lbs., value \$37,350,000. Cotton, 1,700,000,000 lbs., value \$136,000,000. Hay and fodder, 16,000,000 tons,

MOON'S PHASES.	Boston.			N. York.			Wash'g'tn			Sun on Meridian or Noon Mark.		
	D	H	M	H	M	H	M	H	M	D	H	M
FULL MOON,.....	1	0	49 e	0	37 e	0	25 e	1	12	6	0	0
THIRD QUARTER,.....	9	4	39 e	4	27 e	4	15 e	9	12	5	9	9
NEW MOON,.....	16	5	36 o	5	24 e	5	12 e	17	12	3	43	43
FIRST QUARTER,.....	23	8	6 m	7	54 m	7	42 m	25	12	1	45	45
FULL MOON,.....	31	4	13 m	4	1 m	3	49 m					

DAY OF MONTH.	DAY OF WEEK.	Sun's declens. N.	CALENDAR For Boston, N. England, New-York State, Mi- chigan, Wiscon., Iowa and Oregon.				CALENDAR For N. York City, Phi- ladelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				CALENDAR For Washington, Mary'd, Virg'a, Kent'y, Miss'ri, and California.			
			SUN rises	SUN sets.	MOON rises	H. W. Bost.	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
1	W	17 51 58	4 52 7	20	rises	11 19	4 56 7	16	rises	8 5	5 07 12	rises		
2	T	17 36 31	4 53 7	19	7 38	11 59	4 57 7	15	7 36	8 45	5 17 11	7 33		
3	F	17 20 47	4 54 7	18	7 58	ev. 38	4 58 7	14	7 57	9 24	5 27 10	7 56		
4	S	17 4 46	4 55 7	16	8 17	1 2	4 59 7	13	8 17	9 58	5 27 9	8 17		
5	S	16 48 29	4 56 7	15	8 37	1 44	5 07 12	8 38	10 30	5	37 8	8 39		
6	M	16 31 59	4 57 7	14	8 57	2 17	5 17 11	8 59	11 3	5	47 7	9 2		
7	T	16 15 5	4 58 7	13	9 21	2 56	5 27 10	9 24	11 42	5	57 6	9 27		
8	W	15 57 59	4 59 7	11	9 47	3 39	5 37 9	9 52	ev. 25	5	67 4	9 56		
9	T	15 40 37	5 07 10	10	10 20	4 26	5 47 8	10 25	1 12	5	77 3	10 31		
10	F	15 23 1	5 17 9	11	2 5	5 20	5 57 6	11 8	2 6	5	87 1	11 14		
11	S	15 5 9	5 27 8	11	53	6 26	5 67 5	11 59	3 12	5	97 0	morn		
12	S	14 47 3	5 37 7	morn	7 34	5 7 7	3 morn	4 20	5	106 59	6			
13	M	14 28 43	5 47 5	55	8 42	5 8 7	2 1	5 25	5	116 58	1 8			
14	T	14 10 10	5 57 4	2 5	9 45	5 9 7	0 2	6 31	5	126 57	2 17			
15	W	13 51 21	5 67 2	3 23	10 41	5 10 6	59 3 27	7 27	5	136 55	3 32			
16	T	13 32 20	5 77 1	sets	11 28	5 11 6	58 sets	8 14	5	146 54	sets			
17	F	13 13 6	5 87 0	7 13	morn	5 12 6	57 7 12	9 0	5	156 53	7 12			
18	S	12 53 39	5 96 58	7 40	14	5 13 6	55 7 40	9 45	5	166 52	7 40			
19	S	12 34 1	5 106 56	8 6	59	5 14 6	54 8 8	10 27	5	176 50	8 10			
20	M	12 14 10	5 116 55	8 34	1 41	5 15 6	53 8 37	11 13	5	186 49	8 40			
21	T	11 54 8	5 126 54	9 6	2 27	5 16 6	51 9 11	morn	5	196 48	9 15			
22	W	11 33 54	5 146 52	9 44	3 19	5 17 6	50 9 50	5	5	206 46	9 55			
23	T	11 13 30	5 156 51	10 31	4 15	5 18 6	49 10 37	1 1	5	216 45	10 43			
24	F	10 52 55	5 166 49	11 25	5 18	5 19 6	47 11 31	2 4	5	226 43	11 38			
25	S	10 32 10	5 176 48	morn	6 27	5 20 6	45 morn	3 13	5	236 42	morn			
26	S	10 11 15	5 186 46	25	7 34	5 21 6	43 31	4 20	5	246 41	37			
27	M	9 50 10	5 196 44	1 29	8 31	5 22 6	41 1 34	5 17	5	256 39	1 40			
28	T	9 28 56	5 206 42	2 35	9 27	5 23 6	40 2 40	6 13	5	266 38	2 44			
29	W	9 7 33	5 216 41	3 40	10 13	5 24 6	38 3 40	6 59	5	276 36	3 46			
30	T	8 46 2	5 226 39	4 43	10 53	5 25 6	36 4 45	7 39	5	286 34	4 47			
31	F	8 24 22	5 236 37	rises	11 26	5 26 6	34 rises	8 12	5	286 33	rises			

the value \$160,000,000. The value of domestic animals and animal products in the States is set down at \$1,500,000,000.

AGE OF ANIMALS.—A bear, dog and wolf, rarely exceed twenty years, a fox fourteen; lions and elephants are long-lived, the former sometimes reach seventy years, and the latter four hundred. An elephant captured by Alexander the Great from an Indian king, was found three hundred and fifty years subsequently, with the following inscription on him: Alexander, the son of Jupiter, had dedicated Ajax to the sun. The name of Ajax having been given to the elephant by Alexander. The average of cats is fifteen years; hares, seven or eight; squirrels the same; pigs thirty years; rhinoceros, twenty; horses average twenty-five; camels one hundred;

MOON'S PHASES.		Boston.	N. York.	Baltimore	Sun on Meridian or Noon Mark.		
	D	H M	H M	H M	D	H M	S
FULL MOON, .....	8	6 23 m	6 11 m	5 59 m	1	11 59	40
THIRD QUARTER, .....	15	1 25 m	1 13 m	1 1 m	9	11 57	0
NEW MOON, .....	21	6 41 e	6 29 o	6 17 e	17	11 54	13
FIRST QUARTER, .....	29	8 56 e	8 44 e	8 32 e	25	11 51	26

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

sheep seldom exceed ten years ; stags are long-lived ; cows, 15 years. Cuvier gives one hundred years to the whale, thirty to the dolphin. Ravens one hundred years. An eagle died at Vienna one hundred and four years old ; swans three hundred ; tortoise one hundred and seven.

WEIGHT OF WATER ON LAND.—A cubic foot of water contains 6¼ gallons, each weighing 10 lbs. If 4,000 gallons of liquid manure are applied to an acre, the cubic capacity of the application is 23 yards 9 feet, and its weight 17 tons 17 cwt. 16 lbs. This dressing, if not imbibed by the soil or allowed to run off, would cover it with a sheet of water having a depth of nearly 3-16ths of an inch, and would be equivalent to a very heavy thunder-shower.

MOON'S PHASES.		Boston.	N. York.	Wash'ton	Sun on Meridian or Noon Mark.	
THIRD QUARTER, .....	D	H M	H M	H M	D	H M S
NEW MOON, .....	7	9 21 e	6 9 e	5 57 e	1	11 49 28
FIRST QUARTER, .....	14	9 53 m	9 41 m	9 29 m	9	11 47 8
FULL MOON, .....	21	9 26 m	9 14 m	9 2 m	17	11 45 18
	29	2 6 e	1 54 e	1 42 e	25	11 44 7

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

METHOD OF PREPARING AND USING GLUE.—Set a quart of water on the fire, then put in about half a pound of good glue, and boil them gently together till the glue be entirely dissolved, and of a due consistence.

When glue is to be used, it must be made thoroughly hot, after which, with a brush dipped in it, besmear the faces of the joints as thick as possible; then, clapping them together, glide or run them lengthwise one upon another, two or three times, to settle them close; so let them stand till they are dry and firm. Parchment glue is made by boiling gently shreds of parchment in water, in proportion of one pound of the former to six of the latter, till it be reduced to one quart; the fluid is then strained from the dregs, and afterwards boiled to the consistence of glue. Isinglass

MOON'S PHASES.		Boston.	N. York.	Baltimore	Sun on Meridian or Noon Mark.		
	D	H M	H M	H M	D	H M S	H M S
THIRD QUARTER,.....	6	4 33 m	4 21 m	4 9 m	1	11 43 42	
NEW MOON,.....	12	7 52 e	7 40 e	7 28 e	9	11 44 2	
FIRST QUARTER,.....	20	4 9 m	3 57 m	3 45 m	17	11 45 16	
FULL MOON,.....	28	6 54 m	6 42 m	6 30 m	25	11 47 23	

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

glue is made in the same way; but this is improved by dissolving the isinglass in alcohol, by means of a gentle heat.

CHINA OR INDIAN INK.—Dr. Lewis, on examining this substance, found that the ink consisted of a black sediment, totally insoluble in water, which appeared to be of the nature of the purest lamp-black, and of another substance soluble in water, and which putrefied by keeping, and when evaporated, left a tenacious jelly, exactly like glue or isinglass. It appears probable, therefore, that it consists of nothing more than these two ingredients, and probably may be imitated with perfect accuracy by using a very fine jelly, like isinglass, or size, and the finest lamp-black, and incorporating them thoroughly. The finest lamp-black known is made from ivory shavings, and thence called *ivory black*.

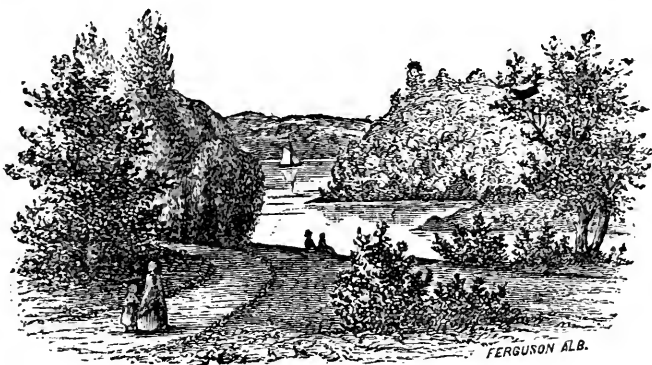
MOON'S PHASES.		Boston.	N. York.	Wash'ton	Sun on Meridian or Noon Mark.		
THIRD QUARTER, .....	D	H M	H M	H M	D	H M	S
NEW MOON, .....	5	1 17 e	1 5 e	0 53 e	1	11 49	29
FIRST QUARTER, .....	12	8 4 m	7 52 m	7 40 m	9	11 52	52
FULL MOON, .....	20	1 26 m	1 14 m	1 2 m	17	11 56	42
	27	10 33 e	10 21 e	10 9 e	25	12 0	41

DAY OF MONTH.	DAY OF WEEK.	Sun's declens. S.	CALENDAR For Boston, N. England, New-York State, Michi- gan, Wiscon., Iowa and Oregon.				CALENDAR For N. York City, Phi- ladelphia, Conn., New Jersey, Penn'a, Ohio, Indiana and Illinois.				CALENDAR For Washington, Mary'ld, Virg'a, Kent'y, Miss'ri, and California.													
			SUN rises		SUN sets.		MOON rises		H. W. Bost.		SUN rises		SUN sets.		MOON rises.									
			o	'	"	H	M	H	M	H	M	H	M	H	M	H	M							
1	S	21 56 12	7	10	4	29	7	32	1	33	7	5	4	34	7	37	10	19	6	59	4	40	7	42
2	Z	22 5 1	7	11	4	29	8	44	2	19	7	6	4	34	8	47	11	5	7	0	4	39	8	51
3	M	22 13 24	7	12	4	28	9	55	3	9	7	7	4	34	9	58	11	55	7	1	4	39	10	0
4	T	22 21 22	7	13	4	28	11	7	4	0	7	8	4	33	11	8	ev.	46	7	2	4	39	11	9
5	W	22 28 53	7	14	4	28	morn	4	53	7	9	4	33	morn	1	39	7	3	4	38	morn			
6	T	22 35 58	7	15	4	28	18	5	49	7	10	4	33	18	2	35	7	4	4	38	18			
7	F	22 42 37	7	16	4	28	1	32	6	49	7	11	4	33	1	31	3	35	7	5	4	38	1	29
8	S	22 48 48	7	17	4	28	2	47	7	49	7	12	4	33	2	44	4	35	7	6	4	38	2	41
9	S	22 54 33	7	18	4	28	4	2	8	51	7	13	4	33	3	53	5	37	7	7	4	38	3	54
10	M	22 59 51	7	19	4	28	5	21	9	52	7	14	4	33	5	16	6	38	7	8	4	38	5	11
11	T	23 4 41	7	20	4	28	6	32	10	48	7	15	4	33	6	26	7	34	7	9	4	38	6	20
12	W	23 9 3	7	21	4	28	sets	11	38	7	15	4	33	sets	8	24	7	10	4	39	sets			
13	T	23 12 58	7	22	4	28	5	39	morn	7	16	4	33	5	44	9	18	7	10	4	39	5	50	
14	F	23 16 25	7	22	4	28	6	48	32	7	17	4	34	6	53	10	4	7	11	4	39	6	58	
15	S	23 19 25	7	23	4	28	7	57	1	18	7	17	4	34	8	0	10	47	7	11	4	39	8	4
16	S	23 21 56	7	24	4	28	9	3	2	1	7	18	4	34	9	5	11	27	7	12	4	39	9	8
17	M	23 23 59	7	24	4	29	10	5	2	41	7	18	4	34	10	6	morn	7	12	4	40	10	8	
18	T	23 25 34	7	25	4	29	11	8	3	24	7	19	4	35	11	8	10	7	13	4	40	11	8	
19	W	23 26 40	7	25	4	29	morn	4	7	7	19	4	35	morn	53	7	13	4	40	morn				
20	T	23 27 19	7	26	4	30	6	4	50	7	20	4	36	5	1	36	7	14	4	41	6		4	
21	F	23 27 29	7	26	4	30	1	6	5	39	7	20	4	36	1	4	2	25	7	14	4	41	1	2
22	S	23 27 11	7	27	4	31	2	7	6	26	7	21	4	37	2	4	3	12	7	15	4	42	2	1
23	S	23 26 24	7	27	4	31	3	8	7	18	7	21	4	37	3	4	4	4	7	15	4	42	3	0
24	M	23 25 9	7	28	4	32	4	11	8	11	7	22	4	38	4	6	4	57	7	16	4	43	4	0
25	T	23 23 26	7	28	4	32	5	13	9	7	7	22	4	38	5	7	5	53	7	16	4	43	5	1
26	W	23 21 15	7	29	4	33	6	14	10	3	7	23	4	39	6	7	6	49	7	17	4	44	6	1
27	T	23 18 35	7	29	4	34	rises	10	54	7	23	4	39	rises	7	40	7	17	4	45	rises			
28	F	23 15 28	7	29	4	34	5	20	11	40	7	24	4	40	5	25	8	26	7	18	4	45	5	30
29	S	23 11 53	7	29	4	35	6	31	ev.	32	7	24	4	40	6	36	9	18	7	18	4	46	6	39
30	S	23 7 50	7	30	4	36	7	45	1	17	7	25	4	41	7	47	10	3	7	19	4	47	7	51
31	M	23 9 19	7	30	4	37	8	57	2	0	7	25	4	42	8	59	10	46	7	19	4	48	9	0

EAST AND SAFE METHOD OF DISCHARGING GREASE SPOTS FROM WOOLEN.—Fuller's earth, or tobacco-pipe clay, being first wet on an oil spot, absorbs the oil as the water evaporates, and leaves the vegetable or animal fibres of cloth clean, on being beaten or brushed well. When the spot is occasioned by tallow or wax, it is necessary to treat the part cautiously by an iron on the fire, while the cloth is drying. In some kind of goods, bran or raw starch may be used with advantage.

TO SOFTEN IVORY.—In three ounces of spirits of nitre, and fifteen of spring water, mixed together, put your ivory a soaking. And in three or four days, it will be soft so as to obey your fingers.





# ILLUSTRATED ANNUAL REGISTER

OF

## RURAL AFFAIRS.

### ORNAMENTAL PLANTING.

COUNTRY homes are of two kinds—the repulsive and the beautiful. The former are occupied by those who know nothing of domestic enjoyment, and who seek happiness in the bar-room and grog-shop. They never see any charms in the works of nature—ornamental shrubbery to them is “brush,” and flowers are only “weeds.” They never plant a rose-

bush nor a shade tree. They sometimes set out a few apple and cherry trees. But these are left to take care of themselves, and what remain after ten years, appear like those shown

in figure 1, instead of attaining the perfection seen in figure 2, as

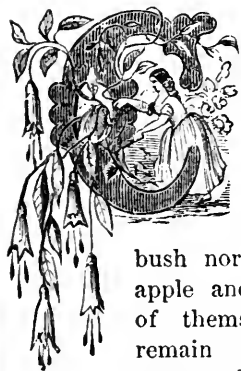


Fig. 1.



Fig. 2.

they would have done if well managed and properly cultivated. They have an especial contempt for all ornamental trees, and exclaim,

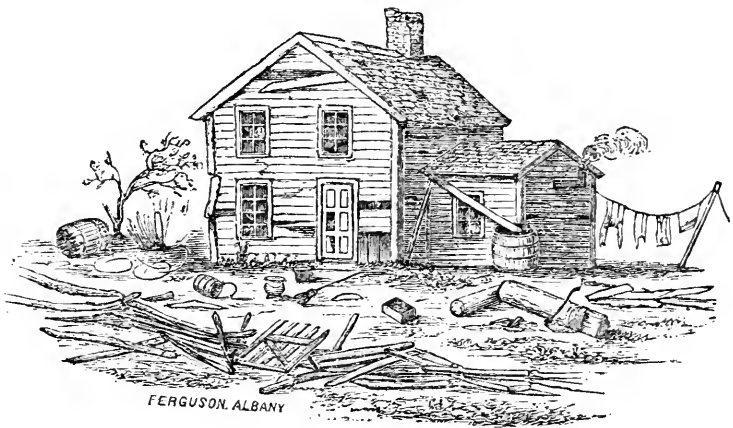


Fig. 3—*Premises of the Man "who Cares nothing for Looks" nor for the Comforts of Home.*

"What! set out trees that don't bear anything fit to eat—that are only good to look at!" Their dwellings are bleak and desolate. There is nothing about them attractive to their children, who grow up with no attachment to home, and with little appreciation of the social virtues. The first figure on this page, (fig. 3,) is a representation of all that is inviting in the homes of their childhood, and where from the earliest

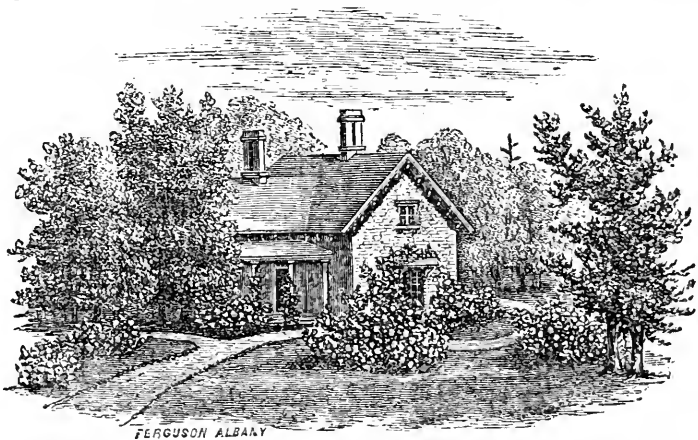


Fig. 4—*Premises of the Man who makes Home attractive to his Children.*

dawn of their forming minds, they have received most of their impressions of life. Few of them have been able to surmount these discouraging influences, and they have become coarse and unintelligent. How different might have been their character if they had been brought up under the influences of the other home represented on the same page!

This neat cottage (fig. 4) cost no more in the first place than the

dilapidated one. Its owner kept it in perfect repair, and planted and cultivated the encircling grounds during those spare moments that his neighbor who lives in the other, occupied at the tavern. Each house cost nearly a thousand dollars in building; while the planting and cultivation of the grounds about the latter, did not require an expenditure of fifty dollars.

There is now scarcely an intelligent mind who does not admit for the above reasons, the real and substantial value and utility of ornamental planting. Added to its utility, is the fascinating employment of imitating the most beautiful natural groupings of objects, by planting and arranging trees. With all these inducements, great and increased attention should be given to the subject, and it would open a world of exalted enjoyment to those who pursue it. Most fortunately, it does not require necessarily a profuse expenditure of money. As much skill may be employed in decorating the limited grounds of a cottage, at an expense within fifty dollars, as in laying out and planting a magnificent park of hundreds of acres, costing many ten thousands.

Much money is wasted in attempts to ornament the grounds of a dwelling before a well digested plan has been adopted. Alterations alone have sometimes cost more than the execution of a complete well arranged design. We have known owners to expend more in excavating and in building terraces, with a real injury in appearance, than others would in effecting the most finished improvement. In one instance the owner of a suburban residence, with the constant labor of two gardeners, succeeded in accomplishing less in the way of neat and beautiful appearance, than another with the services of a single gardener but two days in each week. The art of ornamental planting cannot be learned in a single day, but like any other art, requires much thought and study, with all the assistance that may be derived from the experience of others. Those who wish to understand the subject completely are referred to Downing, Sargent, and Kemp, for full instructions; but a short article like this may perhaps afford many useful hints to those who cannot give so much time to the subject, or whose moderate grounds and limited means may not warrant great expenditure.

In offering suggestions on this subject, it will be best to begin at the beginning, and lay down briefly a few rules for selecting a site for a dwelling. The following requisites may be regarded as important nearly in the order in which they are named, but some will transpose them more or less, according to their preferences.

1. Healthfulness.
2. Neighborhood.
3. Soil and climate.
4. Suitable site, convenience of access, &c.
5. Scenery and views.

The first is all-important, as no home comforts can atone for ruined health. The second is scarcely inferior, for a family possessing civilization and refinement cannot properly enjoy themselves when constantly exposed to the petty annoyances of vulgar and pilfering neighbors, and who are shut out entirely from the social enjoyment of such as are of a congenial character. Where a whole neighborhood unites in works for public benefit and moral improvement, the very atmosphere seems purer and more delightful, than where semi-barbarism and selfishness are the ruling influences. A *fertile soil* is all-essential to the resident who would obtain the necessaries and comforts of life from his own land; and a climate favorable to the cultivation of the finer fruits is equally so to every one who expects to enjoy a constant circle of these most wholesome and delicious luxuries. The *site*, and suitable conveniences for access, are important considerations. A low, foggy place, will be unhealthful; a high one, without shelter, will be bleak and cold; if very near a public road, it will be exposed to noise, dust, and obtrusive observation; if remote from the road, much needless traveling will be required, and not a little inconvenience will be found in time of deep snows. A gentle eminence, and a moderate distance from the public road, and the shelter of evergreens on the side of prevailing winds, will obviate most of these difficulties. A quiet side-road branching from a main highway, will often be better than directly on a great thoroughfare. Comparative nearness to places of public worship, to schools, a post-office, mill and railroad station, are each of considerable importance, and should all be taken into consideration. The value of *fine scenery* will be variously estimated; some would prize it as all-essential, while others would scarcely think of it. Some would merely covet a showy situation as seen from the nearest highway, in order to draw the admiration of travelers; others, discarding such motives, would only desire beautiful views from the windows of the dwelling or from the surrounding grounds, in order to make their homes interesting and attractive to their children.

The site having been selected, the next step is to build the house. This portion of labor does not belong to our present subject, but the plan and intentions should be well understood before the exact spot for the house is fixed upon, and its frontings determined. This precaution is essential in order to secure the finest views, and to furnish protection from winds, or from undesirable odors or unsightly objects.

Great progress has been made within a few years in the art of ornamental planting, but it is still so common to witness defects, that to point out some of these defects in the first place, will more fitly prepare the way for specific directions.

The most common error of past years, but now rapidly disappearing, is the practice of planting only in straight lines or geometric figures. Absolute stiffness reigned supreme, in the attempt to avoid any approach

towards *irregularity*. A neighbor, intelligent in other things, when he saw the first specimen of the natural mode of planting, exclaimed, "Why, Mr. T. ! you have none of your trees in rows !" He considered a want of straight lines a striking evidence of a bungler. The geometric style not only required this formal regularity, but *symmetry*, as it was termed, demanded that every object should have its corresponding one. A tree on one side must oppose just such a tree on the other side ; a row on the right was to have its accompanying row on the left. It is stated that the old gardener of the Earl of Selkirk, was so strongly imbued with this mania for symmetry, that when he shut up the thief who stole his fruit in one summer-house, he was compelled for the sake of symmetry, to put his own son in the other opposite. How immeasurably more pleasing and beautiful than this stiff and artificial mode, is the simple imitation of the beautiful and picturesque in nature, which constitutes the modern or natural style of planting.

It is not an unfrequent error to suppose that the modern style consists *merely* in *irregularity*. But irregularity without arrangement, is not taste—confusion is not the beautiful in nature. The *perfection* of art consists in producing a pleasing effect, while the art which produced it is concealed from the eye of the spectator. The scenery which artificial planting produces, may *appear* to be the accidental arrangement of agreeable parts or objects ; but it must really be the result of close study and a careful eye—in the same way that the roughly dashed work of a skillful painter, where every touch, rude and accidental as it may seem at first glance, is found on taking the whole together, to produce a most perfect and complete combination of different parts. And one great excellence of the modern style consists in its complete adaptation to all grades of residences—it does not require costly embellishments, nor a profuse outlay—the cottage resident may show as much skill in a *tasteful simplicity*, as the owner of the magnificent park in the disposition of his broad lawns and majestic forest trees.

In order to produce the best effect in grouping trees, these requisites are essential—*unity, harmony, and variety*. The following is an example



Fig. 5—*Example in Grouping.*

in illustration (fig. 5)—and the scene represented in fig. 6 on the following page, exhibiting a natural group of elms, possesses everything agreeable

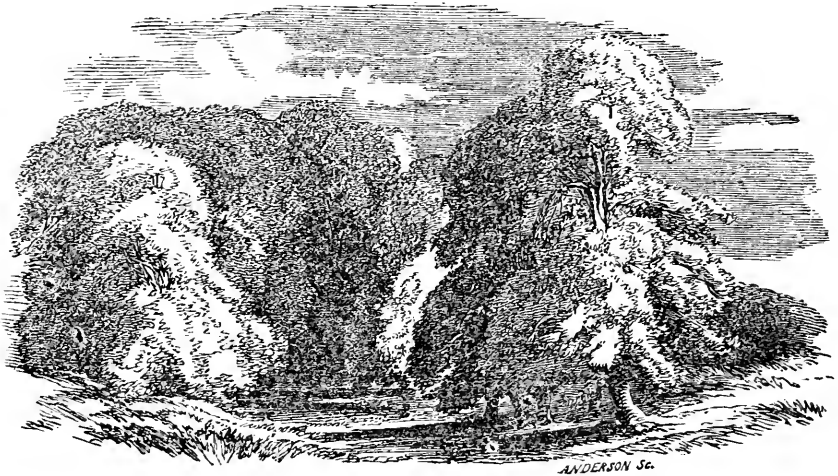


Fig. 6—Grouping Elms.

but *variety*—and it possesses much of this quality so far as the arrangement of the trees is concerned, but it lacks variety from the trees being all of one kind. For this reason the preceding example (fig. 5) is free from objection.

The next figure (fig. 7) affords an illustration of monotonous irregularity; and presents the same appearance that some grounds do after they have grown up with trees which have been planted all over without regard to effect or to open portions of lawn, or distant views

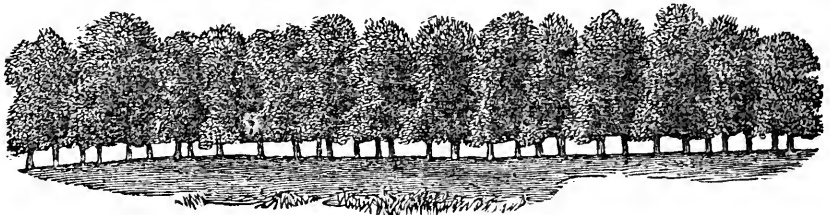


Fig. 7—Monotonous Grouping.

towards beautiful objects. On the other hand, the two following figures present fine examples of natural grouping; the first (fig. 8) exhibiting the advantage which may be taken of slight undulations in the ground, in increasing the picturesque variety which it may afford; and the second (fig. 9) a fine and exceedingly varied sky outline produced by a group of dissimilar trees, yet all supporting each other and harmonizing together.

No error is more common with those who have “a little knowledge” on the subject of planting and designing grounds, than in attempting to combine within the limits of a small place, all the different objects that

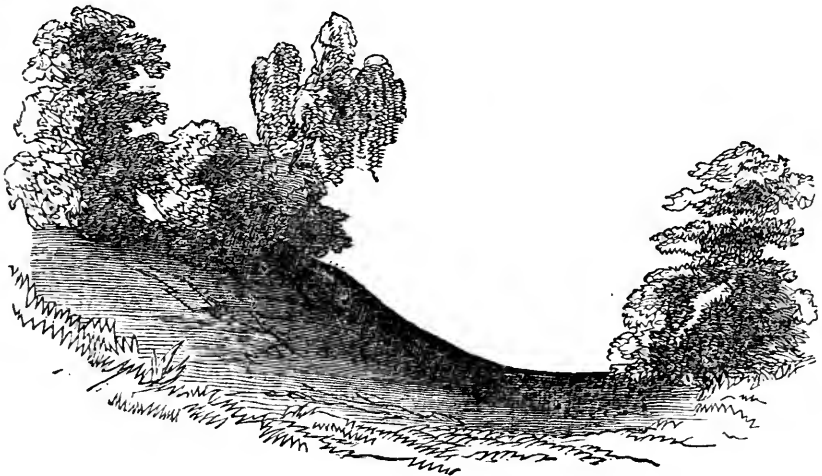


Fig. 8.

can be introduced only in extensive grounds. Neat and harmonious simplicity is sacrificed to incongruous confusion. This propensity is



Fig. 9.

sarcastically exhibited by Lowell in his account of the "*Rural Cot of Mr. Knott*," a dwelling

"'Twixt twelve feet square of garden plot,  
And twelve feet more of lawn,"

containing meadow and upland, a water view, (consisting of pump and trough,) and a woodland made up of

"Three pines stuck up askew,  
Two dead ones and a live one."

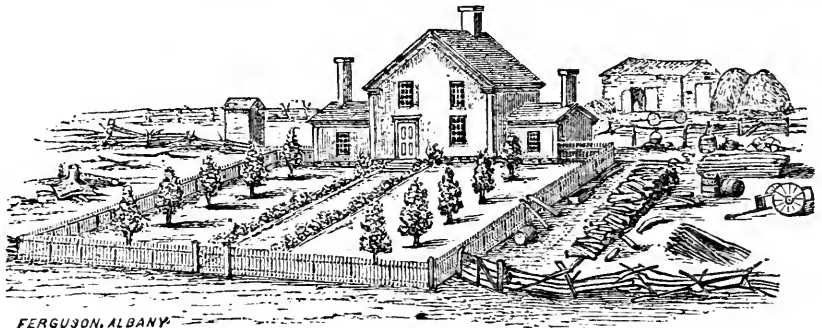
The house was built cheaply of wood, and painted in imitation of stone; but so much was expended on odd conceits and flimsy ornaments, that

"Ere many days poor Knott began  
Perforce accepting draughts that ran  
All ways—except up chimney;

The house, though painted stone to mock,  
 With nice white lines round every block,  
     Some trepidation stood in,  
 When tempests (with petrific shock,  
 So to speak,) made it really rock,  
     Though not a whit less wooden."

Among other errors often committed in the attempt to crowd many objects within a small space, is the construction of a multiplicity of walks, beyond what is useful or essential; planting trees over the whole surface, rendering the grounds uniformly spotted with them; introducing too many flower beds; making artificial mounds or terraces, instead of merely softening off the naturally varying surface; placing rustic objects in immediate connection with the house, the architecture of which does not at all harmonize with them; and especially to be avoided is the error of introducing *shams*, which will be discarded by every person of correct taste. Among these, as Kemp observes, are "artificial ruins, mere fronts to buildings, bridges that have no meaning, and for which there is no necessity," to which we may add all puny attempts at artificial rock work, which are only small heaps of stones.

Persons of more moderate pretensions, including a large portion of such as live on medium-sized farms, fall into another error. They devote to ornamental planting a square plot of ground exactly in front of the dwelling, and varying from half an acre down to two rods square. This is



FERGUSON, ALBANY.

Fig. 10—Residence with a Neat Front Yard only.

enclosed with a picket fence in the form of a *tight pen*, with one straight walk passing through the center from the front door down to a small gate opening into the public highway. Very few ever pass through this gate or enter through the front door; but carriages, wagons, and foot passengers go in at the large gate just without this square yard, and enter the house by a side or back door. The square yard is therefore often allowed to grow up with grass or weeds, and is shaded by a few cherry trees, one or two lilac bushes, and a few hollyhocks. Occasionally it is seen in much better order, with a straight and neatly-kept gravel walk lined with shrubs and flowers, and with rows of cherry and pear



trees on either side—(fig. 10.) This is, however, the only neat portion of the whole premises; for the worm-fence enclosures on the right and left, and the back yard, contain a numerous collection of cord-wood, old rails, empty boxes, barrels and barrel hoops, unburned brush, plows and sleds, wagons and carts, pails and kettles, chips, slop puddles, &c. It appears, however, like a neat and comfortable residence to the traveler who is careful to look at it only at the moment when he is exactly in front.

#### PLANS OF GROUNDS.

A small town or village residence, with only a few feet of ground, may be laid out as represented in the accompanying figures. Fig. 11 exhibits

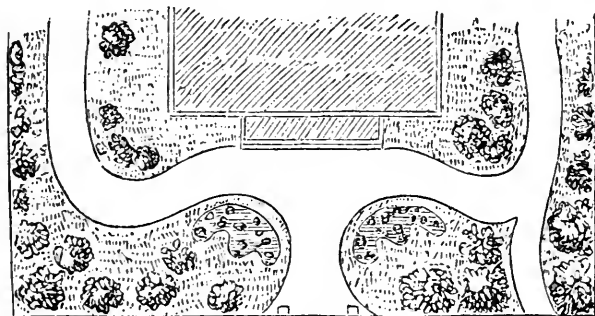


Fig. 11.

to the garden, and on the right to the kitchen and barn. A small gate on the right admits entrance to the kitchen without passing

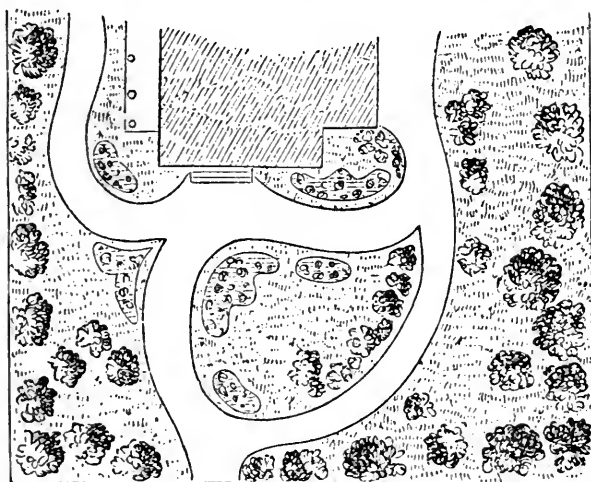
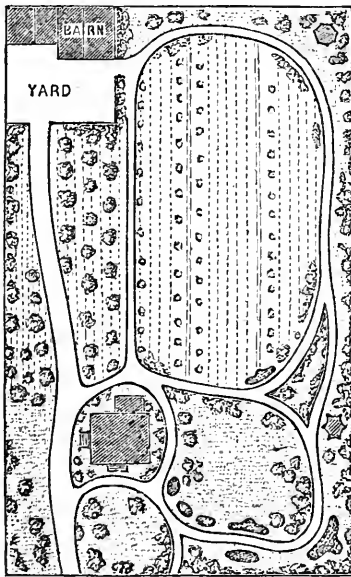


Fig. 12.

up the front walk, and the curved passage from this side-gate being closely planted with evergreens, is rendered less conspicuous. Fig. 12 is a larger place, admitting greater variety in the form of the walks, and several arabesque flower beds cut in the smooth shaven lawn. The exterior is planted with the larger shrubbery or trees, evergreens standing nearest the boundary, and growing thickly where it is desired to conceal any unsightly neighboring building or other undesirable

object, and leaving an opening where the view is of a pleasing character. In grounds of the limited extent of these two residences, perfect neatness should prevail; the soil should have been previously made deep and rich, that the trees and shrubs may grow freely with rich foliage; the part covered with grass should be smooth, (the grass seed having been sown very thickly, or at the rate of two or three bushels per acre,) and the grass mowed twice a week within half an inch of the surface, during the early part of the season, and once a week later; the gravel walk should be as smooth as a floor, slightly convex or curved upwards, and trimmed with a true curve at the edges.

Fig. 13 exhibits a plan for the grounds of a village residence, varying from half an acre to an acre, and where a horse and cow are kept. The front portion, as far back as the dwelling, is occupied with lawn, kept



13—Grounds of a Village Residence.

closely shaven, with trees and shrubs, and a few flower-beds bordering the walks. In the rear and on the left is a small orchard, through which the carriage road passes; and in the yard which it enters is the horse and carriage barn, the cow-house, and poultry-house. On the right is the fruit and kitchen garden. This is laid out so as to admit of plowing at least once a year, as well as horse-cultivation so far as may be desired. The rows of fruit trees are dwarfs, with currants and gooseberries and the other smaller fruits. The boundary of the kitchen garden is planted with roses and flowering shrubs, through which a neatly kept walk passes, thus giving the advantages of a wider extent of ornamental grounds. Converting the kitchen garden into a lawn, and providing a kitchen garden by extending the grounds to the left, would form a more perfect place.

A design for the grounds of a farm residence, where half an acre to an acre is devoted to ornamental planting, is exhibited in fig. 14. The carriage road enters nearly in front of the house, bending slightly, and forming a sweep for turning—from this the carriage may return to the road, or pass to the carriage-house in front of the barn-yard. On the left is a pear and cherry orchard planted in the quincunx manner; in front and to the right is the lawn, kept smoothly shaven and planted with trees and shrubs. These grounds are traversed by a curved walk five

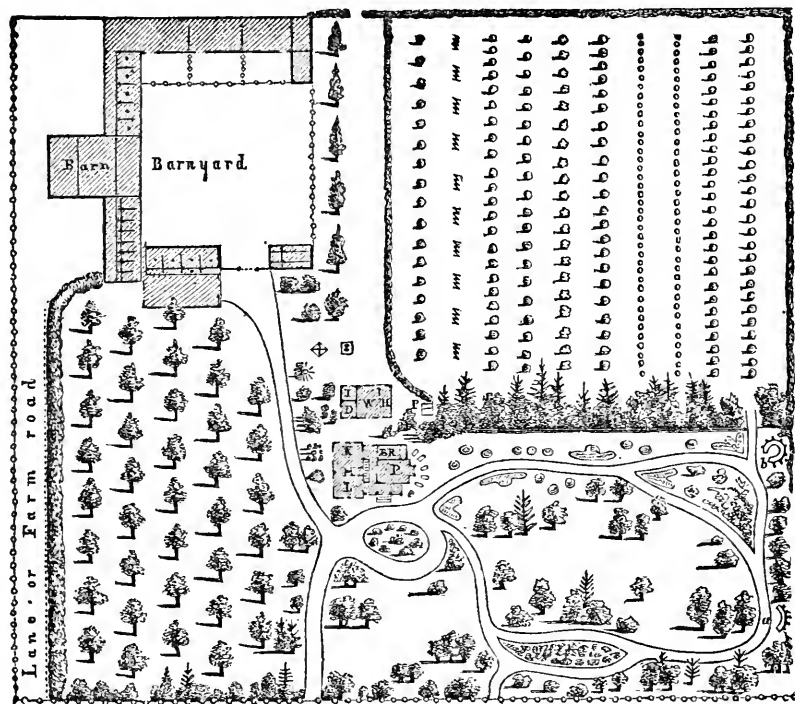


Fig. 14.

and a-half feet wide, which is bordered with several flower-beds. The boundaries are most thickly planted where the view is undesirable beyond ; and the view across the lawn is left nearly unobstructed towards the most distant points, and especially towards the seat *a*, and the summer-house *b*. In the rear of the grounds is the garden, which combines the kitchen and fruit garden for dwarf trees. They are planted in rows, and consist of dwarf pears, dwarf apples on doucain stock, gooseberries, currants and raspberries, and dwarf plums. Between these rows the ground is cultivated by horses, the garden vegetables being planted in drills to admit the passage of a narrow cultivator.

There is perhaps an imperfection in this plan. To constitute it a finished specimen of landscape gardening, the ornamental portion of the ground should lie more in the rear from the public road. A residence with ornamental grounds only towards the highway, has a shallow and ambitious appearance—indicating more desire to be admired by strangers, than to secure domestic comfort, privacy, and rural beauty. This defect, however, is not very prominent in the present plan.

Fig. 15 is the plan of about three acres occupied as a garden and ornamental grounds, belonging to a gentleman residing near Liverpool, England, and given in Kemp's Landscape Gardening. The public road

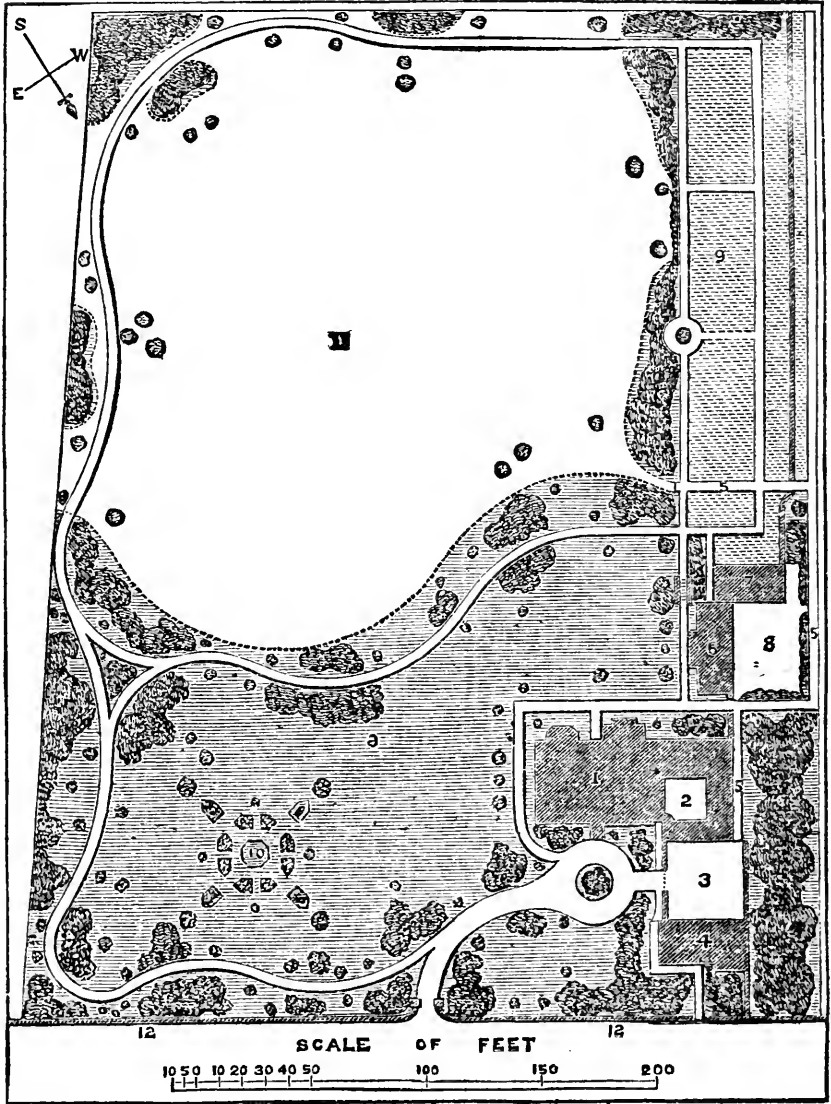


Fig. 15.

runs nearly east and west, on the north side of the dwelling; the finest views are only towards the south-east and south-west, in which direction the surface of the land descends. The house is therefore made to front those views, and not as many would absurdly make it, towards the road, which is an object possessing no interest whatever as a component part

of a beautiful natural scene. To the right of the house (1) the view is entirely obstructed by trees, which shelter from the westerly winds, and which also partly conceal the carriage-house and stables, (4) leaving a small entrance from the circular sweep to the carriage yard (3.) The carriage-sweep passes round a large ash tree. The conservatory (6) lies towards the kitchen garden (9.) The portion of the grounds nearest the dwelling, (shaded in the design,) is planted with trees, and kept as a smoothly shaven lawn; it is separated from the white or unshaded part by a wire fence at the curved dotted line, the latter being used for a sheep or other pasture. The wire fence being invisible at a short distance, the whole appears from the windows as one continuous lawn. At 10 is a fountain at a low place in the grounds, surrounded by a few regular flower-beds and beds of dwarf evergreens. These might be omitted in a place of less costly and finished character. The boundary, it will be perceived, is mostly concealed by trees, a boundary fence seen at any point being an undesirable object. The walk which extends around the pasture, and passes through the kitchen garden, is perhaps nearer this boundary in some places than true taste would admit; but it will be observed this is not only intended for purposes of utility as a pasture, but as an arable field when desired. Hence too broad a strip of land should not be taken for the passage around it.

It will be seen that this plan possesses one very important advantage over that given in fig. 14, in the broad view which it furnishes by connecting the lawn with the pasture; while the ornamental grounds in fig. 14 are narrow and limited, and obstructed by its thickly planted exterior.

Where the selection can be made, the most desirable site for a residence is where the public road passes on the north side, from which there is a slight ascent towards the house, and afterwards a considerable descent in an opposite direction and towards the finest views. This gives a more secluded character to the place, furnishes a more unobstructed and rural view across the grounds, and affords a warmer aspect for the garden and plantation.

Planting and keeping such a home as this need not be expensive. The portion immediately contiguous to the dwelling, may be neatly kept sheared once a week with the scythe. A wire fence may separate this part from the more extensive pasture beyond, which may be made to assume the character of a park by being planted with ornamental and shade trees. The view (fig. 16) at the head of the next page, represents a farm residence of the better class, surrounded with about an acre of neatly kept lawn, beyond which there are twenty or thirty acres interspersed with fine spreading trees of the chestnut, oak, black walnut, maple and ash, and which affords valuable pasturage for sheep, which keep the grass trimmed short. The reader is requested to contrast the



Fig. 16.

trees here seen, with the appearance the same would present if planted in stiff geometric rows.

The plan (fig. 17) on the following page, also copied from Kemp,\* exhibits a place where a small lake is embraced within this wire-fence boundary. This lake, which covers an acre and a-half, was made in a curious manner. Its place was occupied by a number of old marl-pits filled with clear water. These were bordered with old oaks of stunted growth, and picturesque masses of thorn, furze, and other brushwood. Many would have looked upon this as a most unsuitable place for the front of a fine mansion. With a little excavation, the pits were thrown into one for the lake; the islands being formed out of unreworked portions of the division banks. A little dressing converted the wild growth of the trees and shrubs into appropriate clothing for the islands and banks. The islands with their covering, served to diversify and conceal the boundaries of the lake, and impart magnitude, as trees alone perform the same office in an enclosed lawn by hiding the exterior. The house was built on a bank above the level of the water, towards which the lawn gradually sloped, and the lake formed a characteristic foreground to the somewhat level country beyond, terminated by blue hills fifteen miles distant.

#### VARIOUS DETAILS.

**LAWNS.**—The dry summers of this country preclude the greenness and freshness of the perfect lawns of England; but by deepening and enriching the soil to cause a free growth of the grass throughout the season, a great improvement may be made. In providing a lawn, therefore, the

\* We are indebted to the liberality of JOHN WILEY, for cuts of several of the plans in Kemp's admirable Treatise on Landscape Gardening, and to A. O. MOORE & Co. for several figures of trees from Downing's Landscape Gardening and London's Arboretum.

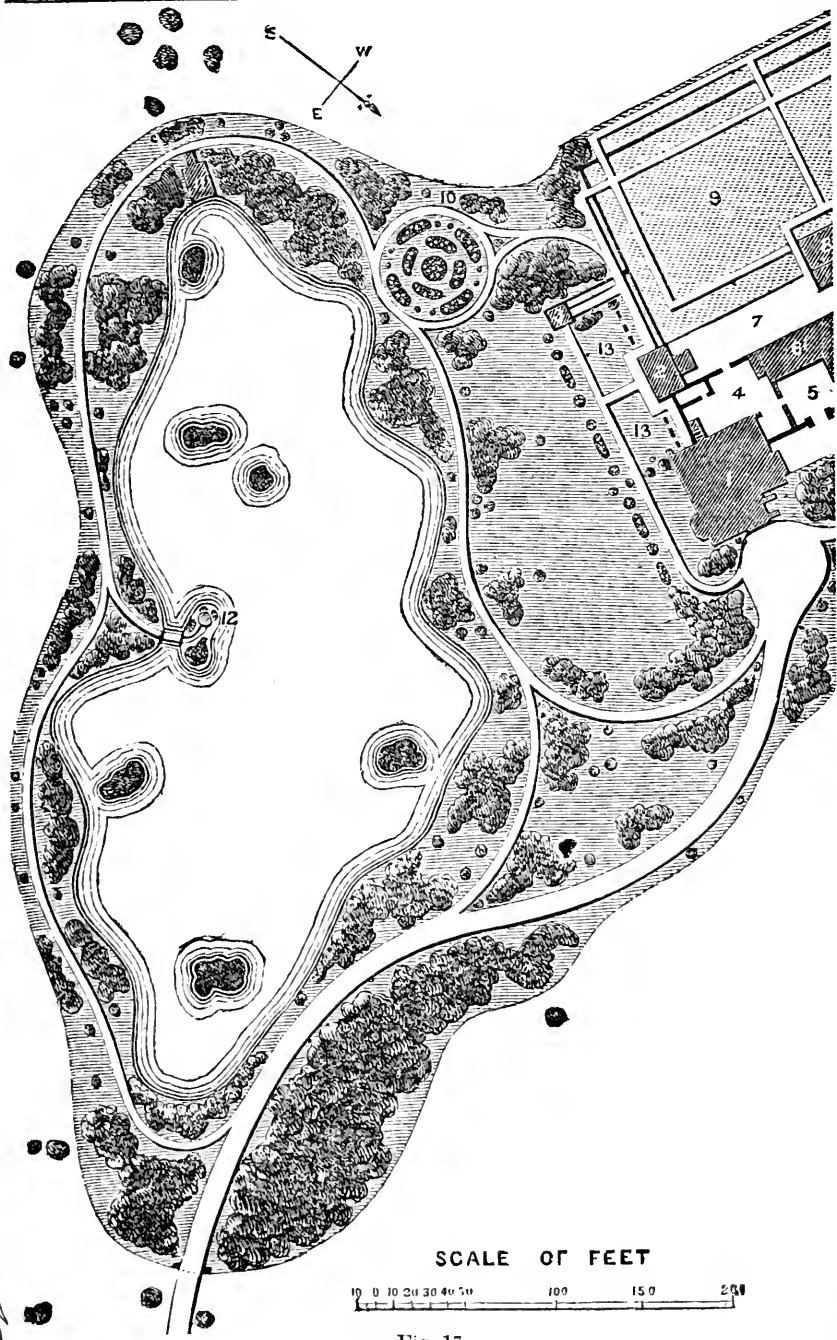


Fig. 17.

first thing is to prepare the soil by trenching or subsoiling, with the addition of fine, pulverized manure, equally mixed throughout. It is of great importance that the manure should be very evenly applied, as dark and light spots occasioned by its irregular application, destroy the beauty of a piece of grass. The seed should be sown at the rate of at least two or three bushels per acre—otherwise a fine close velvet turf cannot be secured. White clover and red-top are an excellent mixture, and the grass continues green through the summer—and to this mixture a portion of the English lawn grasses may be added, if within reach at the seed stores. Never seed down a lawn in connection with a grain crop, but sow alone, early in spring, and roll the surface, which will cover the seed if the ground is previously fine and mellow. It is scarcely necessary to urge the importance of a perfectly even surface, free from knobs or furrows. This remark does not, however, apply to the easy and graceful undulation which may be given to the ground where nature has deviated from the perfect level. No lawn can be satisfactory unless kept constantly shaven. Some who have first allowed the grass to grow several inches high, are disappointed on mowing it, to find a brown and bare appearance of the new surface. The lower portions of the grass having been shaded by the growth above, lose their greenness. But if allowed never to reach more than an inch in height, the blades will be numerous, and green down to the very roots, and the whole will appear like a dense surface of fine moss, or like velvet.

**WALKS.**—If the soil is light or gravelly, never retaining any water, a space may be dug out the width of the intended walk, and filled, first with coarse gravel, and afterwards with finer for the surface. But in most soils the walk will need additional preparation. If the surface ever retains water, the walk should be dug at least a foot deep and filled within a few inches of the surface with small or broken stone, which will form a solid and dry bottom to the gravel. Provision should be made for the



Fig. 18.

free escape of any water which may settle among these stones, by suitable underdrains. A solid stone foundation is still more important for a carriage drive covered with gravel; but to prevent small stones working up, these should be put at the bottom, and larger stones, *point upwards*, be evenly laid, between which the gravel will become wedged in by the roll of the wheels, and form a hard mass, (fig. 18.)

The above figure (fig. 19) represents a section of a gravel walk, being a little lower than the grass at the edges, and rising by a slight convexity



Fig. 19.

The above figure (fig. 19) represents a section of a gravel walk, being a little lower than the grass at the edges, and rising by a slight convexity



about two inches in the middle. In order that this convexity may be perfectly uniform, and the surface smooth, a gauge-board cut with a corresponding curvature, is used in finishing the walk. It must then be rolled hard with a cast-iron or stone roller.

It is essential to good appearance, that curved walks be entirely free from all appearance of angles or abruptness at any point. When the curve is made to increase or diminish, it should be done gracefully and uniformly. It is usually accomplished in practice by first drawing the plan on paper, and afterwards transferring it by measurement of its principal points to the ground. This is not difficult, if drawn accurately to a definite scale; short pegs being used to mark the points. Intermediate curves may be laid out with much accuracy, by sticking short pegs of

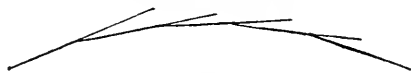


Fig. 20.

wood into the ground at equal distances from each other, but instead of being in a straight line, let each one deviate a certain uniform distance from the right line, and a true curve will be formed. When it is desired to change from a short to a longer curve, gradually increase the distance between the pegs, (fig. 20.)

The following rules for designing curved walks should always be observed:

1. They should never follow closely a boundary fence, and where they pass near it, it should be hid by the foliage of trees, of which that of evergreens is most dense.

2. They should never bend without an obvious reason—either to avoid a change of level, a group of trees, a mass of shrubbery, a flower-bed, or to reach a distant object not lying directly before the spectator. Unmeaning curves, or zig-zag undulations, should be especially avoided.

3. Where short curves occur, the walk should be hidden except immediately before the spectator; otherwise the increased distance may appear tiresome.

4. Walks running nearly parallel should be entirely hidden from each other.

5. They should have some definite object to reach, as a summer-house, arbor, or interesting point of view. "A walk that leads nowhere," says a late writer, "or ends in nothing, is always unsatisfactory."

6. Planting should be dense along such parts of the walk as require the concealment of unsightly objects, and open whenever fine prospects may be brought into view.

7. A rise or fall in the surface of the ground where suitable, may be made to add much to the variety of the scenery; but a sudden rise or depression should be carefully avoided.

8. If walks separate, the branch should pass off at an outward curve, and they should take, as Repton observes, a decided turn from each other,

so as not to seem as if they would soon unite again. This rule is not applicable to a mere temporary diversion, as around a circular bed or mass of shrubbery.

**THE BALDNESS OF NEW PLACES.**—The remorseless manner in which the native trees have been totally cleared away from country residences, has left most of them in a very bleak and unsheltered situation. A neighbor had a fine natural oak grove before his house, but being strongly imbued with the cut-and-slash mania, chopped them all down, and then planted a row of maples in their place, which would require about thirty years to attain the size of the oaks. Sir Joshua Reynolds said he would paint Folly in the shape of a boy climbing over a high fence with an open gate close at his side. He might have done it more effectually by representing an American land-owner cutting down all his native shade trees, that he might enjoy transplanted ones thirty years afterwards.

There are, however, many places where a thin natural growth of trees may be found, and among which a residence may be built. Yet with a most singular fatuity, such land-owners avoid these beautiful natural parks, and build in an open field adjacent. We witness frequent instances of this folly.

Where trees have grown up thinly, their heads have become rounded and well developed, and nothing is easier than to remove those possessing the least beauty, or which may stand in the range of fine landscape views. Even such as have grown closely together, and have shot up bare trunks, may be greatly improved in appearance in a few years, by heading them down soon after thinning out, as low as a good supply of side branches will admit, and gradually bringing them down into a fine form in successive years. The addition of other trees by planting, will soon greatly improve the appearance of the whole, and impart to the wildness and crudeness of nature, the grace and finish of an embellished landscape.

Where necessity leads to the selection of such places as have no trees, the most rapid mode of supplying the deficiency is, first to prepare the soil in the best manner by trenching or deep subsoiling, at the same time working in large quantities of old manure or compost. Then plant moderate-sized, thrifty trees, which have been carefully taken up, and keep the soil bare and mellow for a few years, foregoing the pleasure of a green turf for the sake of a more rapid growth of the trees. Large trees when set out present a more conspicuous appearance at first, and some may be interspersed, but in a short period the smaller ones will have outstripped them, and will then present a richer, more dense, and far more beautiful foliage. By selecting a portion of the most rapidly-growing sorts, as the Silver Maple, the European Larch, and the Abele, among deciduous trees; and the Norway Spruce, Scotch Pine and Austrian Pine, among evergreens, a more speedy effect will be secured.

**ROCKWORK AND RUSTIC OBJECTS.**—The grounds in immediate connection with the house should present a neat, graceful and finished appearance—unless the house itself partakes of the picturesque character of architecture, and be of small size and in the rural Gothic style. Rustic structures, rockwork, and climbing plants, and a tangled wildness of growth, should be at a distance, and be sparingly introduced unless there is a good deal of diversity in the surface of the ground, as a glen, a steep ascent, or a rocky bank. We have seen a rustic arbor, thatched with straw, most singularly out of place almost in front of a Grecian dwelling, and not unfrequently pillars and festoons of climbing and trailing plants in nearly the same relative position. The latter, with a few occasional

rustic structures, may occupy a remote portion of any ground, even if quite level, provided the planting is less trim and finished and more free and wild, in that direction, so that the transition may be gradual from one to the other.

A neat rustic summer-house is shown in the annexed plan and elevation, (fig. 21,) copied from Kemp. It is made of unbarked larch, and thatched, the seat being plank. It is about eight feet in diameter. The posts may be set in the ground, the tops sawed off even, and the rustic frame attached. One quite similar to this, but with a board roof, is shown in fig. 10 of the Register for 1858. A less formal and more picturesque structure, is represented by fig. 22 on the following page;

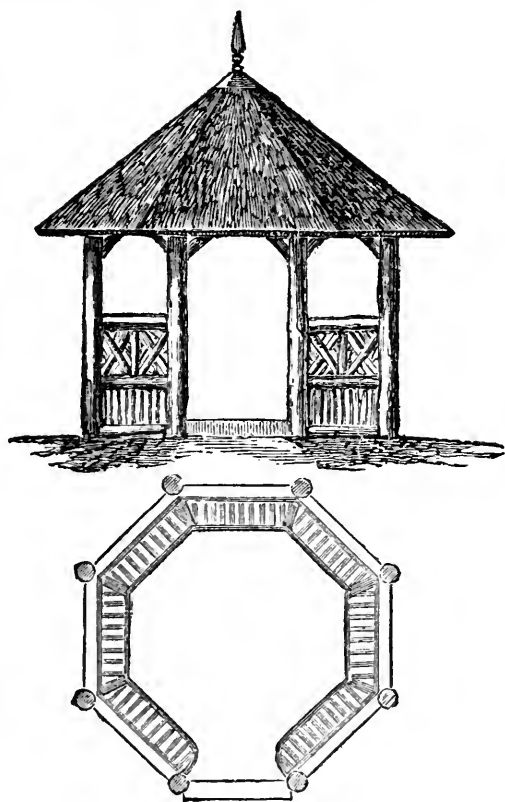


Fig. 21.

and another somewhat similar, but still more rustic in character, and embracing the trunk of a spreading tree, in fig. 23 on same page. Rustic seats, for placing under the shade of trees, are shown in figs. 24, 25, 26 and 27.

**PLANS OF GARDENS.**—The geometric style for flower gardens, not only

requires a large expenditure of labor, for it must have constant dressing, shearing, and trimming—but it always tends to convey to the spectator

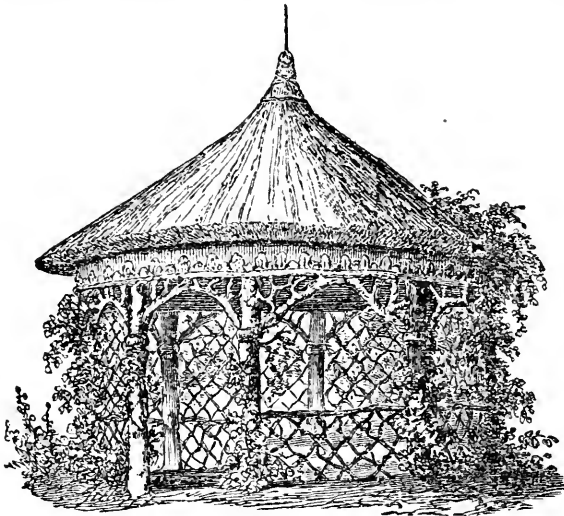


Fig. 22.

an impression of a smaller extent of ground than really exists, with the still farther disadvantage that the eye sees and comprehends the whole at once, after which there is little or no variation in the expression as seen from every part. But a garden in the modern or graceful style, requires far less labor to keep it, for it may be mostly green turf, with occasional elliptical and arabesque flower-beds cut in this turf, and it affords a constantly varying scene from every point of the walk, and by

occasional elliptical and arabesque flower-beds cut in this turf, and it affords a constantly varying scene from every point of the walk, and by



Fig. 23.



Fig. 24.

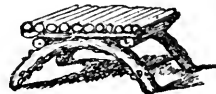


Fig. 25.

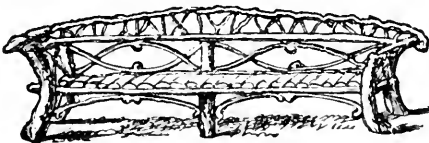


Fig. 26.

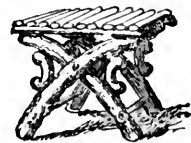


Fig. 27.

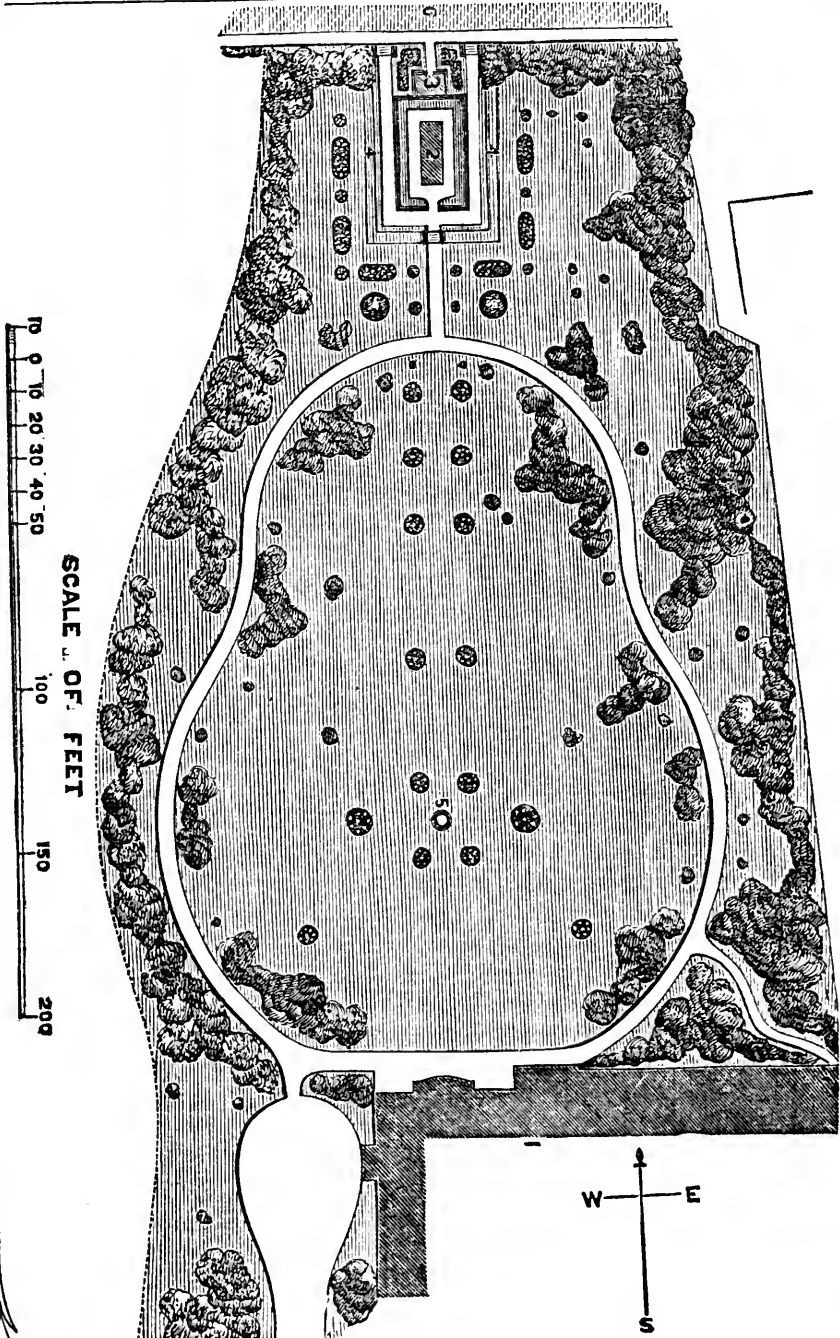


Fig. 28.

this perpetually changing scene greatly increases the apparent extent of the grounds.

The most easily managed garden is one where the beds are chiefly planted with hardy shrubs and with the larger and more vigorous growing herbaceous perennials. The mode of treating beds of this kind is pointed out on pages 201 and 299 of the first volume of Rural Affairs. A very neat and somewhat regular garden is represented on the preceding page, (fig. 28.) It is separated by a wire fence (shown by the dotted line,) from the larger portion of the lawn containing trees, and kept grazed by sheep.

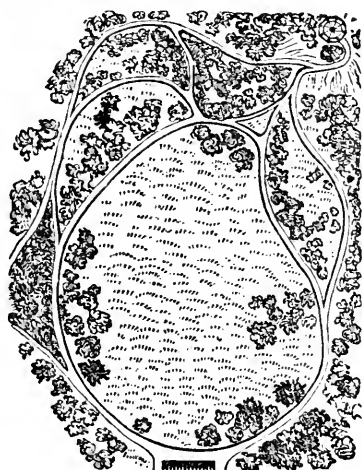


Fig. 29.

The outer portions of this garden are planted with small trees and large shrubs; the circular and oblong beds contain small flowering shrubs and herbaceous perennials, including the more brilliant bulbous species for early flowering, followed by transplanted annuals. In this design the house is at 1, green-house 2, fountain 5, kitchen garden 6.

Fig. 29 represents a picturesque garden planted wholly with trees and shrubs, having an uneven surface of ground. The parallel walks being concealed from each other, either by dense planting or by intervening ridges, the effect of great variety and extent is produced, although but half an acre is occupied. The summer-house, represented at the upper right corner, is on an eminence, and commands an extensive prospect.

#### TREES.

The limits of this short article forbid anything more than a faint allusion to the endless variety of expression which may be produced by a combination of different trees. If the whole landscape were willows, or if all were Lombardy poplars, and placed on a dead level, the prospect would be dull in the extreme. This subject has already been alluded to on a previous page; but the labors of the artist may be facilitated by observing the special character of each. They are *round-headed* like the walnut, oak and chestnut, (fig. 34); *spiry-topped*, as in the larch and several species of spruce, (figs. 30, 31, 32); *oblong-headed* as in the Lombardy poplar; and *drooping*, as in the weeping willow, weeping ash, &c. All degrees of modification in these general divisions, furnish a great diversity of outline.

The following clear, practical and interesting directions from Downing,

cannot fail to be useful to every person planting his own grounds, and in effecting the endless combinations which may be produced in arranging and grouping the many forms which different species of trees afford :

“ The only rules which we can suggest to govern the planter are these : First, if a certain leading expression is desired in a group of trees, together with as great a variety as possible, such species must be chosen

as harmonize with each other in certain leading points. And, secondly, in occasionally intermingling trees of opposite characters, discordance may be prevented, and harmonious expression promoted, by interposing other trees of an intermediate character.

“ In the first case, suppose it is desired to form a group of trees, in which gracefulness must be the leading expression. The willow alone would have the effect ; but in groups, willows alone produce sameness : in order, therefore, to give variety, we must choose other trees which, while they differ from the willow in some particulars, agree in others. The elm has much larger and darker foliage, while it has also a drooping spray ; the weeping birch differs in its leaves, but agrees in the pensile flow of its branches ; the common

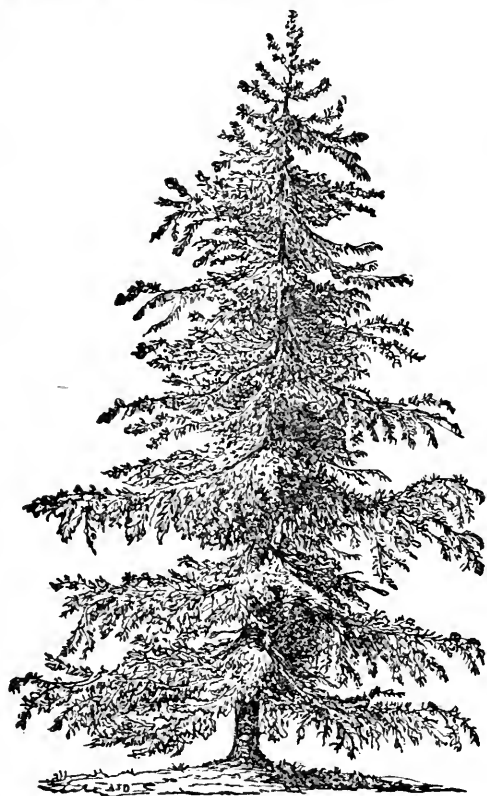


Fig. 30—EUROPEAN LARCH.

birch has few pendant boughs, but resembles in the airy lightness of its leaves ; and the three-thorned acacia, though its branches are horizontal, has delicate foliage of nearly the same hue and floating lightness as the willow. Here we have a group of five trees, which is, in the whole, full of gracefulness and variety, while there is nothing in the composition inharmonious to the practiced eye.

“ To illustrate the second case, let us suppose a long sweeping outline of maples, birches, and other light, mellow-colored trees, which the improver wishes to vary and break into groups, by spiry-topped evergreen trees. It is evident that if these trees were planted in such a manner as

to peer abruptly out of the light-colored foliage of the former trees, in dark or almost black masses of tapering verdure, the effect would be by no means so satisfactory and pleasing, as if there were a partial transition from the mellow, pale green of the maples, &c., to the darker hues

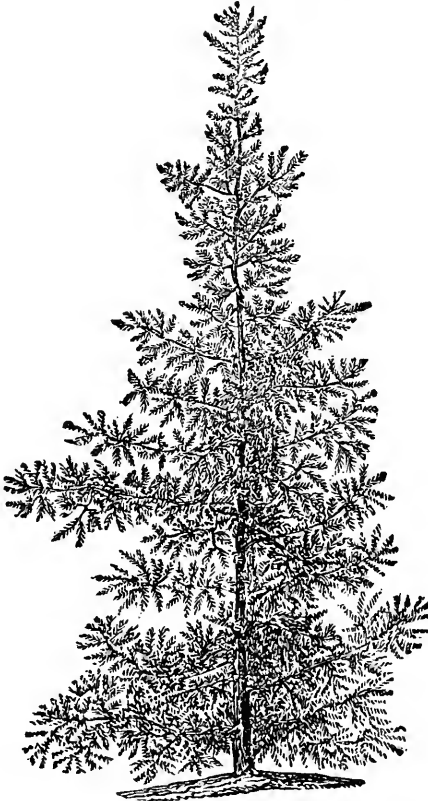


Fig. 31—BALSAM FIR.

of the oak, ash, or beech, and finally the sombre tint of the evergreens. Thus much for the coloring; and if, in addition to this, oblong-headed trees, or pyramidal trees, were also placed near and partly intermingled with the spiry-topped ones, the unity of the whole composition would be still more complete.\*

“Contrasts, again, are often admissible in woody scenery, and we would not wish to lose many of our most superb trees, because they could not be introduced in particular portions of landscape. Contrasts in trees may be so violent as to be displeasing; as in the example of the groups of the three trees, the willow, poplar, and oak; or they may be such as to produce spirited and pleasing effects. This must be effected by planting the different divisions of trees, first, in small leading groups, and then by effecting a union between the groups of different character, by intermingling

those of the nearest similarity into and near the groups; in this way, by easy transitions from the drooping to the round-headed, and from these to the tapering trees, the whole of the foliage and forms harmonize well.”

**SAVING EXPENSE.**—A few of our countrymen expend yearly in preserving the finish and fine cultivation of their ornamental grounds, from

\* We are persuaded that very few persons are aware of the beauty, varied and endless, that may be produced by arranging trees with regard to their coloring. It requires the eye and genius of a Claude or a Poussin, to develop all these hidden beauties of harmonious combination. Gilpin rightly says, in speaking of the dark Scotch fir, “with regard to color in general, I think I speak the language of painting, when I assert that the picturesque eye makes little distinction in this matter. It has no attachment to one color in preference to another, but considers the beauty of all coloring as resulting, not from the colors themselves, but almost entirely from their harmony with other colors in their neighborhoods. So that as the Scotch fir tree is combined or stationed, it forms a beautiful umbrage or a murky spot.”



five to ten thousand dollars. The majority of country residents do not, however, expect to devote a hundredth part of this amount. It is worthy

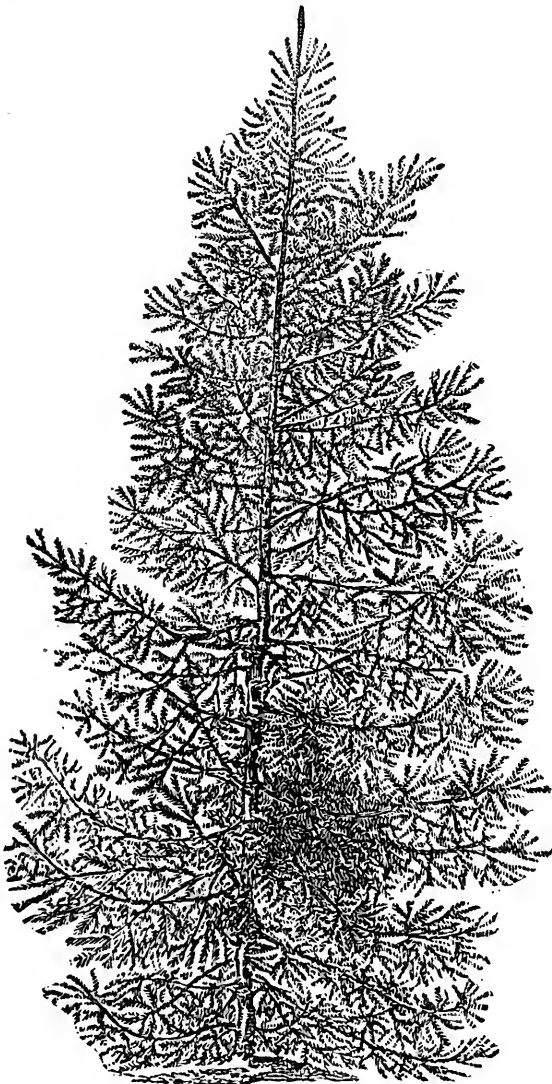


Fig. 32—NORWAY SPRUCE.

of attention to examine how cheaply the delights of ornamental planting may be obtained. Every owner of a place should determine well beforehand what he has to perform. He must carefully count the cost; for nothing can be much worse than to lay out an extensive flower-garden or a plantation of shade trees, and leave it unfinished, rough with neglect, and covered with weeds. A very little, in the best order, is better than ambitious shabbiness. Be especially careful, therefore, not to plan more than there is ample provision in labor to neatly execute.

An acre of ornamental planting may be kept by different owners after a different manner, each perfect in its way, but widely varying in the required expenditure. If occupied chiefly with flower-beds and gravel walks, and the succes-

sion of flowers is maintained throughout the season by re-planting from reserve grounds, several gardeners would be required. If the grounds are, however, kept mostly in turf, with some shade trees, and a few neat beds of shrubs and flowering plants properly interspersed, the



Fig. 33—HONEY LOCUST.

labors of one man would fully answer the purpose.\* Grounds of a still cheaper character might again be sufficiently attended to, if allowed to



Fig. 34—WEeping ASH.

partake more of the wildness of the picturesque, presenting a more uneven surface, denser and more varied planting, giving little artificial symmetry to any of the trees, festooning them in some of the wilder parts with climbers, and allowing some underbrush to grow beneath them. The smaller portion of grass lying between them would grow less rapidly than when wholly exposed, and need less frequent

\* An acquaintance residing at one of our smaller cities, succeeded in keeping one of the neatest half acres of garden we ever met with, (which was a perfect velvet of turf, with walks, and a few broad flower-beds,) with the labors of one gardener only, a day and a-half each week.

mowing. The gravel walks, however, which traverse these grounds, should be kept studiously neat, or the whole will have a neglected and decayed appearance. It would be a great error to suppose that such a piece of ground as this may be designed without careful study; nothing could afford a better opportunity for testing the combined abilities of a landscape painter's eye, and of the ornamental gardener's skill, in producing the pleasing diversity, the sky outline, the blending of light and shadow, and the changing combination of objects as seen from every advancing step of the spectator.

Most of the designs we have given of the grounds about dwellings, indicate a considerable amount of attention required for the beds of shrubs and flowers. An unobjectionable and much cheaper mode, adapted to farm residences where there is plenty of room, is to introduce shade trees only—such for example as the chestnut, oak, elm, black walnut, maples, and other natives of a similar character. Two or three acres or more of these, planted in park style, may be kept as a neat lawn by occupying them as sheep-pasture, at no expense whatever. This treatment is only adapted to such places as are already grown with these trees.

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## COUNTRY DWELLINGS.\*

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THE enjoyment to be derived from living in the country, depends in great measure upon two things—a tasteful house and a pleasant garden. Fortunately with us, these conditions of enjoyment are within the reach of every healthy, industrious man. Neither imply the presence of wealth or elegance. They are the results simply of good taste, and a certain amount of cultivation, acquired either through books, society, or observation. The poor man, evidently, may possess taste and cultivation just as truly as the man of wealth. He is, perhaps, not quite so likely to possess them; still, for him the way is open no less than for others.

The necessity that the poor man be possessed of taste and cultivation, will seem all the more urgent when we consider that they become his most available capital, and especially so when dealing with the things of nature. They are to him as gold and lands. They supply the place of elegance and luxury, and are such treasures as, without which, even elegance and luxury are nothing but tinsel and a vulgar sham, if they be not clothed with taste and made to show the hand of cultivation in all their arrangements.

It has been with the purpose of bringing to the aid of those not likely to consult more expensive and elaborate works on rural architecture—or

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\* This article and its excellent original designs, were prepared expressly for this number of the Register by Geo. D. RAND of Hartford, Conn.

if they should consult them, should find everything on too costly a scale for their purposes—that we have introduced into these pages from year to year, such designs as, in our judgment, are calculated to improve the taste and furnish some available knowledge upon the subject of building a home in the country. We have some reason to believe that our previous efforts have been widely appreciated; and we hope this further contribution may be as favorably received and as extensively useful.

We have thought it of little use to publish designs of cottages containing, besides the pantry, closets, &c., less than three rooms. No good American housewife is for any long time content with less, and no industrious, intelligent working-man, need ask his wife to take up with less. Those who are willing to live in more straightened quarters, would never look into these or any other pages for a design for such a cottage, but would build something after the style of those they were familiar with, whether it were the log cabin or the Irish laborer's shanty of turf and boards. Our designs, therefore, in this number of the Register, will begin with a cottage, which, although small, has some claims to a pleasant style of living, and which can be made tasteful as well as comfortable. Such a dwelling will be found capacious enough to rear in much refinement an ordinary family, and if substantially built, even of wood, will last two or three generations.

That the smallest of these designs may be the better appreciated, we wish to refer the reader to some remarks made in a previous number of this work, in relation to building small cottages on large farms, for the occupation of the farm laborers and their families. Since the publication of those remarks, we know of several instances where they have been acted on, and have reason to rejoice with those more directly interested, that so good and every way beneficial results have followed the adoption of the plan. We ask the owners of those large farms who take into their own families the numerous laborers whom they are compelled to employ, to consider a moment if they are pursuing the most judicious course. We acknowledge it may involve less immediate outlay than any other plan, and may in some instances be a trifle less expensive from year to year. But we will suggest once more, whether the saving be not made at the expense of many home comforts, much refinement in the increasing family, and an untold amount of drudgery for the farmer's wives and daughters, that fearfully imperils their continued good health, and reduces them to a servant's knowledge of the world about them, and how to render home attractive, and all its influences pure and healthily stimulating. We are among those who believe that a farmer's home may be as full of grace and beauty, and as suggestive of high hopes as any other. We know of no good reason why they, more than others, should yield their lives and the lives of their families, to the discomforts of a primitive style of life and the hard wearing monotony of thoughtless toil. The

easily attainable possibilities of a nobler life are so much greater than this—the way has been shown in so many living instances, and the reward reaped is so evident and satisfactory, that we are impatient that every dweller in the country should make the most of his opportunities, and labor not alone to put money in his pocket, but also to increase his knowledge, cultivate his appreciation of the beautiful in art and nature, and attune his perceptions to the fine harmonies of a well-ordered, refined life, which unites the whole family circle in constant efforts to promote the general intelligence and happiness.

Our plans and descriptions in this number occupy so much space, that we will not stop longer to discuss the general theme, but proceed to the plans at once. First we give three designs for

### WORKING-MEN'S COTTAGES.

#### DESIGN I.

In accordance with the preceding remarks, the first design we shall present, is one as compact and as moderate in size as will allow of the number of rooms specified. In the perspective view, (fig. 35,) we have chosen to represent a style of construction once very common in the older States and across the ocean, and even now regarded by the best architects as peculiarly adapted to small picturesque cottages. The side

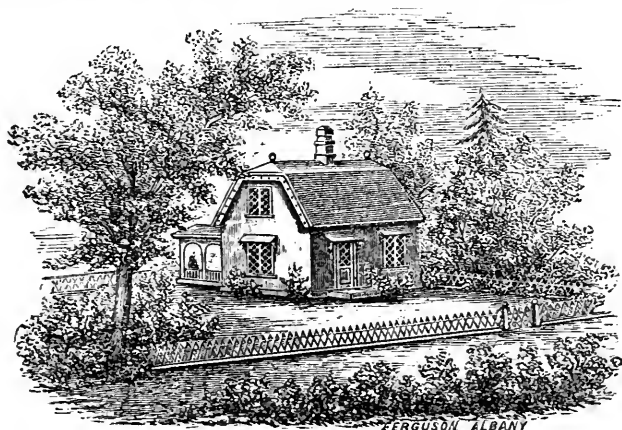


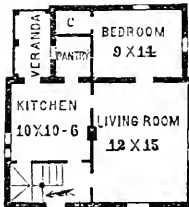
Fig. 35.

walls are only one story in height, which renders the style more suitable than story and a-half houses, when either stone, brick, or concrete is to be used. The tie-beams go directly across from plate to plate, thus preventing all spreading from the pressure of the roof, which is a fruitful source of trouble in one-and-a-half-storied houses. The steep pitch of the roof, to a height sufficient to allow of comfortable rooms in the attic, makes the chambers nearly as large and pleasant as in a house of two full stories, while the cost is considerably less, and much is also gained,

in our opinion, in the picturesque appearance of the exterior, which harmonizes so well with all our ideas of what a small unpretending cottage should be.

The main portion of the cottage is only 16 by 24 feet. A lean-to, 9½ feet in width, is added on the back side. It should be made of good height, coming just under the cornice of the main part, the roof rather flat, and hipped at the ends. One end is left unenclosed for a veranda, as may be seen by reference to the design.

The plan (figs. 36 and 37) needs little explanation. It has one or two points of superiority over most plans usually adopted in so small dwellings, which may be mentioned. It will be noticed that the front



36—PRINCIPAL FLOOR.

door opens into a pretty hall or entry, from which the chambers are reached, and which also gives access to the living-room and the kitchen. This arrangement gives an air of elegance rarely seen in such a cottage, and its mistress will readily appreciate the difference between it and the more common way of compelling every person who wishes to go up-stairs, to pass through the kitchen. The cellar, which should be under the whole of the main part, is reached by a door leading from the kitchen, under the chamber stairs. Two good bed-rooms are provided in the attic, each with ample closets.

The window and door hoods, and the verge boards, are the only non-



Fig. 38—PERSPECTIVE VIEW.

essentials of the exterior. But we believe that whoever builds a cottage like this, can poorly afford to dispense with them. Their cost need be very little, while the air of neatness, content, and rural fitness which they confer, can hardly be over-estimated. If the interior be made to correspond, by taste in its arrangement, by a few pictures and graceful curtains and flowers, a cottage as inexpensive as this may be made to express more of happiness and refinement, than can be got out of many statelier and more ambitious mansions.

The estimated cost of this cottage varies from \$250 to \$350.

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This arrangement gives an air of elegance rarely seen in such a cottage, and its mistress will readily appreciate the difference

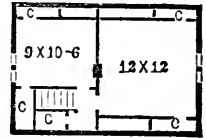


Fig. 37—CHAMBER.

between it and the more common way of compelling every person who wishes to go up-stairs, to pass through the kitchen. The cellar, which should be under the whole of the main part, is reached by a door leading from the kitchen, under the chamber stairs. Two good bed-rooms are provided in the attic, each with ample closets.

DESIGN II.

The accommodation afforded in this design, (perspective view, fig. 38,) is the same as in the preceding one, with the exception of an additional chamber.

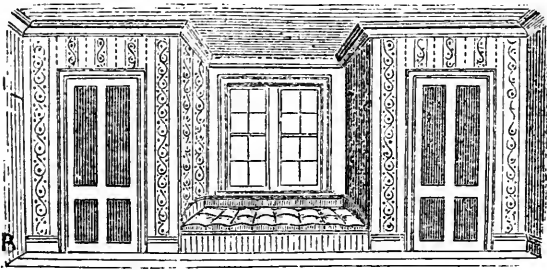


Fig. 39—WINDOW SEAT.

however, is larger, and the living-room has a pretty window-seat and two closets. This way of obtaining closets in a room which would otherwise be destitute of them, has much to recommend it. It improves the appearance of the room, while it lessens but little its apparent size. The accompanying cut (fig. 39) will give a good idea of their appearance and construction.

The kitchen, however, is larger, and the living-room has a pretty window-seat and two closets. This way of obtaining closets in a room which would otherwise be destitute of them, has much to recommend it. It improves the appearance of the room, while it lessens but little its apparent size. The accompanying cut (fig. 39) will give a good idea of their appearance and construction.

The exterior we have given to this design is a very common one, and

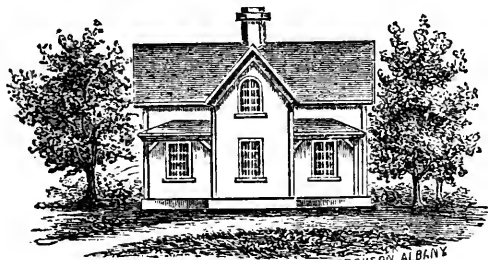


Fig. 40.

requires no explanation. It may easily be improved in appearance by carrying up the central portion of the lean-to as high as the main building, as indicated in fig. 40. This arrangement would give an additional room on the second floor.

The dotted lines in the chamber plan (fig. 42) show how it might be done. The chimney is located in the center of the house where all its heat is saved, and where



41—PRINCIPAL FLOOR.

it is accessible to the stove funnels on every side. The passage between the kitchen and the living-room may have a door on each side, so as effectually to exclude all noise, heat and odors from the kitchen. The cellar is reached from this passage, and opposite the cellar

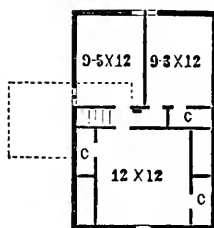


Fig. 42—CHAMBER.

door is a small closet. The cost will vary from four hundred to five hundred dollars.

DESIGN III.

This cottage is properly a suburban one, and should not be built far away from some town or village. Its form is well adapted to brick or

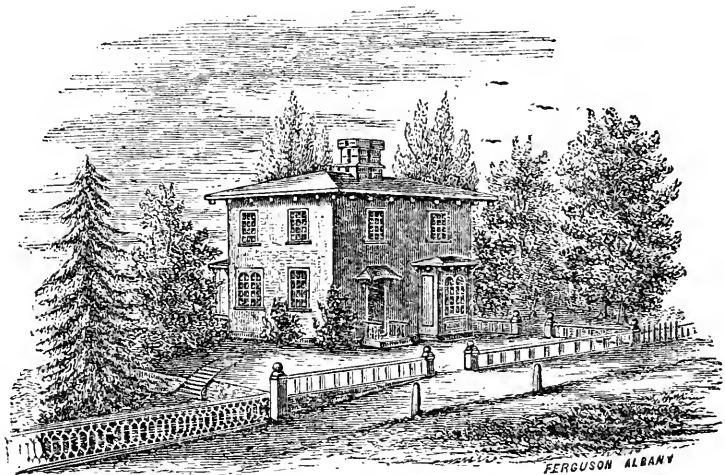
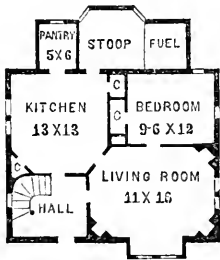
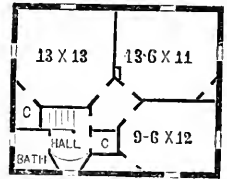


Fig. 43—PERSPECTIVE VIEW.

concrete, as it is nearly a square, and has a broad, overhanging cornice. The square bay in front, the circular-headed door and the double windows, are the distinguishing features of this cottage. The accommodation is about the same as in the two preceding designs. The hall, however, has a more villa-like breadth, and the living-room has three cases of book-shelves, which should be enclosed by glass doors. The large bay increases the size of the room, and adds greatly to its elegance. The bed-room opens from this room in the plan, but can be made to communicate also or solely



44—PRINCIPAL FLOOR.



45—CHAMBER PLAN.

The kitchen has two good closets, from one of which the cellar stairs descend, and a good-sized pantry. This pantry, and the partly enclosed veranda, and space for fuel, is simply a piazza with enclosed ends. Where neighboring houses are quite near, as is often the case in a suburban district, it is desirable sometimes that some means be adopted to ensure privacy, and we know of no better way than that here indicated.

The arrangement shown in the chamber plan (fig. 45) is a very happy one, as by no other way could so good room be obtained in the same area. The corners cut off supply the necessary closets. The hall has closet and a window-seat, and a bath-room is supplied on the left.

The entire cost will be from \$600 to \$800.



FARM HOUSES.  
DESIGN I.

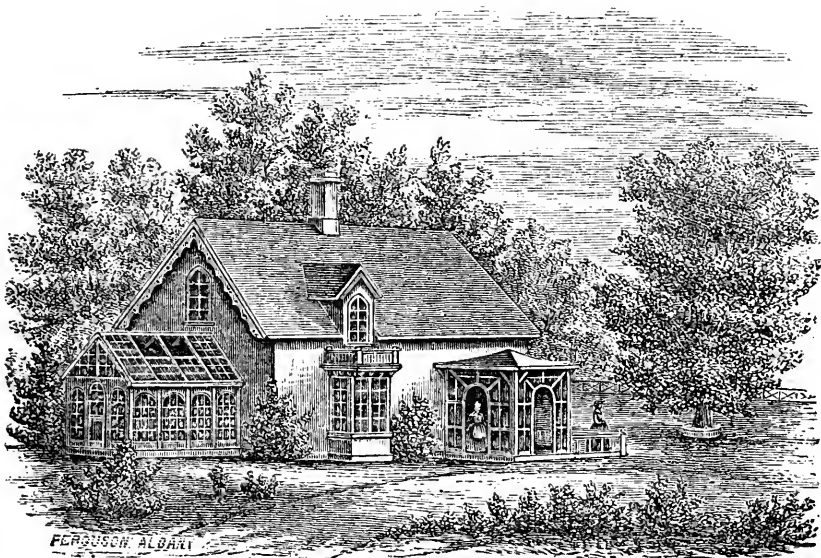


Fig. 46—PERSPECTIVE VIEW.

We present this design with some confidence that it will be found to meet the wants of a large class of farmers and other dwellers in the country. It is neither large nor costly. It has neither a pretentious nor a foreign aspect. It seems as if it might have grown out of the soil itself, so modestly does it harmonize with the best features of any cultivated landscape. Yet it is roomy enough for quite a large family, and every room is arranged for home, family enjoyment, rather than for show or for company. Any family which will adapt itself to the suggestions

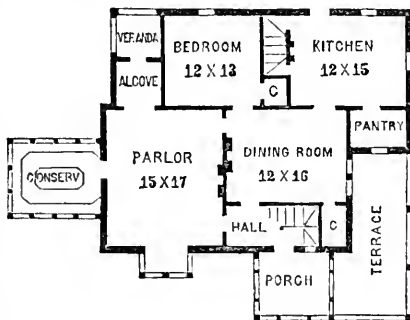


Fig. 47—PRINCIPAL FLOOR.

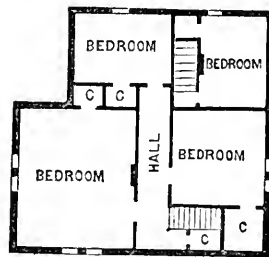


Fig. 48—CHAMBER PLAN.

of refinement and intelligence indicated by the green-house, the bay window and its crowning balcony, the latticed porch and the simple

terrace, need never want more exciting pleasures than those always at command beneath and around the old roof-tree.

The accommodation provided is an entrance hall, a parlor of fair proportions, with a bay window, a glass door through which the plants in the green-house may be seen, and an alcove, which is a small recess cut off the veranda, and only separated from the parlor by an arch, and, if preferred, a fall of drapery. On its left wall a case of books, or articles of curiosity or *vertu*, may be placed; through its farther wall a glass door leads upon a small private veranda, enclosed by a light balustrade; and at the right, a private door gives a "favored few" access to the bedroom. The dining-room with its closet, the kitchen, the back stairs and the pantry, conclude the accommodation given on the first floor, (fig. 47.) Everything in the way of a scullery, dairy, wood-room, &c., can of course be added according to the necessities of each particular case. Four good chambers (fig. 48) are supplied in the attic, each with a closet.

For details of the construction of the conservatory or green-house, see previous numbers of the Register, or special treatises on that subject. In order to give sufficient variety, we must be brief in our remarks and explanations.

The cost of this house will be from \$1200 to \$1400.

DESIGN II—ALTERATION OF AN OLD HOUSE.

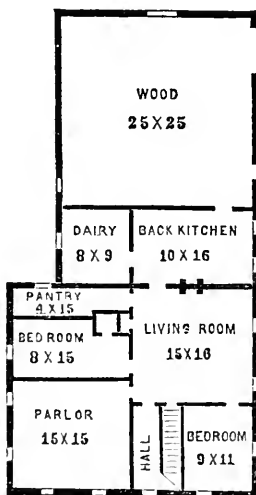


Fig. 49—PRINCIPAL FLOOR.

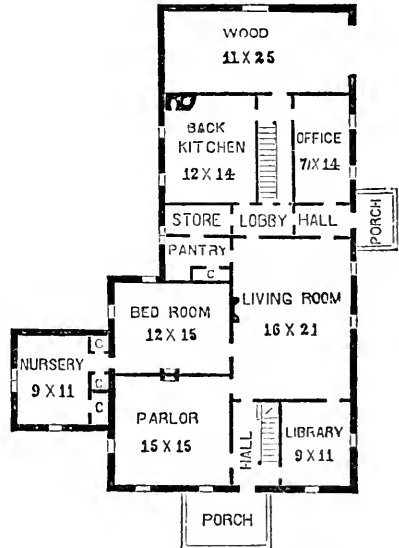


Fig. 50—THE SAME AS ALTERED.

In all parts of the country there are old-fashioned houses with awkward exteriors, and most ingeniously inconvenient in their internal

arrangements. The accompanying plan (fig. 49) is a specimen of by no means the worst of this class. It is selected because it is the copy of a house now standing in Lamoille Co., Vt., and the alteration shown in fig. 50 is there proposed to be carried out. The points of difference may be briefly stated:

The stair-case of the old house was a close one, with a door at the foot, and the hall afforded entrance to no room but the living-room. In the modified plan, the stair-case is opened, giving a more cheerful aspect to the hall, and doors conduct from it into the parlor and the small room to the right, now proposed to be used as a library and private sitting-room. The living-room is extended six feet into the ell part, and the old bedroom and pantry are thrown together, making one pleasant and roomy sleeping apartment. Beyond this room a small wing has been added for a children's bed-room. The arrangement of closets to accommodate these two rooms, can be seen on the plan. The back hall and stair-case, business office and back-kitchen, occupy part of the space formerly devoted to fuel. Room enough, however, is left for the latter purpose, as the introduction of more economical heating apparatus renders it less necessary to keep so large quantities of wood on hand, as most of our old farmers were obliged to do in the days of enormous fire-places.

We have not thought it necessary to give exterior views, as the chief object in this plan was simply to furnish a hint or two in relation to the improvement of a very common sort of house. It is a fact, however, that it requires more skill and ingenuity to alter an old house economically, and at the same time effectively, than are needed in making an entirely new design. A person of limited experience and observation ought never to go forward in such change, without consulting some person who has had both, and who has, besides, taste enough to make the new harmonize with the old. Old houses frequently, when modified in the right manner, and with a proper feeling of respect for what is venerable, become the most satisfactory of dwellings. They are associated with the past, and interlinked with pleasant memories of youth and the friends of other days. It is an enviable privilege, therefore, which he possesses who inherits an old house, which needs only a few alterations to accommodate it to a newer state of society, while it is still left in all the pride and dignity of a former generation.

### DESIGN III.

This design (fig. 51, following page,) is intended more particularly for the suburban or village residence of some professional gentleman who has a love for rural pursuits. It is also well adapted to the wants of a market gardener, and would not be out of place anywhere in the country. If the general plan suits a young man who is not able to carry out the whole design at once, it is so arranged that he need build only a portion at a time, and add the remainder as his necessities and his means increase.

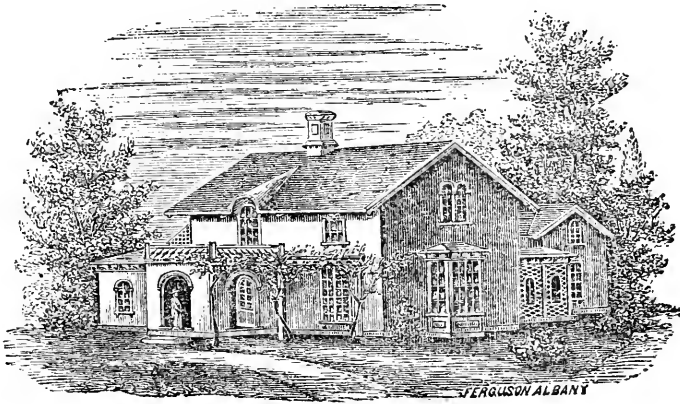


Fig. 51—PERSPECTIVE VIEW.

The rear of the house, for instance, containing the kitchen, pantry, bedroom, entry and dining-room, may first be built—an arrangement of rooms which would not only be very convenient, but would make a neat-looking cottage. In the plan as here shown, (fig. 52,) we call attention only to the green-house or conservatory, which, with a southern exposure, would be well adapted to a high latitude. The room marked P, the construction of which can be seen

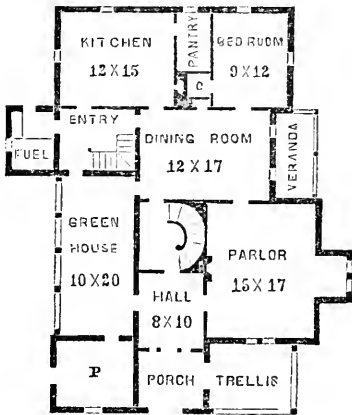


Fig. 52—PRINCIPAL FLOOR.

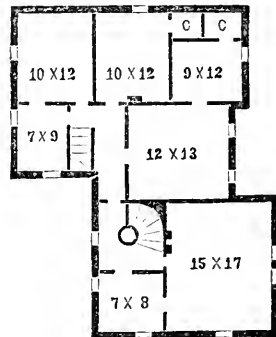


Fig. 53—CHAMBERS.

in the view, is intended for use as a potting-room. The doors from the green-house to the hall and the dining-room should be glazed. The enjoyment which such a room can be made to afford, can be known only to those who have experienced it. It can be heated (so well is it protected on every side but one,) by the ordinary furnace which warms the rest of the house. The chamber plan calls for no special remark.

This house *may* be built of wood for \$2,000.

## DESIGN IV.

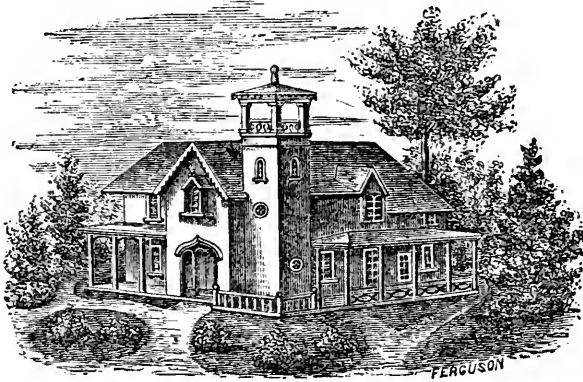


Fig. 54—PERSPECTIVE VIEW.

For a locality which commands a wide prospect, or one where an outlook over neighboring obstructions is desired, the design here given may prove a satisfactory one. It is intended for a farm-house of the larger class, and if built of solid materials might properly be called a villa. It would, however, make a very satisfactory dwelling built of

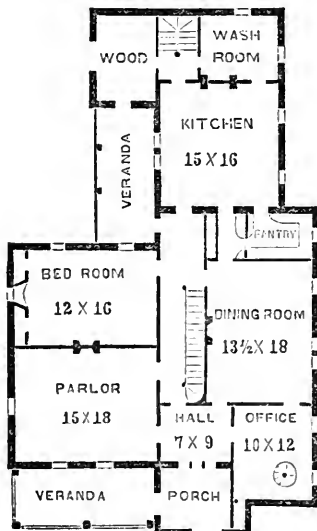


Fig. 55—PRINCIPAL FLOOR.

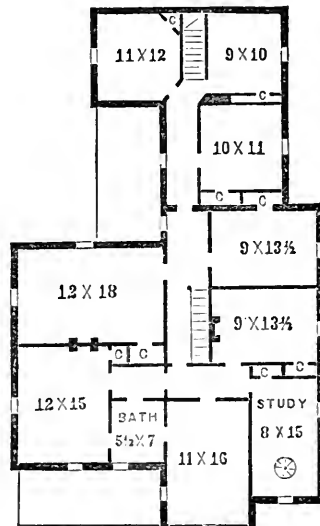


Fig. 56—CHAMBER PLAN.

wood. The accommodation afforded in the ground plan, (fig. 55,) is sufficient for a large family living in liberal style. The office at the right of the hall has a circular stair-case in one corner, leading to a small library or study, which can also be reached from the upper hall. The

two rooms taken together make an arrangement which every "country gentleman" who loves to investigate the sciences which pertain to his sphere of activity, will particularly enjoy. The dining-room and kitchen accommodations are ample, and the stair-case hall through the center of the house makes it cool and airy in summer, and is, besides, very convenient. The chamber plan (fig. 56) furnishes eight sleeping apartments, besides the study. The observatory is reached by circular stairs from the study. This house can be built of wood for not far from \$2,200, but at this price there would be no scope for any superfluities of decoration, though every part would be built durably and tastefully.

## DESIGN V.

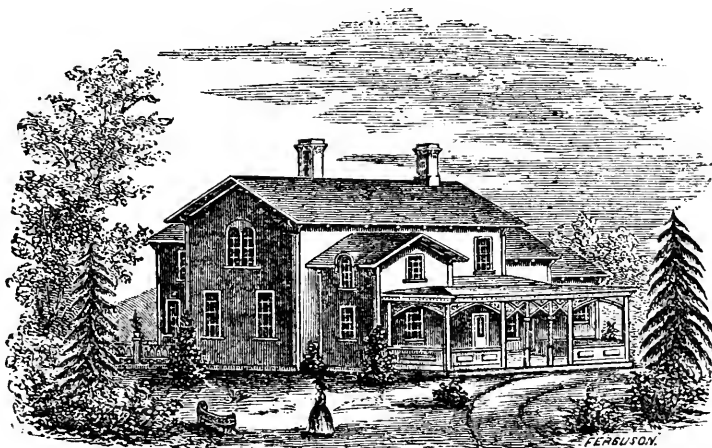


Fig. 57—PERSPECTIVE VIEW.

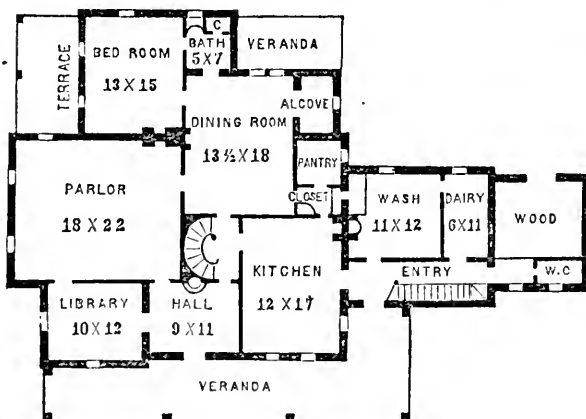


Fig. 58—PRINCIPAL FLOOR.

In this design we have endeavored to furnish a country house, which should have first-class accommodations, large and airy rooms, and still be neither pretentious nor very expensive. We have some confidence that a careful examination of the design will

accord to it these advantages. In its exterior it is somewhat irregular, yet so arranged that the parts harmonize with each other, and join to-

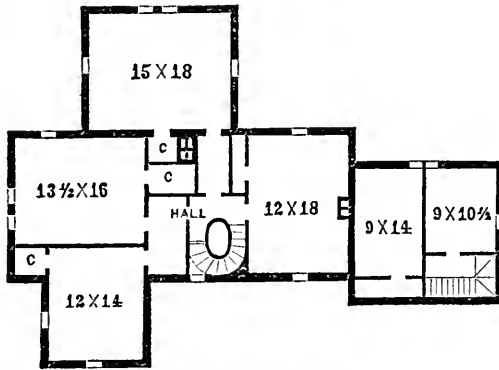


Fig. 59—CHAMBER PLAN.

gether without those expensive and troublesome gutters, which are often the accompaniment of many stylish houses. The main hall and a portion of the kitchen are in a lean-to, which is carried forward far enough to form the wide veranda. A corner of the dining-room and the adjacent alcove, are formed in the same way on the

opposite side. The remaining peculiarities of the design are readily seen from the accompanying plans. The cost need not vary much from \$2,500.

## HEDGES.

Two reasons, which circumstances have rendered powerful, have operated in preventing a more general and successful adoption of hedges. One is the aversion so prevalent, to undertake anything which does not produce immediate results, several years being required to make a perfect hedge. The other is the almost universal notion, adopted without a moment's thought, that everything in the form of a tree must grow and take care of itself. Hence we see, for every good well managed hedge, at least one hundred bad and neglected ones. This remark applies with more force to the attempts made with the Osage Orange than with any other plant, for nothing that is ever used for hedges, is more sensitive under bad usage, or succeeds better if well treated, than this. The privet and the buckthorn will usually present something of a hedgy appearance with any kind of management; but the Osage, unless well cultivated and properly sheared, will not exhibit even the semblance of a hedge. Hence the common notion that it has proved a failure.

Many plants have been employed in hedge-making, with various degrees of success. The English hawthorn was first extensively planted, but with the exception of the most northern parts of the Union, the summer proved too long and hot for its close growth. The native Newcastle and Washington thorns were next largely used; but after hundreds of thousands had been set out, the borer entered them as well as the hawthorn, and swept them off by miles together. The Buckthorn, being

a poisonous plant, has withstood the attacks of all enemies; and being easy to raise from seed, easy to transplant, of natural hedgy growth, and never suckering, has much to recommend it. Its objections are, want of thorns, slow and slender growth, and not flourishing in the shade. It will not succeed well under large trees, which is a comparatively small objection, nor will the *interior* of a close hedge continue dense for the same reason, which is a formidable one. Planted in a fertile soil, and well cultivated for several years, it will form a good hedge in about six years. Where there is danger of cattle dashing through, one or two stout No. 5 wires should be stretched lengthwise through its center.

*Evergreen* hedges are mostly employed as screens from observation and from winds; but as animals scarcely ever attempt to pass where they cannot look through, perhaps they may yet be used as farm barriers. But we want further experiments. The American *Arbor-vitæ* is one of the best evergreens for this purpose, but like the buckthorn, it will not grow well in the shade; hence, when closely sheared, the interior branches are bare. Instead, therefore, of being sheared in the common way, it should be shortened back.



Fig. 60.



Fig. 61.



Fig. 62.

shorn surface, darkens and kills the interior foliage, as shown in fig. 60. Fig. 61 represents the same shortened back, or rather *thinned back*, admitting the light within. Fig. 62 shows how this is done,

the cut being made at a fork *b*, or still shorter at *a*. The red cedar should be similarly treated.

The *hemlock*, although hardly stout enough for a hedge until it has grown many years, forms one of the most perfect and beautiful screens in existence. Its fresh deep green color is unsurpassed; and its denseness of growth in consequence of its quality of growing in the shade, is scarcely equalled. The Norway spruce will probably prove a fine hedge tree. It grows with great vigor, and may be freely shortened back.

For common farm fencing purposes, the Osage orange has so far been the most promising. It grows rapidly if well cultivated; is sufficiently hardy, except at the extreme north; and is densely armed with sharp and terrible thorns. In order to insure a perfectly continuous and even hedge, the young plants must be allowed to swell their buds before they are set out, that all dead and feeble plants may be rejected. The first winter a light furrow should be plowed upon it, to protect and drain it at the same operation. The soil should be kept deep and mellow by cultivation, at least four or five feet on each side, instead of allowing it to grow up with



weeds and grass, as is usual; and, if possible, it should be placed nearly over a tile drain, which will contribute greatly to its endurance of winter.

The following figures, (a part of which are reduced and improved from those in *Warder on Hedges*,) will show how this, and indeed all hedges, should be sheared.

The neglect of cutting down at the commencement, causes the hedge to become thin and

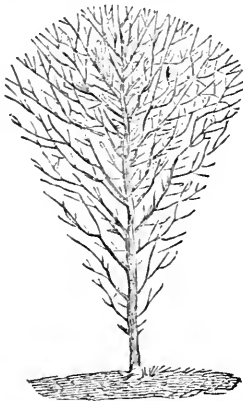


Fig. 63—BADLY PRUNED HEDGE.

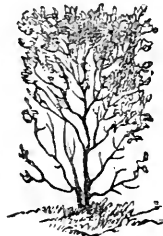


Fig. 64.



Fig. 65.

narrow, and full of gaps at the bottom where it should be the thickest—and dense and impenetrable only at the top, where this is less essential. In other words, the hedge becomes wrong-side-up, or mounted on stilts, (figs. 63 and 64.) The appearance of

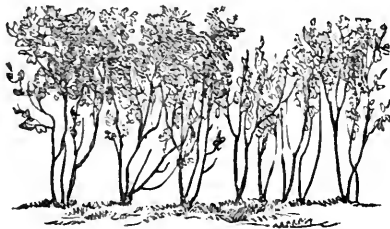


Fig. 66.

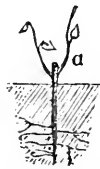


Fig. 67—FIRST YEAR, NEWLY SET OUT.

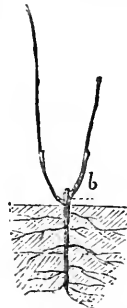


Fig. 68—BEGINNING OF SECOND YEAR.

the young hedge just before cutting down the first time, is shown at *a*, fig. 65, and the cut portion at *b*. It is almost impossible to induce a

novice to cut off "all this fine growth"—he thinks it will "ruin" his young and promising fence. Yet if the work is omitted, it will in a few years appear as in fig. 66.

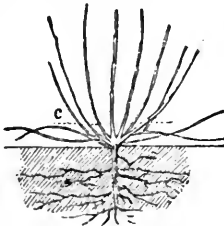


Fig. 69—BEGINNING OF THIRD YEAR.

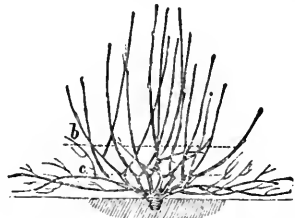


Fig. 70—SUMMER OF THIRD YEAR.

The following is the regular order of working each successive year. Fig. 67 represents the plant the first year, or

a few weeks after setting out—it has been cut down nearly to the surface of the earth, the tap-root trimmed off, and the young shoots are starting from it at *a*. It should grow untouched at least one year—some prefer two years, in order that the roots may become thoroughly established. Its appearance the beginning of the second year, is shown in fig. 68—when it is cut down again near the line *b*, to thicken it at the bottom. The result of this cutting down is seen in fig. 69, which shows the

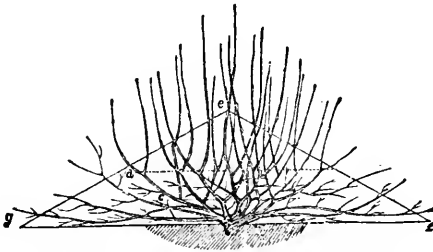


Fig. 71—BEGINNING OF FOURTH YEAR.

same plant after further growth, and which is again to be cut down at the line *c*—this may be done in the spring of the third year, if the hedge has been well managed and kept vigorous. This shearing will not be more than four or five inches high. Nervous people “cannot bear” thus to cut down their beautiful growing hedges—and of course never have a good one. But if the work has been unflinchingly done, the hedge will present by early summer of the third year, the fine broad-based, thickened appearance at the bottom, represented by fig. 70. The next pruning, to be done at the beginning of the fourth year, is shown in fig. 71, as indicated by lines meeting at *e*, when the hedge for the first time begins to assume the form of a roof. The previous shearings (or rather mowings) are shown by the dotted lines *c* and *d*. Fig. 72 shows the subsequent cuttings—first by the lines meeting at *h*, and afterwards at *o*.

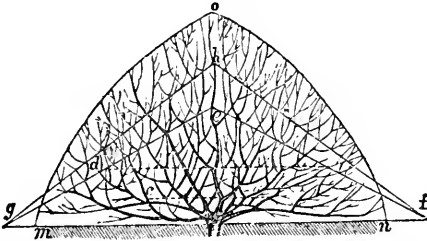


Fig. 72—END OF FOURTH YEAR OR BEGINNING OF FIFTH.

The latter may be straight, as the previous ones, or in the form of a gothic arch, as shown by the figure. This brings the hedge to the close of the fourth year, when it will begin to form an efficient barrier, if it has been well cultivated and pruned as here indicated. Its breadth at bottom will be nearly double its height. Future years will give it more height; but it must be especially observed to keep it always narrow at top, so that the foliage above shall not shade that below, nor injure the broad thick growth at bottom.

## FENCES AND FENCE MAKING.

A MODERATE estimate will show that the entire cost of the fences of the whole country, cannot be less than five hundred million dollars. The reduction of this aggregate expense but one-fifth, would consequently save the country at large a greater sum than the whole value of the Erie Canal and of the New-York Central and Erie Railroads. Every suggestion for cheapening their construction, or rendering them more durable, may contribute essentially to this most important result, and is worthy of the attention of the inquiring farmer.

The common worm or zig-zag fences of the country, with their projecting stakes, occupy a strip of land at least twelve feet wide—occasioning a loss of land equal to this breadth on two sides of every arable field—or half a rod more than is occasioned by a straight boundary. If there are ten million arable acres in the State of New-York, the entire loss in this State alone, from the zig-zag form of fences, cannot be less than three hundred thousand acres of cultivated land—equal to more than three thousand good farms. The importance, therefore, of looking for substitutes for these obtrusive fences is obvious.

### POST FENCES.

The durability of fences is the first consideration. The most durable wood should be selected for posts, such as red cedar, white cedar, locust, white oak, and other kinds which resist decay a long time; but the selection of the *kind* of timber merely, is not all. Its durability depends much upon the mode of preparation, and the way in which it is used. If, for instance, posts are cut and set before seasoning, the moist soil may prevent its drying for a long time, until it becomes sap-rotten. If, however, the soil is porous, and happens to be very dry, this bad result may not occur. On the other hand, if the timber is cut at mid-summer, when the air is warm and drying, and placed where evaporation may rapidly take place, the wood will become hard like horn; and such posts set in ground that has a perfect natural drainage, or over an underdrain, will remain dry and last a great number of years. Posts set in wet ground, or where they become thoroughly soaked every spring, and dried every summer, will soon decay.

Wherever, therefore, land slopes in a favorable direction, a post fence should always be placed in a ditch, either over tile, or upon a carefully laid stone channel; and it would be better if sand or gravel be rammed in well around them, to facilitate the downward escape of water. Coarse gravel, or fine broken stone, used for this purpose, would nearly prevent such timber from ever becoming water-soaked; but even compact clay, closely beaten about the post, would tend to keep away much water, as,

closely pounded, it would be water-tight, and the moisture of the earth would pass downward to the ditch, outside of this impervious portion. Cutting the drain under the fence serves to carry off the water from the adjacent land, and especially from that strip that is apt to be hardened by the tread of horses at headlands; and the labor of cutting, with the assistance of a ditching plow, is not greater than digging a row of post-holes alone. Numerous trials indicate that posts will last about one-half longer if inverted from the natural growth but further experiments are needed to prove that this is so under all circumstances. The practice of charring only preserves a thin shell at the outside of the post, and is of little use.

Filling the holes with stones around the post, is now generally discarded, as it becomes impossible to pound them firmly enough to hold the post from sagging; and unless each hole is well drained, they admit every flow of water more freely to the post, thus promoting decay by a constant alternation of moisture and dryness.

The holes should be at least two feet and a-half deep for a common fence, and three to four feet deep for a high or tight fence around barnyards. They should be large enough to admit freely the pounder on every side; and to make the earth around the post as hard as a brick, only two or three ounces of earth should be thrown in at a time, and beaten quite hard before more is added. The pounder should be a straight stick, about five and a-half feet long, the size of a pitchfork handle above, and two inches by an inch on its face or end, where it should be shod with an iron head. If the earth is quite moist, it cannot be compactly beaten, and for this reason the posts should not be set in a wet season of the year. If too dry, which rarely happens, the addition of a little water occasionally from a watering pot, will promote very close packing.

*To set the posts perfectly straight*, a line must first be stretched, and a peg stuck into the ground at the place for each post; the line is then removed, and the holes dug, each peg forming the center of the hole. If a ditch is cut, as already recommended, the only care required so far, is to have it straight. Next, whether in holes or in the ditch, two posts are to be carefully set by the plumb, at several rods distance from each other, and accurately on the line. Two strong cords are then stretched across the face of each post, connecting them, one near the ground and the other near the top. The face of every intermediate post is then placed just touching these lines, and all are thus set upright and in a right line, with the greatest facility. The cords will not be strong enough unless about a fourth of an inch in diameter, and two workmen will set posts twice as fast with as without them, and with greater accuracy besides.

*In nailing on the boards*, the top board is first to be very accurately

placed, as a guide for the rest of the fence. Where the surface of the ground is level, the top of this board should be perfectly straight, which may be done by stretching a cord tightly across the face of the line of posts, raising it from the slight curve it falls into, by a nail driven a quarter of an inch into each post. A little experience will enable any one to dispense with the use of the line, driving the nails in an exact range. Against this line of nails, the top board is to be placed and secured by nailing.

Where the surface of the ground is uneven, the fence, to suit it, should not be broken into awkward and irregular angles, but should pass over it by a succession of graceful curves. Such curves are easily made by a row of nails as already stated, each successive nail being driven a quarter of an inch or less, above the right line, in passing over a hollow, and below the right line, when rounding over a hill. These successive distances are easily estimated by the eye, with sufficient accuracy, without measuring. The accompanying figure, (fig. 73,) strongly represented, to

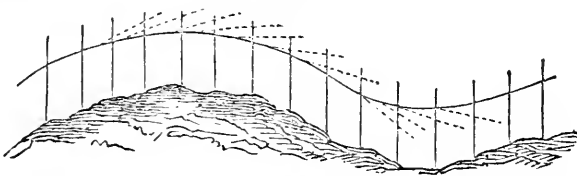


Fig. 73.

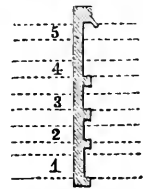


Fig. 74.

exhibit more plainly, will show how this is done. An experienced hand will thus lay off fifty rods in half a day. Marking the height of the fence on every fifth post with chalk, previously, will be useful.

To assist in nailing on the other boards, accurately and rapidly, procure two pieces of board, the length of which is to be equal to the height of the fence, or a little more, and saw notches in them, as represented in fig. 74. The projections thus left, support the boards while they are nailed to the posts, these pieces of board being hung, by the upper projection, upon the top board, already in its place. All the distances

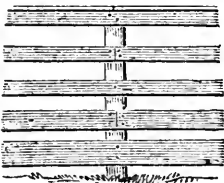


Fig. 75.

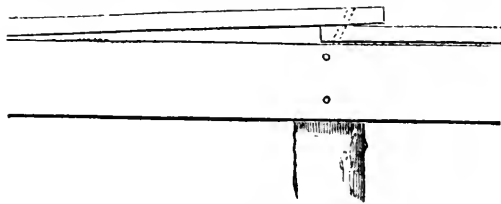


Fig. 76.

between the different boards are thus measured without error, and one hand will proceed along with the work as fast as two could do without this contrivance.

The boards should be made to break joints, as shown in fig. 75, and if

well secured with strong nails, will entirely obviate the necessity of the *facing boards*, usually placed upright over the joints, which, by retaining moisture, generally cause decay at the ends of the boards after the lapse of several years.

A cap-board always serves to stiffen and strengthen the top, as well as to shelter from water the joints of the upper board. It is easily and very neatly nailed on, as shown in fig. 76, by first laying the cap-board so as to overlap the preceding one, and nailing it at the other end and middle. Then saw off both these lapping ends with one cut of the saw, setting it with a slope just equal to the width of the cut, when both will accurately coincide, and form the perfect joint shown in fig. 77.

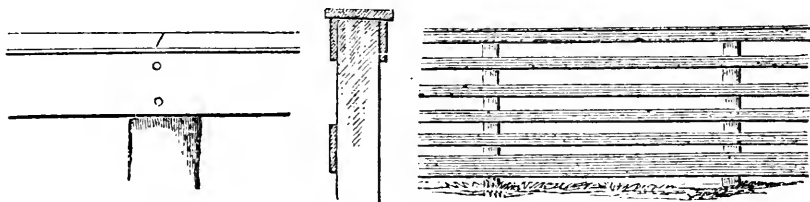


Fig. 77.

Fig. 78.

Fig. 79.

When it is desired to form a fence of great strength, so as to endure the assaults of unruly cattle and ferocious colts, two top-boards should be nailed on opposite sides, surmounted by a stout cap, as shown in the section, fig. 78. This has proved entirely successful as a boundary fence, where nothing before had withstood a herd of furious horses.

A proper width for the boards and of the spaces between them, is a matter of some importance. A neat fence is shown in fig. 79. The bottom board is 6 inches wide; the four next 4 inches; the top board 3 inches, and the cap 4 inches. The spaces are 3,  $3\frac{1}{2}$ , 4,  $4\frac{1}{2}$ , and 5 inches. Fig. 75, (preceding page,) represents a heavier fence, better adapted to ordinary purposes, the lower board being 7 or 8 inches, the next 6, and the three upper 5 inches. Where boards are knotty, it is safer to have them at least 5 or 6 inches wide; but a lighter appearance is given by narrower strips, and less stuff is required. Tough kinds of wood, liable to warp, as, for example, elm, should be sawed as narrow as 3 inches, and not over seven-eighths thick; and then, being well nailed before dry, they will be held securely in place, and not draw nails nor become distorted in seasoning. If cut in summer, when they may season quickly, they will last much longer.

Picket fences, as they are termed, cannot be recommended for their appearance, but only as a method of security in preventing the ingress of intruders.

The following figures (figs. 80 and 81,) represent finished but picturesque fences to accompany Cottage-Gothic buildings. They are made of smooth lumber, and should be painted light brown. Posts are first

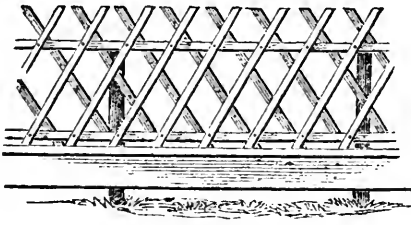


Fig. 80.

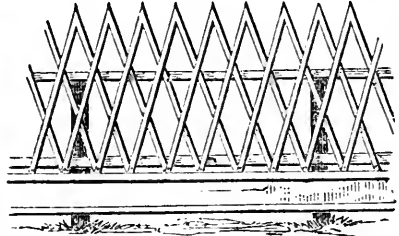


Fig. 81.

set, and stout horizontal rails secured nearly as in making a common picket fence. These rails are scantling, 2 by 3 inches, let into the posts, and the lower one high enough to admit a board about a foot wide at bottom. The height of the fence shown in fig. 80, above this board, is about 3 feet, making more than 4 feet in all; the strips of picket stuff, being inclined as shown in the figure, must be 3 feet 9 inches long. They are nailed on opposite sides of the horizontal rails, and form a stiff fence.\* In fig. 81, the fence is higher, and intended to exclude fowls from a garden. The pickets are 4 feet long, 2 inches wide, and an inch thick, and are nailed on the same side of the rails. In both instances, 2 feet is a sufficient distance between the upper and lower rail.

All fences not of split or rough rails, should be protected from decay by a coating of paint or of lime wash—the former for planed wood, and the latter for rough or sawed surfaces.

The construction of iron fences was described in the Register for last year.

#### HURDLES AND CHEAP FENCES.

A hurdle fence, made of sawed stuff, is shown by fig. 82; the posts of which are  $2\frac{1}{2}$  inches square, the rails  $2\frac{1}{2}$  by 3-4th inch, morticed through the posts, and secured by  $2\frac{1}{4}$  inch cut-nails. The braces and cross-bar are merely laid on, and are fastened to each rail with

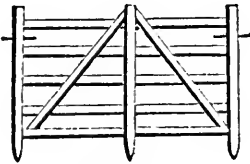


Fig. 82.

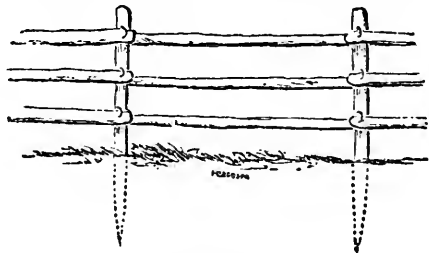


Fig. 83.

annealed cut nails clenched. The fence is put up by making a hole a foot deep, or a foot and a-half if in soft earth, for each post, and fastening them at the top with a pin. This may be made for about a dollar a rod, and we have found it answer an excellent purpose for a movable

\* The figure is wrong in one particular—the pickets on the other side are *beyond* the posts, and are let into them where they are thicker than the width of the rail.

fence. These hurdles may be made more cheaply, nearly as strong, and lighter, by "letting-in" the rails slightly into the posts, and securing each by a stout annealed nail.

Fig. 83 shows a cheaper temporary fence, intended for confining cattle or horses only. It is made of common split rails, attached to posts by means of annealed fence-wire, thrust through half-inch auger holes made for the purpose, and secured by a twist. One good rail will make two posts, which are set about 20 inches deep into crowbar holes. The meeting ends of the rails are placed on opposite sides of the post, and both are held by one wire, as shown by fig. 84. This fence will cost from 40 to 50 cents a rod, including rails, wire and labor.

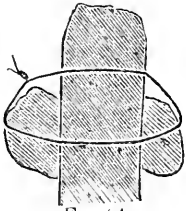


Fig. 84.

Another fence, more portable in form, sometimes used on western prairies, where winds are violent, is represented by fig. 85. It is very cheap, but not neat in appearance. Short sticks are mortised as represented, to form a support, to which common fence rails, or poles, are

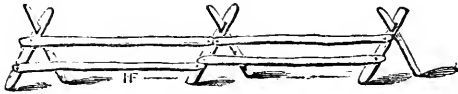


Fig. 85.

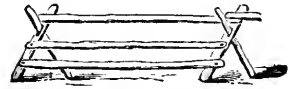


Fig. 86.

nailed. A rider is added without nailing, as is exhibited in fig. 86. It stands firmly upon the ground, and may be moved with great facility. It is as cheap as the preceding, and more durable.

Many patents were taken out a few years since, for movable board fences, made first into separate panels, and then set zig-zag for support, locking together at the ends. As such fences obviate the necessity of providing posts and digging holes, they were made cheaply, or for 60 or 70 cents a rod, but were of no value except in sheltered localities. Strong winds have frequently upset long portions at a single blast, and on the whole they cannot be recommended.

Zig-zag fences have been successfully constructed, however, by using timber that exposes but little surface to the wind. One form is made by boring holes at 6 inches distance along the whole length of two horizontal rails, and forming pannels by inserting round 4-foot sticks through these holes. They are fastened at the ends by thrusting the same stick

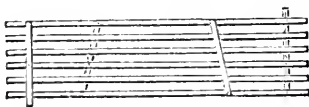


Fig. 87—WATSON'S FENCE.

through the holes of the two connected ends of the rails. Another form is shown by fig. 87. It consists of six rails, 13 feet long, sawed of tough timber, 2½ or 3 inches wide, and 1¼ inch thick. These are placed respectively at distances of 4, 5, 6, 7, and 8 inches, and secured by wrought nails to cross-bars or battens, as represented.



A 13-foot rail will make three of these battens without loss of stuff, and they are placed on alternate sides for binding the fence more securely at the corners. When placed in position, the ends interlock, and are connected by a loop of No. 9 annealed wire. The acuteness of the angles is determined by the length of this loop, and the fence is thus modified for windy or sheltered places. The cost is about 50 cents a rod.

## FARM GATES.

MANY a farmer, discarding the awkward machinery of "bars" for field entrances, has erected gates, which at first gave perfect satisfaction.

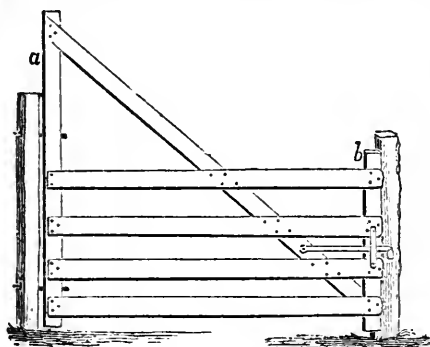


Fig. 88.

They would swing easily on their hinges, latch with precision, and present a neat and handsome appearance, (fig. 88.) But every gate tends to sag, and in a few years the fine qualities of the farm gate have departed; it no longer swings upon its hinges, but is dragged by force over the ground in opening and closing; its self-latching contrivance has given way to a cord loop thrown over the post, and at a still

later period the hinges are gone, and it is "scotched" with a rail, (fig. 89.)

Such a discouraging result is not, however, necessarily connected with the farm gate. To retain its form it should be well braced, and as light as proper strength will admit. When the brace is of wood,

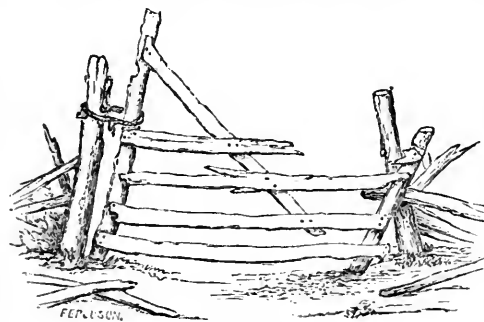


Fig. 89.

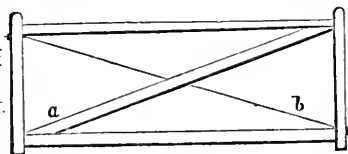


Fig. 90.

(*a*, fig. 90,) the pressure should be against its ends, because it may be secured more completely if set firmly against the wooden frame, than if merely fastened by nails in serving as a tie. But if an iron rod *b*, is used, not being stiff enough as a brace, it can only act in the contrary

direction with a screw and nut at each end. Whence the general rule—use wood as a *brace*, and iron as a *tie*.

But a more frequent and greater cause of sagging than the distortion of the gate, is the settling of the post. This is prevented by digging deep holes; by using a large post that shall present a broad surface against the earth; but still better, by setting a large flat stone upright in the ground, so that the post shall press against its face. The earth, in filling the hole, must of course be firmly rammed or beaten, by adding

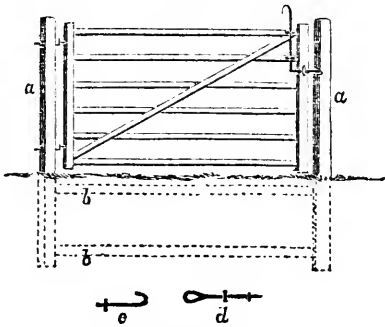


Fig. 91.

small portions at a time; and the same treatment must be given to the earth against the flat stone. Posts may be very firmly set by building masonry of water-line about them, placing most of it on the sagging side; but as frost will destroy it, this can be used only to advantage where the earth freezes but a few inches deep, an earth-covering protecting the top.

Fig. 91 shows the manner in which posts are kept from settling by connecting timbers *b b*, placed in a ditch, afterwards filled with earth. These connecting pieces will do if of large scantling, and may be mortised into the posts. A single stout rail, laid a few inches below the surface, and accurately fitted, without mortising, will be found quite useful.

### HANGING THE GATE.

A gate hung exactly perpendicular, will turn freely in every direction through the circle, and will remain at rest at any point. To be a self-shutter, it must be hung with an inclination.

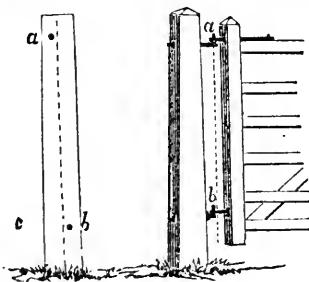


Fig. 92.

Fig. 93.

If the dotted line, for example, on the face of the post, (fig. 92,) be drawn with a plumb line, the upper hinge must be inserted an inch to the left of this line, at *a*, and the lower an inch to the right, at *b*, to cause the gate to fall toward *c*. But if opened more than the quarter of a circle, it will then begin to fall wider open. To prevent this, the turning point of the upper hinge, (*a*, fig. 93,) should be about two inches nearer the gate from the (dotted) plumb line, than the lower hinge *b*. The gate will then fall shut if not opened more than three-fourths of the semi-circle—which is about as wide as is generally needed. Beyond this, it is desirable that it remain open, without fastening, as a matter of convenience when passing through. The same end will be attained if the

post itself is made to incline about two inches, the hinges in this case being set in the center of the post. If it incline directly towards the latch-post, the gate will fall shut through a fourth of the circle; if it incline besides with the direction of its motion, it will fall through a larger portion. This may be effected either by using a plumb line, or by hanging the gate when the post is partly set, and then fixing its position after opening and shutting, until the right inclination is found. The latch-post must have the same inclination, in order that the gate may strike it without twisting.

Another advantage in a self-shutting gate of this kind is that it rises in an inclined plane when opened, passing over snow-drifts and other obstructions. The height to which it rises exceeds the deviation from the perpendicular, as much as the length of the gate exceeds its height. For example, if the hinges are three feet apart and two inches out of the plumb line, a gate twelve feet long will raise eight inches in opening—if the hinges deviate four inches, the gate will rise sixteen inches—which may be desirable where deep snows are prevalent.

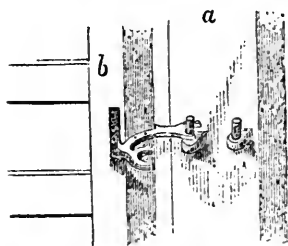


Fig. 94—DOUBLE HINGE, FOR SWINGING BOTH WAYS.

A gate that is often passed should open both ways. To effect this object, the upper hinge is made as usual; but the lower one is double, or consists of two hinges placed a few inches apart horizontally. Instead of a ring to fit the hook, as in the common hinge, there is only a *fork* to admit of its being thrown out, and each hinge is brought into use alternately, as the gate is swung one way or the other.

Fig. 94 represents this double hinge, *a* being the gate-post, and *b* the gate as seen open, the further hinge being in place, the nearer one thrown out by the process of opening. As the gate is thrown one way or the other, each fork of the hinge grasps its corresponding hook alternately. Both of these hooks being outside the plumb line, the gate falls shut from both sides. The notch for the latch is commonly made as shown in fig. 95, but as the sudden arrest of motion when the latch drops into it, jars and racks the gate, it is better to round the corners of this notch as in fig. 96, so that the latch will glance over it while alternately striking from either side, until the force is gradually spent.

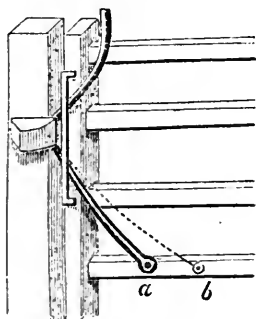


Fig. 97.



Fig. 95.



Fig. 96.

An important advantage of this kind of hinge is, that the gate is not beaten to pieces in striking forcibly against the post.

Fig. 97, (preceding page,) represents an excellent and cheap gate-latch, made by bending a half-inch rod of iron into the shape indicated, and fastening it by an iron pin on which it moves at *a*. Its weight causes it to fall against the post. If bent in the direction of the dotted line, and moving on a pin at *b*, it will fall more quickly. This latch, if well made, will last as long as the gate; and if the gate sags two or three inches, it is not thrown out of place.

A self-shutting gate should always be a self-fastener—otherwise careless persons will leave it unlatched although closed, to be thrust open by unruly animals, or blown open by wind.

#### CONSTRUCTING THE GATE.

The upper horizontal bar may be tough ash, which preserves its straight form; the head-piece sound elm, which is difficult to split; and the heel-piece may be white oak, on account of its durability. The latter may be heavy, or three by five inches or even more, that it may be strong and form the basis of the rest of the frame. Its weight is but little objection, as it moves but a few inches, and consequently has little momentum, and drags but slightly by its weight on the hinges. The head-piece, on the contrary, and all the frame at that end of the gate, should be as light as possible, as every pound there bears with a leverage of several pounds upon the hinges, and strikes the post with a great momentum. Those who are not acquainted with these mechanical principles, sometimes make both ends alike, and as a consequence the gates are soon beaten to pieces, or sag irretrievably.

Fig. 88, at the beginning of this article, is a cheap and easily made gate, which any farmer may construct. The heel-piece is 3 by 3 scantling, the head-piece 2 by 3; the brace is a board which is first let into the scantling, and then the other boards simply nailed on. The objection to this gate is that the brace is used as a tie; which, however, may be nearly obviated where light materials are employed, by using plenty of good wrought nails in connecting it with the gate. Such a gate as this need not cost more than a dollar, and is less expensive than a set of bars.

The best gate for common farm uses is one constructed by Dr. D. A.

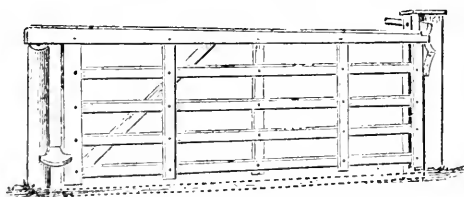


Fig. 98—ROBINSON'S FARM GATE, (not patented.)

Robinson of Union Springs, N. Y., made up of a combination of various parts which he had met with in use, (fig. 98.)

It may be made of any light, tough and durable wood, but answers a good purpose when of pine, with the upright or cross-bars of white oak. The upper horizontal bar is 11 feet long, 3 inches wide horizontally, and 5 inches deep at the hinge, and  $2\frac{1}{4}$  at the latch. Its mortises are only two-thirds through, to shut out rain, and

5-8ths by 3 inches—except of the heel-piece it is an inch and a-quarter. The heel-piece is 3 by 5 inches, and the four lower bars are boards 1 by 5 inches. The cross-bars, the brace, and the two pieces forming the head-piece are 1 by 3 inches. They are secured at each crossing by wrought or annealed nails. The head-piece consists merely of two boards, nailed on each side of the horizontal boards. All the stuff forming the frame of the gate proper being 3 inches wide, may be sawed with little waste from the log; and the top bar by sawing alternately, for the taper. The gate is 4 feet high.

An important advantage is the protection of every mortise, and of the hinge and latch, from the weather. The hinge is made by driving an iron rod, at least three-fourths of an inch in diameter, into the top of the post, (fig. 99,) which turns in a hole seven-eighths of an inch, bored two-thirds of the distance through the large end of the upper bar. A short iron plug driven into this hole, makes a hard resting point that



Fig. 99.

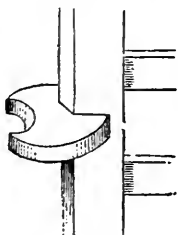


Fig. 100.

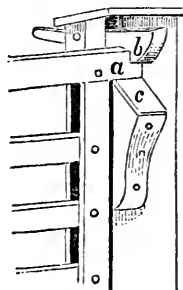


Fig. 101.

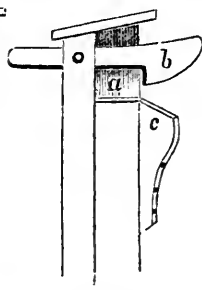


Fig. 102.

will not wear, for the gate to turn upon. Fig. 100 shows the wooden collar which fits the round post and completes the hinge.

The latch being fastened to the fixed post at the head, and not to the gate itself, may be made stouter and more durable, and the gate not being encumbered with it, is less liable to be injured or broken, and swings lighter and freer on the hinges. The end of the bar itself, (*a*, fig. 101,) with the massive latch *b*, (the latter only rising as the gate shuts, and dropping again to secure it,) constitute a very strong fastening. The inclined plane *c*, which is faced with thick sheet-tin, (figs. 101 and 102,) is added only to facilitate fastening when the gate sags, as all wooden gates will, but this less than others, *because there is no weight whatever straining the hinges, except while the gate is open*. A pin or spike is driven into the post on which the hinges turn, just above the lower hinge, to prevent hogs or other animals from lifting the gate, and which does not prevent it from being placed on its hinges while open. The post holding the latch may be rough except the face; and the other need be rounded only where the hinge turns.

The whole cost of the hinges need not exceed ten cents, and the gate itself may be made at no greater expense than a common set of bars.

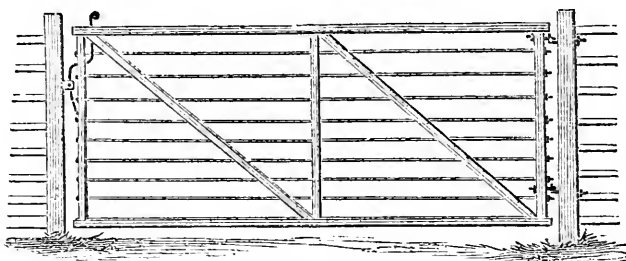


Fig. 103—Wire Gate with Wooden Frame.

Fig. 103, represents a neat and light gate, made of iron rods passing through a wooden frame. It is well adapted to all self-fastening latches, for being light its momentum is but little, and it is not, therefore, easily jarred to pieces. It catches but little wind, and will not occasion snow-drifts. If intended as an entrance gate to a dwelling, the dimensions may be as follows: Length 10 feet, height 4 feet; heel-piece (of white oak,) 3 by 3½ inches, and 3 feet 8 inches long; latch-piece same length, and 2 by 3 inches; braces and cross-bar, and top and bottom horizontal bars, all 1 1-4 by 3 3-4 inches; rods round, 3-8ths of an inch diameter, and secured by

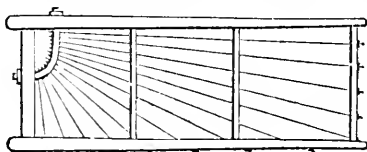


Fig. 104.

heads at one end, and nuts and screws at the other. They are eight in number, and nearer together at the bottom.

Another form of the wire gate is shown in fig. 104. Its chief advantage is that every wire forms a tie, passing through the wooden frame at different points, and the stout iron brace at the upper left corner. Such a gate as this, well made, can never sag perceptibly, and is not expensive.

Iron rings driven on the ends of the timbers, contribute to the strength and endurance of gates, and the practice of bracing the corners with iron, would doubtless be advantageous for gates in constant use.

## BARNs AND STABLES.

FORMER numbers of the REGISTER contain many plans of barns, which are commended to the attention of those who desire information on the subject. A few are here added, which possess some peculiar advantages. The first (figs. 105 & 106,) is of a very neat brick horse-barn belonging to a friend,—built with an especial view to cleanliness and perfect ventilation. Its dimensions are about 22 by 36 feet—it has four horse-stalls, surrounded on each side with open passages, admitting freely both light and air. Hay

from the "hay-shute" drops from the loft above into the feeding passage, and is readily given to the horses through broad openings in front of their heads, about four feet high. These openings are substantially lined with thick sheet iron to prevent gnawing. The partition containing these openings does not extend up to the ceiling above, and the partitions between the stalls are only high enough to effect a proper separation, allowing a free circulation of air. The passage over which the ventilator is situated, is used for clearing away the manure. The ventila-

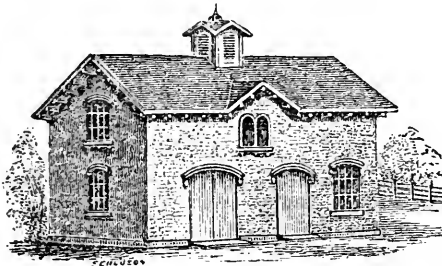


Fig. 105—HORSE BARN.

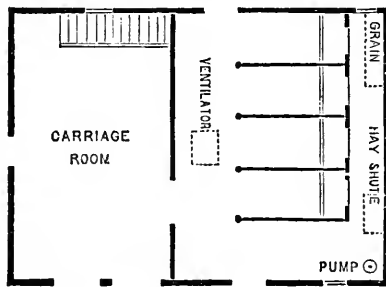


Fig. 106.

tor passes up through the center of the hay loft, and supports the roof. A harness and saddle room is under the stairs. A large cistern holds water enough for the use of the horses, and is brought up by a pump at the end of the feeding passage.

The accompanying plan and view (figs. 107 and 108,) represents a barn adapted to a farm of moderate size, erected by E. W. Herendeen, of Macedon, N. Y., on a tenant farm.

It is neat and compact, and has been found to combine many conveniences for a barn of such moderate ex-

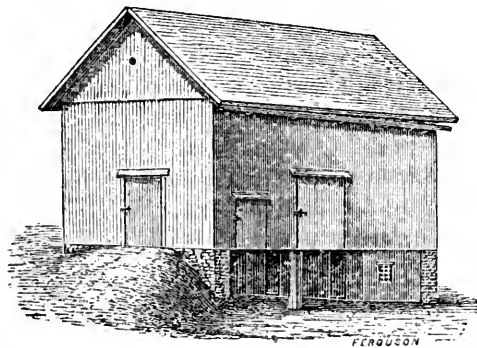


Fig. 107.—BARN FOR SMALL FARM.

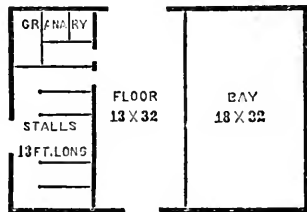


Fig. 108.

pense, the whole having been built for about five hundred dollars. It is 32 by 44 feet, and with posts 18 feet high. It is very substantially built—the siding being vertical unplanned boards—the doors hung on iron rollers—and the floors made of two inch pine plank, planed and matched. The basement is occupied as cow stables and shed. The horse stables are above, experience having proved that horses are healthier above

ground. The stable door is at the end of the building, as shown in the view; and directly in front of this door is a wide stall, admitting a span of horses in harness side by side when desirable.

### BARN FOR HORSES AND CATTLE.

A friend who raises a large number of horses, has furnished the following convenient plan of a building for extensive accommodations. (Fig. 109.) It is placed on moderately sloping ground, the building for hay and roots being on the higher part, and the line of stables gradually descending towards the "straw barn." The "bridge" furnishes ready access for loads of hay, and by raising two or three plank from this bridge, cart-loads of roots are readily dumped down a chute into the root-cellar. The bay on each side the root-cellar serves as a protection from frost, to which may be added when necessary a thick layer of straw. In front of this root-cellar is the area for cutting roots, hay, and straw.

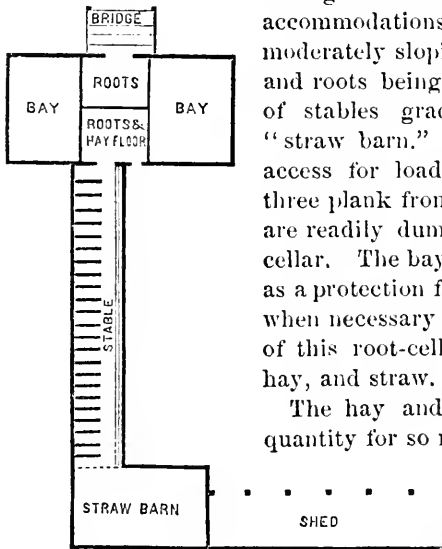


Fig. 109.

The hay and roots, which must be in large quantity for so many animals, is carried along on a rail-car with little labor. Fig. 110, is a cross-section of the part of the building in front of the line of stalls, showing this car, which hangs on a single

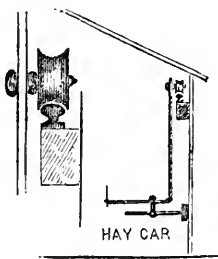


Fig. 111. Fig. 110. the hay barn. Fig. 111 is an enlarged cross-section of the upper rail and roller which sustains the car.

rail above, over which it moves on an iron roller or wheel; and below this car is a larger horizontal wheel, which rolls against a wooden rail fastened to the wall. The car thus moves freely—the load is held by vertical iron rods in front. The slightly descending grade increases the ease of motion; and when emptied, it is easily moved back to

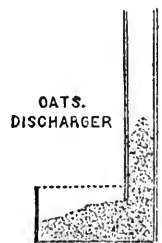


Fig. 112.

Fig. 110. The granary being placed above, a self-regulating discharger supplies oats below. A section is shown in fig. 112, where a wooden box tube, connected with the bottom of the granary, is at all times full of oats, which descending into the horizontal trough open at top, furnishes a supply as fast as it is dipped out. If the bottom of the granary is hopper-shaped, it will serve more completely to discharge the contents.



## STALLS FOR HORSES.

The partitions between the stalls should be stout enough to resist pressure and kicking, and be not higher than safety requires, so as not to impede a proper circulation of air— Fig. 113, represents a common form, made by setting a stout vertical post from floor to joist overhead, from

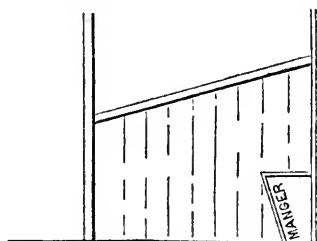


Fig. 113.

which a stout scantling proceeds in an inclined position to the head of the stall to hold the partition plank. The under side of this scantling is grooved to receive the ends of the plank. The only objection to this partition is that lively horses in kicking sometimes get their feet over the partition, the post holding them fast. In one case it became necessary to cut down the partition,

and in another to lift the horse by a tackle. This difficulty is obviated by the form shown in fig. 114, which, however is not high enough in the

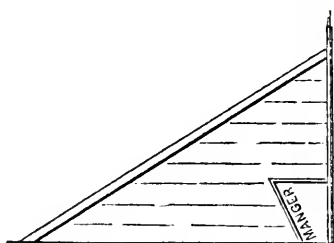


Fig. 114.

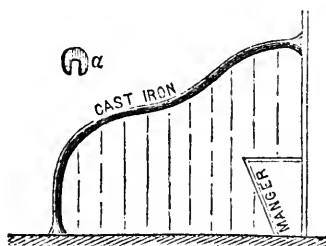


Fig. 115.

rear, unless running nearly across the passage. The best form is exhibited in fig. 115, where a stout curved cast-iron rail receives the partition plank—*a*, showing a cross-section of this rail. Such a cast rail should not weigh less than 300 lbs.

The partitions should be about seven feet high at the head, and average about four feet at the rear; they are usually made about seven feet long, but six feet in length is preferred by some, as allowing better ventilation. The stalls should be at least five feet wide—the whole width of the stable never less than 12 feet, and the height at least 9 feet—many prefer 12 feet; but if thorough ventilation is effected, 9 feet would be better than 12 feet without it.

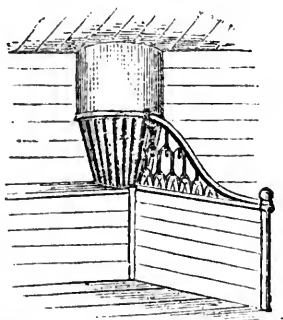


Fig. 116.

In the preceding figures, the manger is represented as the place for holding all the feed, the hay being thrown down through an opening above. This course is adopted by many for the purpose of keeping horses' heads clear

of hay-seed, as well as for greater ease in feeding. Where racks are preferred, fig. 116, shows an excellent plan, representing a semi-circular opening from above with an iron rack underneath. At the bottom of this rack, is a cast-iron manger 15 inches wide. The post which forms the rear of the partition, and the ornamented portion of this partition are of cast-iron. The stable from which this sketch was made, was 12 feet high and 15 feet wide; the shute or opening was 4 feet wide or diameter,



and cased with sheet iron; the iron rack was 3 feet high, four feet wide at top and 2 feet at bottom, and serves for two stalls. Drainage in each stall was effected by means of a cast-iron plate (fig 117,) set in the floor, a foot square, slightly concave (half an inch depressed,) and perforated with holes.

### CATTLE STALLS.

The stalls vary in construction according to the method adopted for fastening the cattle. As a general rule, the more liberty the animal has for moving about, the more care is required for littering, and vice versa. When every animal is separated from the others, each in its stall, and by a gate, no other fastening is employed. The stalls in this case need not be more than three and a half feet wide, so that animals of ordinary size will not turn about in them; but as they may pass backward and forward, plenty of litter will be required, to maintain proper cleanliness. Where cows are large, the width should be greater. The entire length should be about 14 feet—at least two feet for the manger, 7 feet for the cow (very large will need 8 ft.) one foot for the manure gutter, and about 3 feet for clearing away manure, passing for milking, &c. When gates are used for separating the animals, they may either extend the whole length from the manger to the rear of the stable, or what is rather better only a part of the way, the remainder being occupied with partitions be-

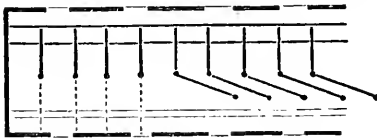


Fig. 119.

Fig. 118.

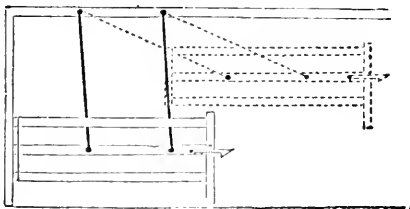


Fig. 120.

tween the animals. The gates all swinging one way, the outer one is opened first, and the occupant of the first stall marches out, and so on successively, till the whole stable is vacated. When they return, a reversed order is observed, the inner one being secured first, and so on. Fig. 118, represents the position of these gates when open, and fig. 119, as shut. This is the usual way in which such gates are made to work, but a neater and much more convenient way is to

have these gates run on rollers on an iron bar overhead, and the attendant

standing in the feeding alley at the heads of the animals, opens and closes their gates by an iron hook on the end of a stick about the size of a rake handle, without leaving the alley. Another way is shown in fig. 120, where the gates, made of three light bars, are hung by two iron rods to the scantling cross-beam overhead which separates each stall, and they are opened as already stated by the hook from the feeding alley

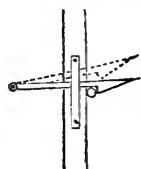


Fig. 121.

in front of the animals, and are secured by the simple wooden latch, shown in fig. 121. When the animals take their places, these latches are successively raised, and the gates fall back and shut. A

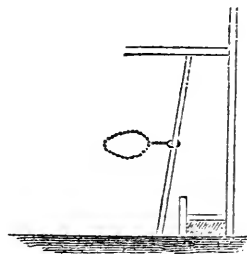


Fig. 122.

double bar forms the top of the gate, between which the suspending-rods play and are thus kept firmly to their places. They shut in between two upright studs, and are thus more firmly held to their position, and are not likely to be crowded against or broken, as in the case of hinges. Another advantage of this mode is, that any one of the gates may at any time be opened, and two or more stalls be thrown into one for a cow about to calve, or for any other purpose.

Another mode of securing cows, frequently adopted, quite comfortable for the animal, but attended with some labor in fastening and loosening, is the sliding halter, shown in fig. 122. The stake or post on which it slides is slightly inclined, to give more room in lying down, and is placed just without the manger. An iron ring or chain loop, sliding easily, encloses the stake, and a smooth chain, attached to this, passes around the neck of the animal, and is fastened by a broad-tongued hook, which is put into any link forming a proper size for the neck, and cannot come out until turned edge-wise by the hand. A strap and buckle is sometimes used for the same purpose, but is less durable.

A third mode of securing the animal is by stanchions. Unlike the preceding, these prevent the animal from bending its head to its sides. Each one consists of two upright stakes or strips of plank, placed just far enough apart for the neck to move up and down freely, but not allowing the escape of the head. One of the strips is movable at the top so as to slide open wide enough to admit the head of the animal, when it is returned to its place, and secured by a pin—its upper end sliding between two bars of wood. Cows are quickly secured to their places by this contrivance, and it has one important advantage over the other modes already described, by not allowing them to step backward beyond a certain line nor to lie down on their droppings—for this reason less care is required in littering them. In a large milk establishment, where nearly a hundred cows were kept, the owner had all the movable stakes of these stanchions secured to a long rod, by which every cow was released

by a single movement of the hand; and when they returned to their places and began eating their messes, a like movement fastened every one.

In all cases where cows are secured at the head, the partitions between the stalls should extend backwards from the manger about five feet, and to admit the free circulation of air, should not be more than four feet high. These partitions may be made thus: Set a post of cedar or other durable wood firmly into the ground to form the rear of the division,

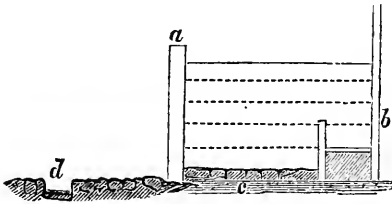


Fig. 123.

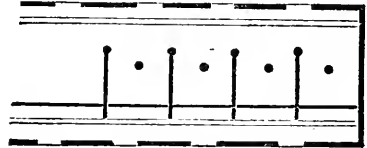


Fig. 124.

*a*, fig. 123; this has a groove chiseled into it, to receive the partition plank; another groove for the other end is made in a stud at the back of manger, *b*. To prevent the decay of these plank, they should rest on curb-stone, *c*, set into the ground. The floor on which the fore feet stand, and on which the animals must kneel in lying down and rising, should be compact earth, well covered with straw, so as to be soft and comfortable. The hinder portion of the floor should be paved, or flagged with very thick solid flag-stones. A gutter, *d*, for the manure should be formed of smooth flag-stones, with curb-stones on each side, so that it may be just wide enough for a common square shovel to work in, and by which it may be easily and effectually cleaned. This gutter may be made of plank, but this soon decays. Stalls are often made seven feet wide, each for two animals, a stout post only being placed midway between them, fig. 124. This has the advantage of securing more circulation of air, and more room for cleaning.

The manger should be at least two feet wide, and if intended to hold roots, meal, &c., should be a foot higher at the bottom than the animals' feet. If only for hay, it may extend down to the floor, the feeding being given in movable tubs holding each about five gallons, which have the advantage of being easily and thoroughly cleaned for each successive meal,—cattle, as well as animals of a higher order, not liking to eat from dirty vessels.

#### RACK FOR FEEDING CATTLE.

The annexed figure (fig. 125,) represents a secure trough and rack, which has many advantages. The rack is horizontal, and covers the box or trough. It turns up like the lid of a chest, and rests while open against the board *a*, which is a little inclined outwards, by being nailed on the slightly diverging side of the box. The hay is then thrown in, and the rack shut down upon it. Secured in this way, the hay can scarcely be wasted at all; it is very convenient for the cattle to reach; they cannot

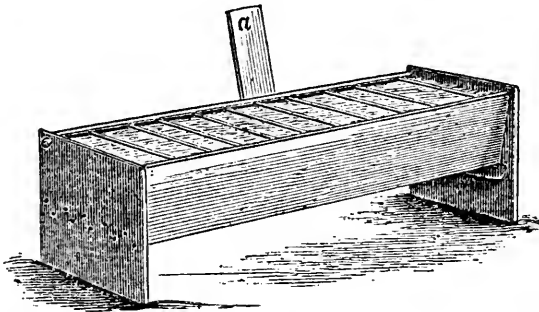


Fig. 125—CATTLE RACK.

and the spaces in the rack nine or ten inches. It should be a little wider than the figure represents, and the end pieces on which it stands, will usually require battening.

### SHEEP RACKS.

Where large flocks of sheep are to be fed, and large quantities of hay are consumed by them, convenient racks and troughs not only contribute to the improvement of the animals, but prevent tons of hay from being trodden under foot and wasted. Their best construction is a matter of some importance; some are costly, cumbersome, and inconvenient; others are

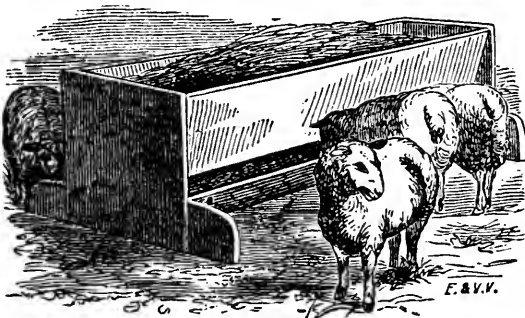


Fig. 126.

neat, cheap, and exactly fitted to their intended purpose.

A feeding trough which has been highly recommended, is shown in figure 127. It is made about two and a half or three feet high; the hay is thrown in at the top and drawn out on each side near the bottom.

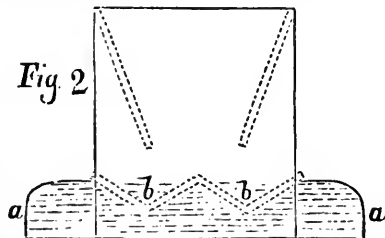


Fig. 127.

Its disadvantages are,—it is rather heavy; the hay, unless

Fig. 127, shows a cross section, and exhibits the double feeding trough *bb*, which is used for grain and chopped roots. The feet *aa*, resting on the ground should be of double plank, and notched at *bb*, to receive the boards forming the troughs. The advantages of this trough are, it does not waste hay, and answers at the same time for a place for feeding grain

carefully placed, will not descend well, and the sheep will not get their entire meal; and the troughs are rather difficult to clean. But it is incomparably better than the old way of throwing hay into the mud, to be worked in by the animals' feet.

A rather more elaborate and finished trough is shown in fig. 128. It is similar in principle to the preceding, but more easily cleaned; and the slats admit a greater number of sheep to feed at once by preventing interference. It is chiefly constructed of

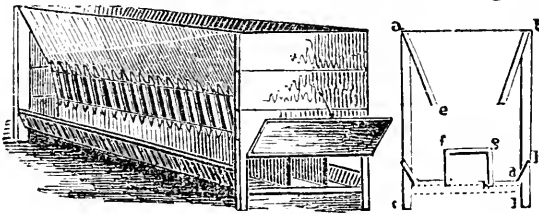


Fig. 128.

12 ft. boards, 9 inches wide. It is 4 ft. high, 34 inches wide—width of the aperture *ef*, 12 inches. Across this aperture the vertical slats are nailed, 3 inches apart in the clear, the ends being made to fit the sloping boards. The board *fg*, forming the bottom of the hopper, is 9 inches wide; and similar boards are used for the sides and bottom of the troughs on either side. The slanting sides of the hopper are nailed securely to the bevelled top of the corner posts. The lid, (seen raised,) is used to facilitate cleaning the troughs. This is the kind of feeding trough used by Wm. Chamberlain, Esq., of Red Hook, well known for his successful breeding of sheep—and is, perhaps, constructed larger than is needed for sheep of ordinary size.

A simpler and lighter trough or rack, and one better adapted to common farming, is represented by fig. 129. It consists of four scantling posts, about 3 feet long, (which should stand on flat stones,) into which the horizontal rails are let or mortised, so that the face of the rail

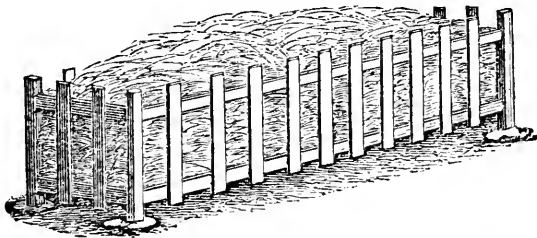


Fig. 129.

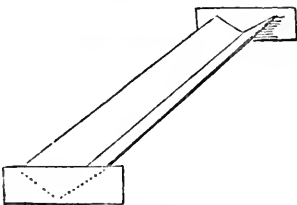


Fig. 130.

shall be one inch within the outer side of the posts. Strips 3 or 4 inches wide are then nailed on, and should be far enough apart to admit freely the head of the largest sheep; and as animals vary in size, each farmer should first ascertain by measurement before constructing his racks, the proper size. Six inches will be a proper distance in most cases.

The advantages of this rack, are its lightness; facility of construction or

cheapness; compactness, rendering it easily packed away; it may be used for making sheep pens; and does not allow the hay seed to enter the wool as is the case with all open racks inclining outwards. The only disadvantage is the want of a feeding trough; but for ordinary purposes, these troughs are most convenient and most easily cleaned if made separately, as shown by fig. 130.

## IMPLEMENTS FOR TILLAGE.

THE simplest plow is the crooked limb of a tree, and the simplest harrow a mass of brush. The former is found at the present day only among the

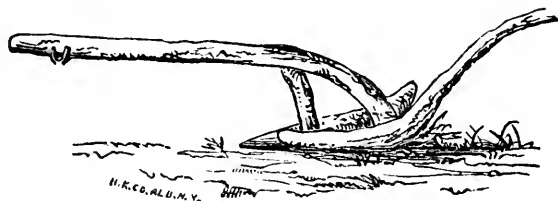


Fig. 131—MOORISH PLOW.

more degraded nations; the latter is sometimes used by good farmers with great advantage, in giving a slight covering to freshly sown grass seed.



Fig. 132—PENJAB PLOW.



Fig. 133—KOOLOO PLOW.

Improvements are made on the crooked-limb plow in the implement now used in Morocco, (fig. 131,) and in the more imperfect ones employed in Northern India, (figs. 132 and 133,) known as the Punjab and Kooloo plows. In the less improved portions of Germany, the Baden plow (fig. 134,) is not much inferior to the Bull plow of sixty

years ago. A finished modern cast plow, in its different forms and patents, is immeasurably superior. (Fig. 135.)

Nothing marks the improvement of the agriculture of the present day more strikingly and distinctly than the variety and perfection of implements for tillage. The soil is now completely under our control, and we can invert and pulverize it from a mere surface brushing to almost any desired depth. A common roller will cover grass seed on mellow soil one-fourth of an inch in depth; an evenly constructed brush harrow will per-

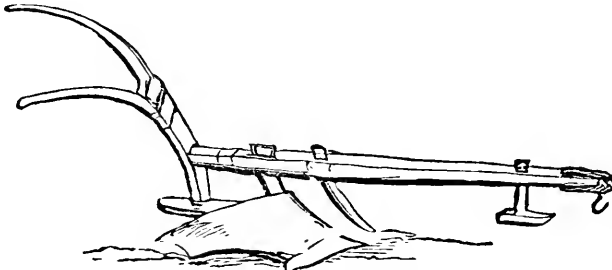


Fig. 134—BADEN PLOW.

form the same work half an inch deep; a fine harrow with numerous teeth will stir, pulverize, and turn up the earth one or two inches; and a coarser harrow, four inches. *Shares'* new *coulter-harrow* will invert and pulverize more than twice the depth of a common harrow; the gang-plow stands midway between *Shares'* harrow and the common plow. The latter

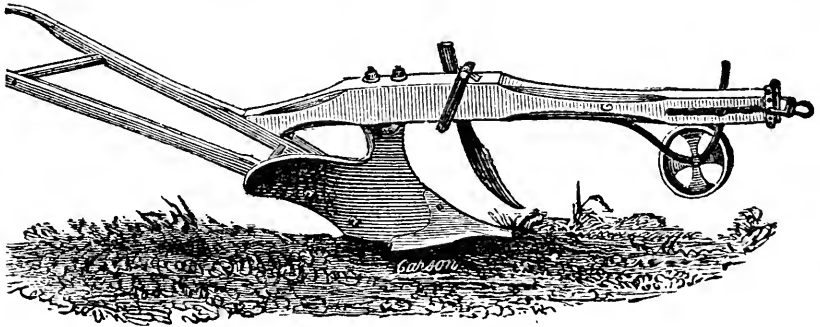


Fig. 135—CHASE'S PLOW.

will run down from five to ten inches or more; the Michigan or double-mouldboard plow, from ten to thirteen inches; and a good subsoil plow will loosen the earth fifteen to eighteen inches deep, measuring from the land or hard side. A more particular notice of some of these implements will doubtless be acceptable to the readers of the REGISTER.

The *brush harrow*, for covering grass seed, as often made, is a very poor implement. The most projecting limbs are cut partly off, that all may lie flat, but it often happens that the projecting angles of the larger branches plow into the ground and make deep furrows. This may be prevented by a careful selection of the small tree which forms the

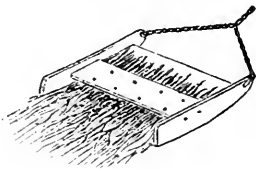


Fig. 136—BRUSH HARROW.

brush, or by constructing a simple rough plank frame, so that any quantity of short brush may be placed between two pieces of plank, to admit the tops of the brush to incline downwards and backwards, being held in place by a few spikes or bolts. Fig. 136.

Next to the brush harrow, for pulverizing finely a shallow portion of the surface, is the fine-tooth *square harrow*, fig. 137. It should for this



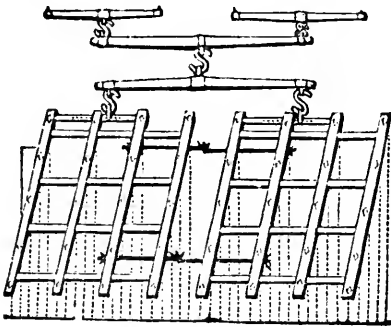


Fig. 137—SCOTCH HARROW.

purpose be made of tough and sound timber sawed two inches square, (the best elm answers well,) and the teeth should be about five-eighths of an inch square, and they should not be less than 48 in number. Such a harrow as this will leave a plowed field nearly as smooth as an onion-bed.

For common purposes, the square harrow with larger and fewer teeth, (32 is a common number,) or the Geddes harrow (fig. 138,) answers a good purpose.

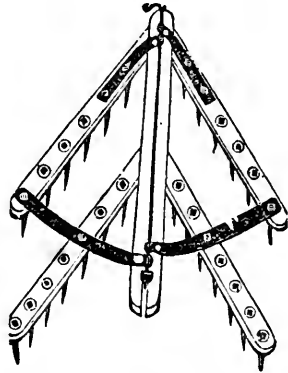


Fig. 138—GEDDES HARROW.

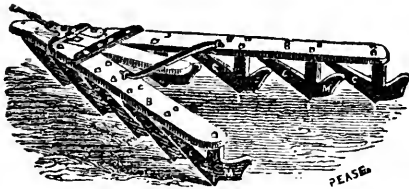


Fig. 139—SHARES' HARROW.

Next, for depth, is *Shares' Harrow*—(Fig. 139.) This is the most perfect of all implements for pulverizing the freshly inverted surface of sward land, to a depth two or three times as great as the common harrow can effect. The teeth being sharp, flat blades, cut with great efficiency; and as they slope like a sled-runner, they pass over the sod, and instead of tearing it up like the common harrow or gang-plow, they tend to keep it down and in its place, while the upper surface of the sod is sliced up and torn into a fine mellow soil. No person who prepares sod for corn should be without this efficient pulverizer.

The *gang-plow* cuts deeper and more efficiently than Shares' harrow, but it does not succeed so well on inverted sod, which it tears up, unless previously well reduced by the former. The gang-plow is a useful and efficient implement for covering spring sown grain, on land plowed the previous autumn. It will also serve an excellent purpose in turning under a coating of fine manure which it is desired to keep near the surface, and not to bury too deep for the benefit of shallow rooted plants. One of the best, most perfectly regulated and most durable gang-plows is Hildreth's, which is wholly of iron except the tongue or pole. It is figured in the last number of the REGISTER. To describe the different modifications of

the common cast plow, and point out fully their peculiar merits would require a volume for the descriptions and a life-time to prepare them. The steel mouldboard plow, although more expensive, is the most perfect implement of the plow kind.

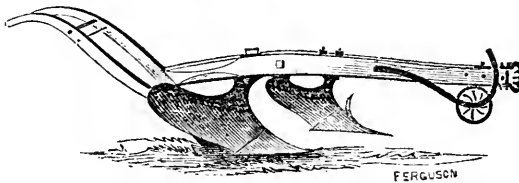


Fig. 140—MICHIGAN PLOW.

It is always useful where there is a fertile subsoil; and where there is not, it is adapted to the gradual deepening of the cultivated stratum in connection with the working in of manures. A common subsoil plow will not turn under manure. For inverting sod, so as to give a new mellow surface, nothing is equal to the Michigan plow. The annexed figures show the difference between its results and those of the common plow. Fig. 141 shows the manner in which the common plow inverts sod—the darker portion representing the top soil, and the lighter, with horizontal lines, the subsoil.



Fig. 141—SOD INVERTED BY COMMON PLOW.

Fig. 142 shows the work of the Michigan plow, the top sod being first laid in the bottom of the previous furrow by the forward mouldboard, and the subsoil piled up in a mellow bed on the top of this inverted sod. The force required to draw this plow is about the same as for a common plow running the same depth. Two good horses with a common plow, will work to a depth of five or six inches, and three horses seven to nine inches. With the Michigan plow, three good horses will run a furrow nine inches deep, the least depth to which it will work advantageously. Four horses will do but little more, as the draught of the forward pair is partly lost by their horizontal direction of draught. The largest size Michigan plow will cut a furrow through sod twelve inches in depth from the turf to the bottom of the furrow, and twenty inches if the measurement is made from the top of the newly formed bed of mellow earth. For such a depth we have found three yoke of oxen, or their equivalent in horses, not too much.



Fig. 142—SOD INVERTED BY MICHIGAN PLOW.

The subsoil plow loosens the subsoil in the bottom of the furrow, but unlike the Michigan, does not throw it up to the surface. It must always work in connection with the common plow. The results of the

The subsoil plow loosens the subsoil in the bottom of the furrow, but unlike the Michigan, does not throw it up to the surface. It must always work in connection with the common plow. The results of the



Fig. 143—SOD INVERTED IN CONNECTION WITH SUBSOILING.

two are shown in fig. 143, the surface or sod on the top and the loosened subsoil beneath. This is an important advantage where the under soil is sterile, and where it is desirable to deepen the fertile bed at the top by manuring, gradually. In connection with draining, it serves materially to prevent flooding as well as drought, by affording a deep spongy reservoir for the absorption of the surplus water of rains, and for retaining it till times of severe drought.

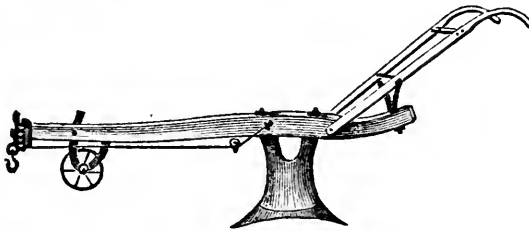


Fig. 144—SUBSOIL PLOW.

A good subsoil plow is shown in the accompanying figure (fig. 144,) and is the kind manufactured by Holmes & Stringer, of Munnsville, N. Y. When the cast blade and point become worn, they may both be reversed, and then wear as much longer. This plow works admirably except where the land is quite stony. We have used it in the bottom of a nine inch furrow plowed by three horses, the subsoiler being drawn by two horses, and running down seven inches more, making sixteen inches in all, or over twenty inches if measured from the top of the inverted sod.

When the ground is quite stony, the ditching plow, described below, has proved the best subsoiler.

#### DITCHING PLOWS.

In most localities where tile drains are made, two-thirds of the labor of cutting is loosening the earth with the pick, before shoveling it out. By means of the ditching plow this laborious process is performed by horses. One span, with a good plow made for this purpose, will loosen the subsoil fast enough for eight or ten men shoveling, and cutting about 100 rods 3 ft. deep in a day; or an hour or two each day with the plow will keep two men at work. If the subsoil is very hard, this work should be done early in summer. The implement is drawn by two horses, attached to the ends of a main whipple-tree about seven feet long, one walking on each side of the ditch. From one to three times passing will loosen the subsoil five to eight inches, which is then thrown out by narrow-shovels, on both sides, so that it may be easily returned after the tile is laid, by means of a common plow drawn as before by the long whipple-tree.

There are several modifications of the ditching plow, all accomplishing the same end. Fig. 145, is one of the simplest in principle. The coul-

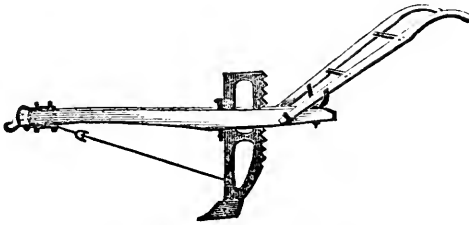


Fig. 145—DITCHING PLOW WITH SLIDING COULTER. The coulter is of cast iron, and is made to slide down through the beam as the ditch becomes deeper. The rear of this coulter being notched, the wedge in front secures it firmly at any depth it may be placed. A rod connecting it with the beam near the clevis serves to stiffen it—this rod is lengthened by means of a screw as the coulter descends. The chief disadvantage in the use of this plow is the want of a wheel to steady it and keep it at a uniform depth where the earth varies in softness; but where the hardpan is of uniform quality, and especially if stratified, it works well.

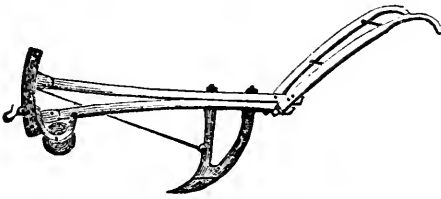


Fig. 146—PRATT'S DITCHING PLOW. Fig. 146 is *Pratt's plow*. The beam consists of two slightly curved pieces screwed together, and spreading apart at the forward end where the draught-arc is attached. By placing the draught-hook at different heights on this arc, the depth of the plow is varied. The handles are raised or depressed by passing the bolt which holds them through the different holes in the rear of the broad, double beam.

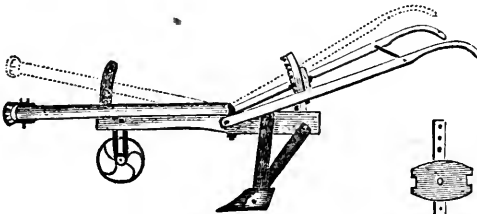


Fig. 147—ADJUSTABLE DITCHING PLOW. *The adjustable ditching plow*, fig. 147, admits of so great a change in the height of the beam and handles, that it may be run down in the bottom of a ditch to a depth of four feet. It is perhaps the best implement of the kind for all purposes and soils. The movable portion of the beam is attached to the fixed beam by a stout loop and staple, and rises on a cast iron arc which passes through it, as shown by the dotted lines. The handles rise on a stiff wooden arc, (as the dotted lines exhibit,) a piece of thick plank, shown in the small figure on the right, being placed between the handles and fastened to them, to render them more firm and steady. The iron work, although light, is braced so as to impart great strength and security. The point is screwed on separately, and is nearly the only part that wears by use.

A modification of this plow rendering it simpler, and capable of run-

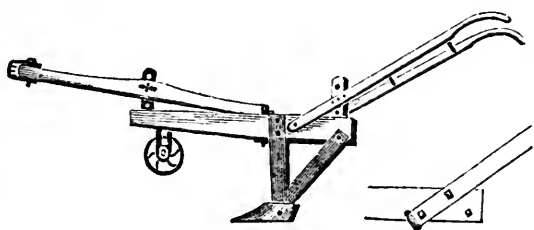


Fig. 148.

ning down to a depth of three feet, is shown in fig. 148. Instead of arcs, small uncurved stems are used for raising and depressing the beam and handles. A slot is made in the movable beam, and three holes for different

heights, in the handles. The rest is similar to fig. 147.

[NOTE.—*Pratts' Ditching Machine*, described in a former number of the REGISTER, although working well when new and in perfect order, has been found on account of its great weight and complex form, and consequent liability to derangement and breakage, to be of little or no practicable value for general purposes.]

#### IMPLEMENTS FOR SURFACE TILLAGE.

SAYRE & REMINGTON'S CULTIVATOR.—Among the many cultivators we have used, we have been especially pleased with those manufactured by Sayre & Remington, Utica. They all have steel teeth, in which strength and lightness are well combined. Several different forms are made, one

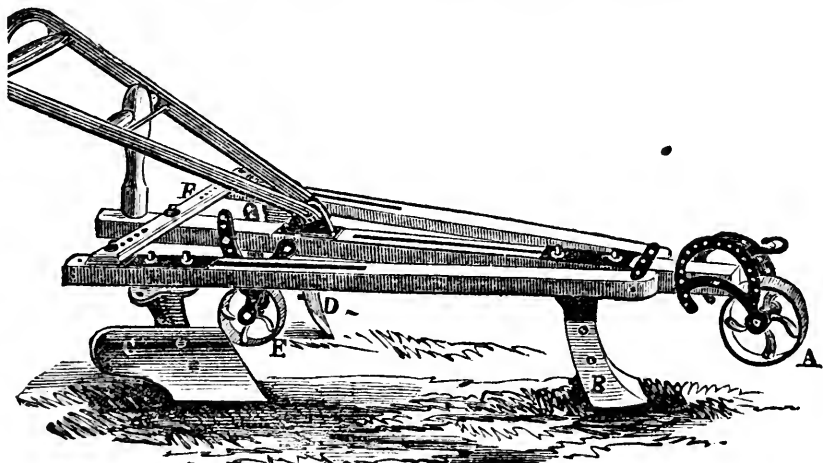


Fig. 149—SAYRE &amp; REMINGTON'S CULTIVATOR.

of the best of which is represented by fig. 149. By means of the forward wheel A, and the central wheel E, the depth may be regulated with perfect accuracy; the sliding bars F control the width; while by reversing the blades, it may be made to throw the earth to or from the rows at pleasure. The teeth continue sharp until worn out. For corn-fields and nursery rows, we have found this implement to do twice the work of a light plow. This cultivator is also used for drilling and covering in planting potatoes,

by first placing the teeth in the form of a double mold-board plow for making the furrow—then taking out the forward tooth, reversing the others, and thus spanning the drill and covering the potatoes. If the ground is in good order, it will thus cover as fast as four men will drop.

**SHARES' CULTIVATOR.**—This implement (fig. 150) we have not tried,

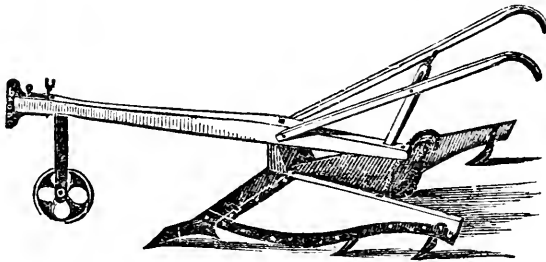


Fig. 150—SHARES' CULTIVATOR.

but it is well recommended for the cultivation of corn and potatoes, and all crops in rows. It is manufactured by Pease & Co., Albany.

**WETHERELL'S HORSE HOE.**—This curious implement (fig. 151) is constructed on a

principle quite distinct from all other implements of tillage. Small rapidly-revolving hoes, worked by the cogs on the large driving-wheel

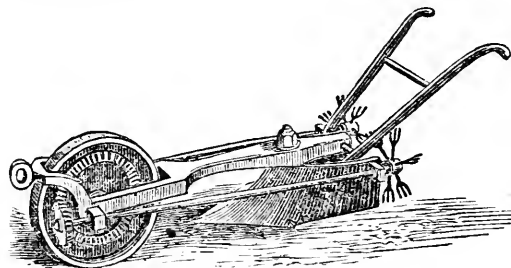


Fig. 151—WETHERELL'S HORSE-HOE.

in front, scatter fine earth among the rows of corn; and if the weeds are not more than three or four inches high, they are beaten down and covered with this stream of earth, while the larger and stouter plants of the crop are not affected. From a partial trial, this implement appears to answer well, and will doubtless prove valuable where the soil is mellow and free from stones. It hills a row of corn with much neatness and accuracy. It is made by L. Wetherell, Worcester, Mass.

is constructed on a principle quite distinct from all other implements of tillage. Small rapidly-revolving hoes, worked by the cogs on the large driving-wheel in front, scatter fine earth among the rows of corn; and if the weeds are not more than three or four inches high, they are beaten down and covered with this stream of earth, while the larger and stouter plants of the crop are not affected. From a

#### OTHER NEW IMPLEMENTS.

In addition to the new implements already described, the following have been carefully tested and found valuable.

**GLADDING'S HAY-FORK.**—Every farmer who has ever pitched off from a wagon in one day ten or twelve tons of hay, is aware that no labor on the farm can be more fatiguing. The common horse-fork, which, to a considerable extent, has been brought into use, has afforded great relief; this severe work not only being avoided, but much greater expedition attained. The effective force of a horse is at least five times as great as that of a stout man; and if half an hour is usually required to unload from a wagon a ton of hay, then only six minutes would be required to accomplish the same result with horse power. Actual experiment very

nearly accords with this estimate, five to seven minutes only being required by the assistance of the best horse-fork.

The accompanying figure (fig. 152) shows the common implement, and the mode of using it. Fig. 153 is an enlarged representation of the fork.

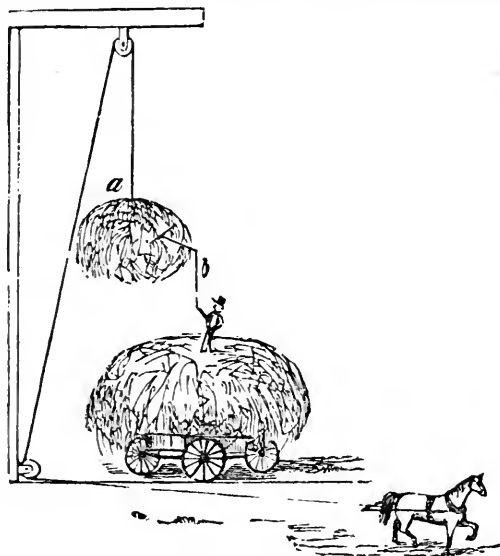


Fig. 152.

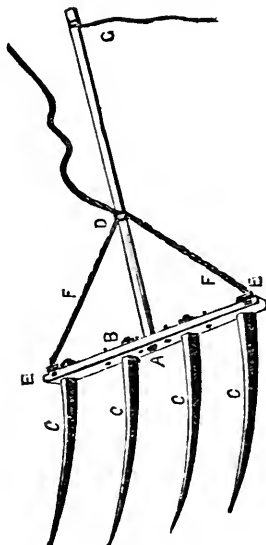


Fig. 153.

The head is about 28 inches long, and has steel prongs of 20 inches. The rope attached at D, or as it should be, rather nearer the rake, passes over the pulley above, by which the fork, after being thrust into the hay, is lifted by the strength of the horse, outside the barn-door. The fork is kept in a horizontal position, and the hay retained upon it by the cord b, until high enough, when this cord is slackened, and the hay accordingly deposited or dumped.

The horse is backed and the operation repeated.

Fig. 154.

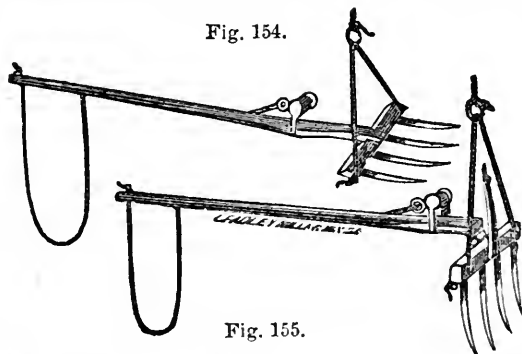


Fig. 155.

There are, however, some difficulties in the use of this fork. The most so results from the necessity for the handle of the fork to sweep upwards in a vertical position, whenever the hay is dropped from it—and falling back it is in

danger of striking the operator. It is hence impossible to use it under a low roof, beyond purlin beams, or when the mow is nearly filled. To

remedy these difficulties, C. E. Gladding of Troy, Pa., has recently constructed a fork, (fig. 154, preceding page,) which, after a recent trial, we are satisfied is an important improvement. It differs from the common horse-fork by placing a hinge joint at the connection of the head with the handle; so that at any moment, by a jerk on the cord which passes up a bore in the handle, the fork is dropped as shown in fig. 155, and its load deposited. This may be done instantaneously, at the moment it happens to be swung to the most favorable spot. The fork is so hung that its weight causes the head to fly back of its own accord, and resume its former position—where it is held by an iron catch until the next forkful is to be discharged.

It should be observed, that the rope suspending the fork should be fastened to the highest portion of one of the rafters over the mow, and a smooth board should be placed vertically against the face of the mow, for the hay to slide against in its ascent. By attaching this rope in front of and within a window, the hay is carried with ease into the window, and thus lofts over sheds, carriage-houses, &c., where the common horse-fork could not be used, are filled by the use of Gladding's improvement. It may (as well as the old fork,) be also used for stacking, by making a tripod of three long poles, from which to suspend the implement.



Fig. 156—WILLARD'S ROOT-SLICER.

WILLARD'S ROOT-SLICER—(Fig. 156.) This has proved an efficient machine. It will cut a bushel of roots in a minute; and a half bushel if



worked quite slowly with the strength of a boy. It slices up the roots into shavings about three-fourths of an inch wide and half as thick, the principal wheel being a cast-iron plate set with small curved blades which do the work, the plate operating at the same time as a fly-wheel. It is evidently a great saver of labor, especially so to the animals which have to do the chewing.

**JOICE'S STAR MILL**—(Fig. 157.) This is intended solely for grinding food for animals, and is driven by two horses. According to our own



Fig. 157—JOICE'S STAR MILL.

experiments, it will grind a bushel of barley in five minutes; a bushel of corn in the cob in the same time; a bushel of shelled corn into coarse meal in three minutes, and into fine meal in ten minutes. It is simple in construction, has no gearing, and is very durable. To farmers remote from mill, it will prove a great convenience. It is made by Hildreth & Co., Lockport, N. Y., for about \$55, and on every considerable farm will perhaps save its price each year.

**HICKOK'S STALK-CUTTER**—(Fig. 158.) This is a heavy and stout

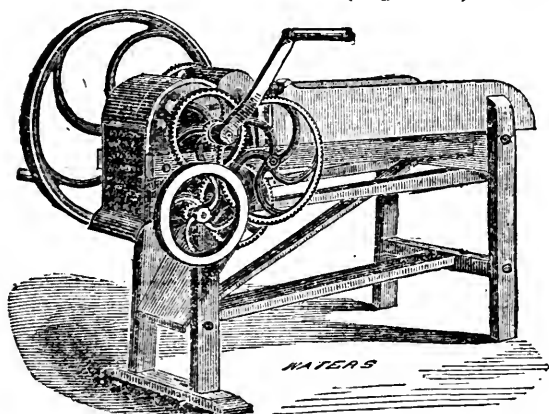


Fig. 158—HICKOK'S STALK-CUTTER.

machine, which may be worked by two men, but it is more particularly intended for horse power. Two horses will cut stalks, hay and straw, with great rapidity. They are cut by the shearing process, about half an inch long, and as soon as cut the small chips of the stalks pass between two grating rollers,

and are torn to pieces, so that they are readily eaten by cattle. The hard stems of the Chinese Sugar Cane are thus rendered quite palatable.

**ALLEN'S POTATO DIGGER**.—Digging potatoes by hand is a most laborious task. We are glad to find the attention of inventors turned to some means of doing it by horse labor. We have recently made a trial of the potato-digging plow manufactured by R. L. Allen of New-York, (fig. 159,) on a principle similar to that of Lawson's English potato-digger, and find

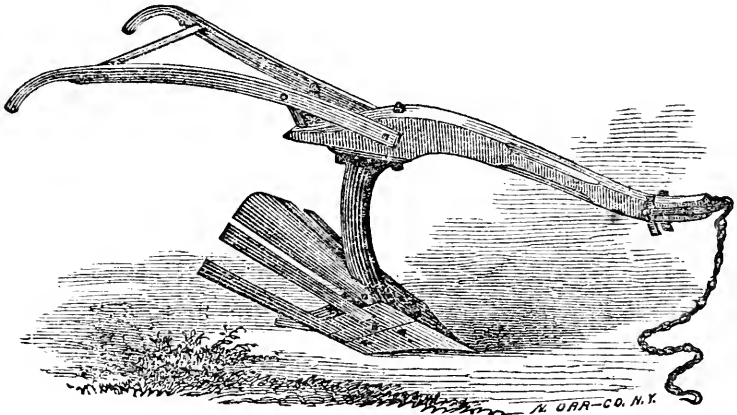


Fig. 159—ALLEN'S POTATO-DIGGER.

it a great saver of labor. The figure nearly explains its construction. It weighs less than a hundred pounds, and is easily drawn by two horses. There should be a driver, as the plowman needs his attention to keep it in the center of the rows. It throws a double furrow, like a shovel plow, and turns the potatoes out of the ground, throwing them on the surface with great rapidity. A very small portion remain covered, but they are easily raked out. Our trial was made on heavy and unfavorable soil, where we think it saved at least three-fourths of the labor of hand-digging. On lighter soil, we have no doubt that its operation would be still more advantageous and perfect. It works best, of course, in clean, well cultivated land, but the standard being high, it is not easily clogged with weeds or potato vines. Its depth may be accurately gauged, so as to run just beneath the potatoes.

### LABOR BY HORSE POWER.

THE performance of all the hard labor of the farm by horse power, so far as can be accomplished, is becoming more and more an object with good managers. A great improvement has been made in the various implements for inverting and pulverizing the soil and tilling crops; it is equally desirable that machinery for stationary labor be successfully brought into use. Some of the best farmers have already made good progress by the adoption of horse power, not only in threshing and cleaning grain, but in cutting straw and stalks, sawing wood, churning, grinding feed, turning grindstone, and pumping water for cattle.

The two-horse endless chain or tread powers, are found to be convenient for the application of labor to these several purposes. The small

space they occupy adds to their convenience. The objections to them are the unnatural position they give the horses, and their cost. These objections are obviated by the smaller sweep-powers, one of which, costing but half the tread powers, we described in the last number of the REGISTER. This power is, however, less compact, and the constant circular motion, tends in some degree to lessen the effective force. We have, however, used one with much advantage in threshing, cutting stalks with Hickok's machine, and other purposes. Many of our readers desire to know the cost of all the machinery for these different objects, and at our request, Hildreth & Charles of Lockport, who make these horse powers, and who have had much experience in their application to different purposes, have furnished the following estimate of the actual expense of such machinery :\*

A Two-horse Sweep Power, .....	\$50
Speeder or Jack for the same,.....	12
Threshing Machine,.....	30
Belt and Rod,.....	8
Extra Rods and Couplings, .....	5
Cross-cut Saw and attachments, for sawing logs, .....	25
Circular Saw with Table, &c., for cutting stove-wood,.....	35
Cap-Augur,.....	5

\$170

It will be seen by the preceding that the entire apparatus for threshing is \$100; for cross-cutting wood, including horse power, saw, pitman, crank, balance-wheel and rods, \$75; and for cutting wood by circular saw, including belts, speeder, rods, &c., about \$105—when each of these is used separately.

## FRUITS AND FRUIT CULTURE.

### PLANT APPLE ORCHARDS.

If any farmer who has had for 20 years a good orchard of grafted apple trees, properly selected for market, and in tolerably favorable portions of the country, has kept an account of the annual *average* product of his trees in that time, he will find they have *netted* him fifty dollars per acre a year. This remark applies to such orchards as have had no care. Those which have received good cultivation have done better.

Why then cultivate whole farms, at hard labor, for a net proceed of five dollars per acre? Why not plant orchards? "They won't bear in an age?" That is because, then, they receive no care. Give them the same chance that a crop of potatoes receives, (and which would not cost a tenth of the labor expended yearly on the potatoes,) and they will send

\* And which we understand are prices at which they will agree to furnish every article here mentioned.

out shoots two or three feet long—but if neglected and weed-grown and grass-bound, they will grow only two or three inches—in one instance twelve times as fast as in the other. No wonder, then, while the thrifty orchardist with his thrifty orchard, has fine young trees with remunerating crops in five years, the slip-shod cultivator does not attain the same in fifty years, at the above estimated rates of growth. These rates are stated from the result of actual experiment, and not from hap-hazard estimates.

Plant orchards, then, of the best varieties. Occasionally, it is true, there may be destitute years, and sometimes the crop at large may overstock the common market. But the above yearly average may be attained at least, in the course of seasons; and the cultivator who is known by his skill to have none but the best fruits, and made better than that of his neighbors by superior cultivation, will be eagerly sought by fruit buyers, even in the most abundant seasons, and if he ships his own apples, he may often obtain triple prices for his handsome and excellent specimens.

#### TRANSPLANTING SMALL TREES.

It has been a very general, almost universal desire among tree-planters, to have large-sized trees from the nursery. One person about to set out an orchard, wrote, "Send me *man* trees. I do not want puny little children—but large, full-grown specimens." Another said, "I want the largest trees you have—I don't care much what kind they are—but give me tall ones—if a rod high, all the better." "But," the nurseryman replied, "smaller ones will be better in five years than these." "I don't care, I want big ones; I may not live five years, and I want fruit *now*." Three or four years after, the same planter called again. Without waiting for an inquiry, the nurseryman immediately remarked, "Well, I have some fine large trees which I can furnish." "Don't want 'em! don't want 'em!" was the answer, "I've had enough of large trees—they have cost me ten times as much labor to set out as the small ones I took from necessity. They have not grown one inch; are just the same size I bought them, although I have doctored them and nursed them, and they have borne me only a very few of half-grown worthless fruit. The small trees have already outstripped them, and have begun to bear large, excellent specimens."

These experiments have now become so numerous, that a change in the opinion of planters has generally taken place, in relation to the size of trees. Where 12 feet were formerly demanded as a desirable height, 5 or 6 feet are now quite as satisfactory, and some find still smaller ones to do better. At a meeting of the Fruit-Growers' Society of Western New-York, held at Rochester a year ago, this subject was fully discussed, and none, who had ever tried the experiment, with large and small trees side by side, could be found who preferred the former. Many instances

were related, and in every case without exception, (good culture being given,) the small trees soon out-grew the others, and were not only larger, but incomparably more vigorous and thrifty. Two-year apple trees and one-year peach trees were preferred by some of the best cultivators present, to any of larger dimensions. And in addition to these advantages, the smaller trees are almost sure to survive transplanting, with scarcely a loss of one in a thousand; while the extra large ones, the roots of which must be greatly mutilated in removal, die by scores. The labor of digging up the large trees, the cost of transportation on them, and the cost of resetting them, are all several times greater than with smaller ones. Where they are to be sent some distance by railroad, the increased cost of conveyance, as well as in risk and in packing, is greater than a hasty observer can have any idea of. A tree, for example, which is twice the height and diameter of another, is greater in weight in a cubic ratio. If a hundred of the smaller weigh two hundred pounds, one hundred of the larger will weigh eight hundred pounds, or nearly half a ton—the cube of two being eight. A single season's growth will often make this difference in the nursery—but many years, after being checked by removal when large. There seems, indeed, to be every reason why trees should be removed small, and everything against the practice of leaving the work till they attain large size. Sir Joshua Reynolds said if he were to paint a picture of Folly, it would be by representing a boy climbing over a high wall with an open gate close at his side. Had he lived now, he might do it with equal effect, by representing a purchaser selecting large trees at a nursery, and rejecting the young thrifty ones.

There is only one instance in which the larger trees can have any advantage, or can maintain it for two or three years—and this is where both large and small are treated with total neglect after setting out, so as barely to survive and not to grow at all. Both remaining stationary, the larger ones will of course maintain their superiority. But all good cultivators discard such treatment.

The practice of copying English customs, has in this case had an especially pernicious effect. In Britain, the moist climate favors the removal of larger trees than can be safely transplanted here. The experiments of Sir Henry Stewart in Scotland, in manufacturing a park of trees to order, thirty or forty feet high, and the publication of a work giving the details of his experiment, have done a great deal of harm. The park, after the first year or two, presented a very shabby, thriftless, and stunted appearance; but even while this practice was at the height of its popularity, that far-seeing and skillful culturist, J. C. Loudon, asserted that with five years' time and with deeply-trenched land, he would agree to produce a finer effect with small trees, subjected to the best treatment, than any that could possibly be accomplished by the removal of large ones at the same time.

## APPLES FOR MARKET.

The following condensed report of the discussions on this subject at the last winter meeting of the Fruit-Growers' Society of Western New-York, contains many interesting suggestions to planters:

The committee on business reported as a subject for discussion, the number of varieties and their names, for an orchard of a thousand trees. L. B. Langworthy said that simply for profitable marketing, he would make a very short list—he would plant only two sorts—the Fall Pippin and the Baldwin. A member objected to the Fall Pippin on account of its poor bearing, but proposed the Tompkins County King in addition to the Baldwin. Another member urged the importance of a larger number of varieties, in order to secure a more certain supply in different seasons, as particular sorts failed in certain seasons. H. E. Hooker of Rochester proposed to add to the Baldwin, Rhode-Island Greening and King, the Roxbury Russet, the latter being the most reliable apple for late spring. Luther Barber of Bloomfield, had found the King rather unproductive—the Baldwin producing several times more, both on young and old trees. A. Stone of Oswego county, would add the Lowell, a mid-autumn variety, and the Wagener, an early bearer, and a very productive and very good sort. G. Ellwanger added Red Astrachan and Sweet Bough. T. G. Yeomans of Walworth, reminded the Society that nearly every person, who had but very few trees, usually had a full supply of early sorts, and did not expect to buy of these, but that winter apples were chiefly wanted by all. He preferred the Baldwin to all others, for its growth, productiveness, and fine appearance. He would therefore propose for the orchard of a thousand trees, nine hundred and ninety-nine Baldwins, and perhaps the remaining one would be a Rhode-Island Greening. B. Fish of Rochester, would have at least ten sorts, because as the community is made up of families, he would have such sorts as families want for their own use, namely, an assortment of different kinds.

W. B. Smith of Syracuse, would not be so liberal in his list as his friend Yeomans, but would for an orchard of 1000 trees, set out 1000 Baldwins. P. Barry thought that the profits of a large orchard would depend almost wholly on winter kinds, that could be sent to the large cities in large quantities; that summer sorts are usually brought in small quantities by farmers generally, who have a few bushels to spare, and that the market is mostly supplied in this way. He would plant mainly of three sorts—the Rhode-Island Greening, Baldwin, and Roxbury Russet, not perhaps in quite equal quantities—he would prefer the Greening to all others, and although the Baldwin was extremely popular from its early bearing, he thought it not always best to allow trees to bear so young. H. N. Langworthy said a greater number should be recommended, for if only a few were generally planted, purchasers would soon "get sick" of a supply so deficient in variety. The President (B. Hodge)

stated that after much experiment, he was now planting out Baldwin and Rhode-Island Greening. The *Northern Spy* was mentioned, and had its friends and opposers. L. B. Langworthy thought it was time it was "knocked in the head"—others objected to it on account of its want of early bearing, but admitted its excellence. T. G. Yeomans stated that he had filled a barrel with 219 specimens, and several cases were mentioned of its productiveness. The fact was also stated that in some portions of the north-western States it had proved valuable, and the California Horticultural Society had pronounced it the most valuable sort out of many that had been fruited in that State, all things considered. P. Barry said that he regarded this apple the finest in quality of any sort grown; that it was objected to because cultivators in this country were so extremely impatient, and must have trees bear immediately. Another objection was in consequence of its delicacy, rendering it easily bruised if carelessly conveyed to market. He had seen several barrels of it at the west, however, that with care had been conveyed there with perfect success, and the specimens were so fine that the owner said it would require several days for him even to *fix a price on them!* L. Barber of Bloomfield, the place of its origin, said it would not do to recommend it for general cultivation, because, needing good, rich, mellow soil, planters generally would fail from the neglect it would be sure to meet with. S. H. Ainsworth, for the purpose of making the most money at the present day, would plant only the Baldwin—but looking farther ahead, he would also add Rhode-Island Greening, Tompkins County King, Twenty Ounce, and Roxbury Russet. He would also plant Northern Spy. He mentioned the twenty-two trees of the Spy owned by R. J. Hand, that some years ago bore four hundred dollars worth of apples, from high cultivation. He would recommend it, however, to only such cultivators as would cultivate well, thin out the top, and pick off the poor specimens, so that they will not be crowded. He had seen the orchards of some persons who had denounced this apple, but their trees were neglected, and the tops as thick as a hedge fence. He highly commended the Sweet Bough, as a sort that would continue to ripen from summer nearly through autumn.

At the same meeting, the following result of the votes of seventeen of the most intelligent and practical members, will show the reputation of different varieties for market in Western New-York—each member making a list for an orchard of 1000 trees. Of the 17,000 thus voted for, there were

6,800 for the Baldwin,	100 for the Red Astrachan,
3,200 " Rhode-Island Greening,	100 " Lady Apple,
1,600 " Roxbury Russet,	100 " Wagener,
1,325 " Tompkins Co. King,	100 " Sweet Bough,
850 " Northern Spy,	50 " Duchess of Oldenburgh,
850 " Twenty Ounce,	50 " Swaar,
475 " Tallman Sweeting,	50 " Cooper's Market, (local,)
300 " Fall Pippin,	50 " Keswick Codlin,
300 " Esopus Spitzenburgh,	25 " Peck's Pleasant,
150 " Lowell,	25 " William's Favorite.
100 " Golden Russet,	

## THE BALDWIN APPLE.

For *early* productiveness, perhaps no apple is equal to the Baldwin. This quality renders it eminently popular among our impatient Yankee fruit-raisers. The adverse quality in the Northern Spy renders the latter eminently unpopular. The character of the Baldwin is thus raised higher than its real merits; that of the Spy is depressed lower.

We have had Baldwin trees bear a bushel or more the fifth year from transplanting, and over three bushels the seventh. B. Hodge of Buffalo, mentioned that in 1848 he sold a farmer 100 apple trees of Baldwins and Rhode-Island Greenings. In 1855, eight years afterwards, the orchard having received good cultivation, they yielded 120 barrels of apples, many of the Baldwins bearing three barrels each. S. H. Ainsworth of West Bloomfield, N. Y., recently informed us that one of his neighbors re-grafted an old orchard to the Baldwin. There were forty trees, covering about an acre of ground. In six years, he sold the crop of those forty trees for *three hundred and fifty dollars*. A. Loomis of Batavia, N. Y., says that his brother had a tree of the Baldwin that bore twelve barrels of good marketable fruit, (besides four or five bushels of windfalls;) and that he sold the twelve barrels for \$2.25 per barrel, or *twenty-seven* dollars for the tree. Forty such trees would be one thousand and eighty dollars. It does not succeed at the South and West. The Northern Spy has done well in Wisconsin and in California.

## APPLES FOR VIRGINIA.

The best sorts are Carolina Red June, Gravenstein, Belmont, Fall Pippin, Bellflower, Smokehouse, Smith's Cider, Male Carle, Maiden's Blush, Loudon Pippin, Limbertwig, Fallwater, Rambo, Prior's Red.

## VALUE OF THE FRUIT CROP IN MASSACHUSETTS.

Marshall P. Wilder states that the value of the fruit crop in 1845, was \$700,000—in 1855 it was \$1,300,000—now it cannot be less than \$2,000,000. The pear crop in Massachusetts is valued at \$100,000 per annum.

## SELECT FRUITS FOR NEW-ENGLAND.

M. P. Wilder, President of the American Pomological Society, furnishes the following select list of fruits:

The following were recommended as the *six* best varieties of apples:

The Williams, Early Bough, Gravenstein, Famense, Hubbardston, Nonsuch, and the Baldwin; and if *twelve* varieties were desired, the Red Astrachan, Rhode-Island Greening, Ladies' Sweet, Porter and Tallman Sweeting might be added.

For pears on their own roots, the following were recommended:

*Best six pears on their own roots.*—Bartlett, Urbaniste, Vicar of Winkfield, Bullum, Beurre d'Anjou and Lawrence.

*For the best twelve* add—Rostiezer, Merriam, Doyenne Boussock, Belle Luerative, Flemish Beauty and Onondaga.



*Best six on quince roots.*—Louise Bonne de Jersey, Urbaniste, Duchess d'Angouleme, Vicar of Winkfield, Beurre d'Anjou, and Glout Morceau.

#### FRUITS FOR WISCONSIN.

The following list of fruits for a family supply is given in answer to a western correspondent. It is difficult to give a precise list, as it may be that the crop will be ten times as great in some years as others; and again some will bear abundantly and others fail in the same season. The following, however, will serve as an attempt or approximation:

**EARLY SUMMER.**—Early Scarlet, Wilson's Albany, and Hooker *strawberries*—two or three square rods, well cultivated in drills.

**EARLY AND MID-SUMMER AND LATER.**—Red and White Dutch currant, Cherry, White Grape, and May's Victoria, one to two dozen bushes each; two dozen Houghton's gooseberry; Fastloff and Franconia raspberries, one dozen or more each, and three dozen Brinckle's Orange, all to be laid down in winter; three trees Mayduke cherry, three of Early Richmond, one of Belle de Choisy, and four of Belle Magnifique; a dozen each of Dorchester and Rochelle blackberries.

**LATE SUMMER.**—Red Astrachan, Sops of Wine, Carolina Red June, High-top Sweeting, Early Joe, Benoni, Sweet June *apples*, each two trees; Tyson, Rostiezer, Osband, and Brandywine pears, each two trees. Some currants and blackberries will continue till this time.

**AUTUMN.**—Oldenburgh, Late Strawberry, Fall Orange, Dyer, Gabriel, Maiden's Blush, and St. Lawrence apples, each three trees; Flemish Beauty, Buffum, Fulton, Onondaga, and Stevens' Genesee, each two trees; the two first being very hardy, might be planted in greater numbers. If *dwarfs* are desired, for coming soon into bearing, they may be of the following sorts, which are among the hardiest at the west, and which do well as dwarfs: Buffum, Osband's Summer, Oswego Beurre, Tyson, White Doyenne—and Glout Morceau and Easter Beurre for winter—three to six each—more of the two last. The Delaware, Clinton, and York Madeira grapes—two to six vines each—the Delaware is the most valuable.

**WINTER AND SPRING.**—*Westfield Seeknofurther*, Jonathan, Fameuse, *Yellow Bellflower*, Winesap, *White Winter Pearmain*, and Mother apples, each five, except those in italics, of which there may be ten each.

Those living at the west, who may be well acquainted with those fruits which do best there, may add to or modify the list.

#### FAILURE OF WESTERN FRUIT TREES.

Lewis Ellsworth, one of the most successful and intelligent fruit-growers in Illinois, says in a communication to the *Prairie Farmer*, that the loss in fruit trees in that State within the last three years, is *millions of dollars*—that it is attributed to the cold winters and dry summers. But he asserts that to a great extent, this result has arisen from their standing *unprotected* in a soil underlaid with a retentive clayey-loam

subsoil, which characterizes most of the prairie lands. He has adopted the practice of ridging his land, by repeated plowings, commencing at the same ridges and ending at the same dead furrows, and where nursery trees were formerly thrown out by freezing, since ridging they stand throughout the winter without injury, and make a better growth in summer. He recommends the ridging system for all orchards, each row of trees being placed on the center of the ridge.

We have no doubt that draining would lessen the effects of severe winters on fruit trees in other regions than the west.

#### RIPENING PEARS.

At the winter meeting of the Fruit-Growers' Society at Rochester, in 1859, the remarks on this subject were confined to the *Glout Morceau* and *Vicar of Winkfield*. P. Barry said the crop of the former always improved after a few years of bearing. The specimens first grown on young trees were difficult to mature well, but as soon as the trees became large enough to yield a bushel or barrel, they ripened well. A diversity of opinion was expressed in relation to the *Winkfield*. W. R. Coppock of Buffalo, had been very successful with this fruit when placed in a warm room, the temperature of which had been kept up to about 90 degrees, and their quality had proved of a high character, and they had sold readily in market for six dollars per bushel. H. E. Hooker of Rochester, had, on the contrary, found no necessity for a warm temperature, but had ripened them perfectly in the barrel in the cool cellar. B. Fish had succeeded equally well in a cold upper room, the maturity in which was perfect, and their quality excellent. But he considered it of the utmost importance, (and others agreed with him,) that the pears should be *well grown* from well cultivated trees. S. H. Ainsworth of West Bloomfield, had combined the two modes, keeping the fruit in a cool cellar, and placing them in a warm room about ten days before needed for eating. He had been agreeably disappointed in the quality of this variety, as it had not only ripened as well as the *Virgalieu*, but had proved scarcely inferior to it in quality.

#### PEARS FOR MARKET.

At the same meeting, W. R. Coppock of Buffalo, would set out in an orchard of 1000 trees, 500 Bartletts on pear stock, and 500 Winkfields on quince. J. J. Thomas would confine his list to *Angouleme* and *Louise Bonne Jersey*, (on quince,) and *Bartlett*, *Flemish Beauty*, *Sheldon*, *Seckel*, and *Lawrence* on pear. P. Barry would add to these the *Beurre d'Anjou*, and the *Winkfield* and *Easter Beurre* on quince. Others recommended the *Virgalieu* or *Doyenne* as best of all where it did not crack.

#### HARDY PEAR TREES.

Some of the best and most productive pear trees in the Eastern and Middle States, prove tender at the west during severe winters. Among

these may be mentioned the Bartlett, Madeleine, and Belle Lucrative, for pear stocks, and the Angouleme and Louise Bonne of Jersey on quince. The following varieties have generally proved hardier in western localities: *On pear stock*—Flemish Beauty, Lawrence, Tyson, Buffum, Fulton, Osband's Summer, Onondaga, Sheldon. *On quince*—Stevens' Genesee, Buffum, Flemish Beauty (double worked,) and Urbaniste.

#### SELECT LIST OF THE NEWER PEARS.

At the request of the writer, P. Barry and G. Ellwanger of the celebrated Mount Hope Nurseries, Rochester, N. Y., have kindly furnished the following lists of the best of the newer pears. No fruit-growers in America have more extensive specimen grounds, or have been more successful in testing and sifting out from the vast multitude of new sorts, those likely to prove the most valuable. Each has furnished a separate list without consultation with the other, with the following result, in which, it will be perceived, they have coincided remarkably:

**LIST OF P. BARRY.**—*Three best*: Beurre d'Anjou, Beurre Superfin, Sheldon. For *six best*, add to the above: Beurre Hardy, Beurre Clairgeau, and Howell. For *twelve best*, add to the above: Brandywine, Beurre Giffard, Beurre Langelier, Nouveau Poiteau, Rostiezer, and Doyenne d'Alençon.

The list furnished by G. Ellwanger, agrees exactly with the above for the *three best*, and also for the *six best*. The six added to make out the *twelve best*, agree with the exception of Beurre de Waterloo and Beurre gris d'Hiver Nouveau, substituted for Rostiezer and Doyenne d'Alençon.

In relation to the value of the above mentioned new sorts, P. Barry remarks: "As to the merits of these new sorts of pears named above, as compared with Bartlett, Flemish Beauty, Louise Bonne, Belle Lucrative, &c., we would only say that B. d'Anjou, B. Superfin, B. Hardy and Sheldon, are all superior in *quality* to the old ones named; but for a small collection, we would still prefer the old ones. The Louise Bonne is one of the most valuable of all, considering how hardy, productive, and sure it is, both on pear and quince. Howell, in growth, productiveness, and quality, is about a match for Flemish Beauty, but is not so showy. No one variety is so much sought for yet as the Bartlett—this is the experience of nearly all nurserymen."

The following list of new varieties has been furnished by H. E. Hooker of Rochester, one of the most careful as well as most intelligent fruit-raisers of this country. In presenting it, he remarks: "The more I test and compare good fruits, the more I become satisfied that there is no fruit designed to comprehend all the excellences; and the more years you grow the new, the more you become satisfied it will not do to discard the old sorts. \* \* Those named below are as new with me as I should be willing to speak of with certainty:"

*Three best*—Beurre Giffard, Beurre Hardy, Lawrence.

*For six best*, add—Doyenne d'Ete, Brandywine, Beurre St. Nicholas.

*For twelve best*, add to the preceding—Kirtland, Beurre d'Albert, Beurre d'Anjou, Beurre Superfin, Beurre Clairgeau, Belle Epine Dumas.

#### DWARF PEARS—LENGTH OF ROOTS.

A careful measurement has been made by the writer, of the roots of dwarf pear trees that had grown only two summers. They were found to be about *four feet* long—forming a circle of fibres *eight feet* in diameter, in the center of which the tree stood. To dig a circle around each tree, large enough for this extent of roots, would therefore require spading a surface at least ten feet in diameter, for the roots of weeds and grass will extend inwards towards this circle at least one foot, and often much more. As the trees grow older, the circle must be much larger. The impossibility of giving adequate cultivation by means of the small circles often seen, not more than three or four feet in diameter, is obvious. Nothing but perfect and *broadcast* cultivation of the soil will answer.

#### PLUM TREES FOR NORTHERN ILLINOIS.

The following list is recommended as promising well for the colder parts of the Western States, or where danger is feared from the severity of the winters: Royale Hative, Prince's Yellow Gage, Red Gage, Lombard, Bradshaw, Schenectady Catharine, Bleecker's Gage, McLaughlin, Monroe, Corse's Nota Bene, Imperial Gage, Smith's Orleans, Reine Claude de Bavay, Fellenberg, Coe's Late Red, Quackenboss, Fulton.

#### NEW PLUMS.

LIST OF NEW PLUMS, BY P. BARRY.—*Three best*: Bradshaw, McLaughlin, Reine Claude de Bavay. *Six best*—add Rivers' Early Favorite, Fellenberg, Prune d'Agen. *Twelve best*—add Bryanston Gage, Golden Gage, Pond's Seedling, (English,) Victoria, Downton Imperatrice, Prince Englebert.

LIST BY G. ELLWANGER, made without seeing the above: *Three best*—Bradshaw, McLaughlin, Peters' Yellow Gage. *Six best*—add Rivers' Early Favorite, Prince Englebert, Pond's Seedling. *Twelve best*—add Bryanston Gage, Reine Claude de Bavay, Denniston's Red, Wangenheim, Royal Tours, Sharp's Emperor.

#### CULTIVATION OF THE BLACKBERRY.

The two best sorts are the Rochelle and Dorchester. The former has yielded at the rate of 100 bushels per acre. The stools should be about six or eight feet apart, and after coming into bearing should be cultivated with a horse, with no crop between. Occasional manuring should be practiced. Three or four stems are enough for each stool. Early in summer, when the stems are about four feet high, they should be pinched off at the tip, which will make them more "stocky," and the side shoots

will become stouter, and the whole better bearing plants. They may be kept in better form by tying to a stake, which should be *inclined*, so that the side branches may not break down with the weight of the fruit.

**MARKET STRAWBERRIES FOR WESTERN NEW-YORK.**

An interesting discussion took place at a late meeting of the Fruit-Growers' Society, in relation to the merits of several varieties. The *Triomphe de Gand* was very large, mostly flattish, coxcomb-shaped, and the largest measured two inches longest diameter. It needs high cultivation in "hills," and is not a great bearer. The *Peabody* had been cultivated by several, was large, often an inch and a-half in diameter, of excellent quality, but a moderate bearer at best. For market, the *Large Early Scarlet* and *Wilson* were most generally approved; the former for running and covering the bed; the latter for "hills." The following was the result of a vote taken, nineteen members voting for the best market sorts:

Large Early Scarlet,.....	19 votes.	Genesee, .....	4 votes.
Wilson's Albany,.....	19 "	Crimson Cone, .....	4 "
Hooker,.....	11 "	Cushing,.....	3 "
Hovey, .....	10 "	Scott's Seedling,.....	1 "
Triomphe de Gand,.....	8 "	Victoria,.....	1 "
Burr's New Pine, .....	6 "	Heuey's Seedling, .....	1 "

**AMATEUR SORTS.**—There were but 7 votes, with the following results:

Hooker,.....	6 votes.	Triomphe de Gand,.....	3 votes.
Large Early Scarlet,.....	5 "	Jenny Lind,.....	1 "
Burr's New Pine,.....	5 "	Scarlet Melting, .....	1 "
Wilson's Albany,.....	4 "	McAvoy's Superior,.....	1 "
Hovey,.....	3 "		

**WILSON'S ALBANY STRAWBERRY.**

A. Van Voast of Schenectady, states that he raised in 1859, from plants set out in 1858, on a piece of ground 9 by 15 feet, by careful measurement, 32 quarts of berries, besides about 3 quarts given away as samples. At the same rate an acre would give 322 bushels. This sort seems to have succeeded finely in the Western States, wherever tried.

**G R A P E S.**

Numerous plantations of hardy grapes have been made within two or three years in various parts of the Northern States, for supplying the market with the fruit. A great impetus has been given to this enterprise by the large profits which a few successful cultivators have made, amounting in some cases to twelve or fifteen hundred dollars per acre. These great results have been obtained by the very highest cultivation, by which the quality and size of the fruit is so improved as to sell for more than double the price of ordinary crops, besides being earlier and better ripened. Thorough maturity has been found absolutely necessary to secure from injury by freezing, and consequently such fruit is much better for winter marketing, when the highest price may be obtained. A very large portion of the many vineyards lately set out, receive only

ordinary attention, and the crop will therefore not only disappoint the owners, but will be difficult to sell at all on account of its inferior quality, as well as the great quantity of such inferior fruit which will be thrown from all sources into the market.

Grapes will grow on a soil that will produce good corn and potatoes; but unless deeply loosened and heavily enriched, they will not be of a quality to sell well in market. The most profitable way, therefore, by all odds, is to make the soil deep and rich, and give the best cultivation and proper pruning. If the cultivator passes through the vineyard at least *fifteen times* in a single season, or once a week or oftener, as long as the vines are to grow, such thorough treatment will obviate very deep trenching. It should, however, be as deep as can be effected by the common plow, followed by a good subsoiler, and afterwards a hundred loads of good manure per acre turned in at different depths by the use of the common and double Michigan plows. The whole vineyard should be well underdrained. If set in the autumn, all the plants should be protected by a slight covering of earth during winter. A *rich soil*, whether light or heavy, will bring good grapes. Grapevines are usually set out when two years old—sometimes as old as three years.

#### BARK LICE ON THE APPLE TREE.

A. G. Hanford of Waukesha, Wisconsin, has been successful with a mixture of equal parts of tar and linseed oil, applied warm, *not hot*, early in spring, to the bark. This mixture does not continue soft and spread over the surface and close the pores so as to kill the tree, as grease would do; but it forms simply a *varnish*, which soon becomes hard, and when the tree appears in leaf and begins to grow, this varnish cracks and peels off, carrying the bark lice with it, and leaving the bark fresh and smooth. Dr. Fitch in his Treatise on Insects, mentions another remedy which he considers very efficacious, prepared as follows: Leaf tobacco is boiled in a strong lye until reduced to an impalpable pulp, and this is then mixed with soft soap (which has been made cold, and not boiled,) the whole mixture becoming of the consistence of thin paint; this, when applied, does not easily wash from the tree, as lye, tobacco water, &c., would alone. One application with the brush to every part, will protect trees two years. A young orchard of 150 trees, required two men a fortnight to go over every part, branch and twig, through the orchard. The trees grew thriftily, and were perfectly free from lice, while others in every direction were dying from their attacks.

Quassia, soda wash, &c., have been strongly recommended, but are much less efficient.

#### THE APPLE BORER.

This insect, so troublesome in many places, should be looked for early in summer and autumn. We have never found anything better than

punching them to death in their holes. The fresh sawdust-looking deposits, thrown out at the foot of the tree, are always an infallible indication that the borer is doing his work. The sooner he is destroyed the better. A flexible wire is a good tool for destruction; but a slender, half-seasoned apple shoot, answers a good purpose. The insect may be reached if five or six inches within, if he has not packed the hole too closely with his chips. As an intelligent friend quaintly remarks, "we may always know when we have killed the borer by the *squashing* at the end of the shoot." A little experience, and a moderate share of skill, are all that are required to clear a tree in a few minutes. It is always best to clear away the chips and outer bark with a knife, till the hole is distinctly found.

#### SENDING GRAFTS BY MAIL.

The mode of sending grafts by mail, so that, if some weeks on the way, they may arrive perfectly fresh, is becoming well understood by many. It consists in simply enclosing them in oil-silk, wrapping fine thread around so as to bring all parts into contact and making a watertight case. One of the worst things to wrap around grafts is dry, unsized paper, which absorbs the moisture rapidly from the fresh wood.

A friend once sent us in autumn, from a long distance, some apple grafts; and as they would probably be several weeks on the road, he purposely left the leaves on as a moist casing to prevent their becoming dry. As leaves are constantly pumping out and throwing off the moisture from the shoot, the result may be easily guessed—the grafts were as dry as dead twigs when they reached us. Unwilling to lose them, however, we immediately wrapped them in moss and buried them in soil, where they remained till spring. When examined, they had become swollen, plump and fresh, and being set, all grew.

#### ROOT-GRAFTING THE APPLE.

Root-grafting is well understood by nurserymen; but there are many others who desire information on the subject, and especially on the expeditious performance of this operation. A grafter may work hard a whole day, and by an inconvenient arrangement of tools and materials, insert not a third as many as another grafter, who gives careful attention to all these particulars. The following method is the result of long practice, and by it we have known a skillful workman to insert three thousand grafts, with an assistant to apply the wax plasters, during ten hours in a single day, in the best manner, and three thousand five hundred, on another occasion, in eleven hours.

The tools consist, 1st, of a sharp, thin-bladed knife, of which the best is made from the blade of an old scythe, ground to its proper form on a grindstone; 2dly, a bench or table placed in front of a light window, and on which the work is done; 3dly, an apron, worn by the grafter, the two lower corners being hooked fast to two sharp nails on the near edge of

the table, for holding the scions while cutting them; 4thly, strips of waxed paper, about an inch wide, made by brushing over sheets of thin, tough paper, a melted, well-stirred mixture of four parts of rosin, two of tallow, and one of beeswax, and then cut into strips when precisely at a proper degree of coldness to separate well by means of a knife cutting upon a smooth board. A sufficient number of these for immediate use, should be hung near enough to the stove which heats the room, to keep the wax upon them about the consistence of butter on a summer day, so as to fit and adhere to the grafted root, without melting and running.

The first operation is to cut up the grafts from the shoots or scions. It is performed by holding the scion in the left hand, the thicker end point-



Fig. 160.

ing towards the right hand, which holds the knife. Such a shoot is represented of diminished size, by fig. 160, the points *a, a, a*, the places where it is cut into grafts, and the dotted lines show how the cuts are made. Fig. 161

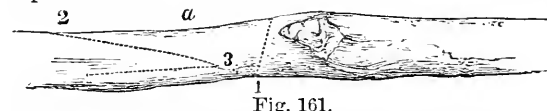


Fig. 161.

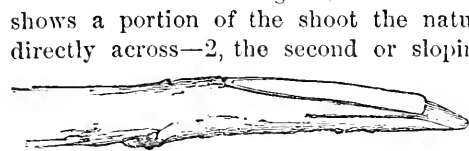


Fig. 162.

shows a portion of the shoot the natural size; 1, the first cut nearly directly across—2, the second or sloping cut, and 3, the slit for the tongue—and the whole finished and separate in fig. 162. Three strokes of the knife are thus required to cut and prepare each graft, and a rapid and skillful operator has done one hundred and twelve in the manner described, in five minutes. Each shoot is thus cut up while yet held in the left hand, and the grafts as fast as they are severed, drop into the cavity of the apron already described. The counting is done during the process of cutting, and at no other time.



Fig. 163.

The second operation is setting these grafts into the roots. Each root is held in the left hand precisely as the scion has been—(fig. 163;) the three cuts are given it

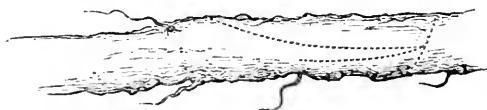


Fig. 164.

(shown by the dotted lines in fig. 164,) to prepare it for the graft (as represented in fig. 165, on the opposite page.) The grafts having been placed directly under the operator's fingers, and in the right position, each one is successively taken and firmly





Fig. 165.



Fig. 166.

fitted to the prepared root, as shown in fig. 166, and as soon as this is done, another cut of the knife three inches lower down the root, severs it, and the root-graft is finished, and drops off obliquely on the table. Another sloping cut on the same root, and a slit

for the tongue, are quickly made, and another graft picked up and inserted, the root being held all the while in the left hand, until worked up. The great point is to perform much with little handling. A single root will sometimes make but one graft, but more commonly two or three, and sometimes more. Each portion of root should be about three inches long, and the graft about five inches.

Root-grafting may be performed at any time during winter, and those who have much of it to do, often continue the process the winter through. The roots when taken up in autumn, should be well washed, the tops cut off, and the roots packed in boxes with alternate layers of damp moss. Thrifty one-year roots are better and more easily worked than two-year roots. Side roots, or branches, should never be used. The scions may be kept in the same way. This is better than packing them in sand, which imparts a grit to them and dulls the knife. Different modes are adopted for packing away the grafts. The best is to place them flat in boxes, in alternate layers with sand, like miniature cord-wood, keeping the outer or graft-ends very even, and carrying up each layer separately and one at a time, so that one may be taken out for setting out without interfering with the next succeeding pile. The sand should be slightly moist and not wet. The varieties should be distinctly marked on strips of board separating each kind, where there is more than one in a box, and in addition to this, a card should be nailed on the outside, naming the kinds, at the point of separation between them. A record should also be made as they are deposited, of the sorts, their order, and the number of each. Boxes two feet long, a foot wide, and six inches deep, are a convenient size, and will hold from one to two thousand each. If furnished with bow handles, they are easily carried at once to the field for setting out. Boxes holding 20,000 or more, keep the grafts equally well, but require additional labor in unpacking when set.

They should be set out in spring as soon as the soil is sufficiently dry, and there is no further danger of its freezing severely. Special pains should be taken to pack the earth well about them, as they are dibbled in. The tips of the grafts should project about half an inch above the surface. The proper depth of setting is controlled somewhat by circum-

stances; if deep, the soil may be too cold to start them well; if not deep enough, the drought of summer may destroy them. The old practice of setting them upright in boxes, to start into leaf before planting, is now discarded. An active hand will set two or three thousand in a day, and in rare instances five thousand.

Apple trees may be propagated by root-grafting with half the labor required to raise trees by budding; and except in the severe winters of the north-west regions of the Union, where root-grafted trees are apt to be injured by the freezing and thawing at the surface, they are as good as when propagated in any other way, according to many careful and frequently repeated experiments.

## NURSERIES IN THE UNITED STATES.

### SUPPLEMENT TO LAST YEAR'S LIST.

INQUIRIES having been sent to the different nurserymen in the United States, for corrections and additions, the following returns have been received. We have also discovered in last year's list a few exaggerations as to the extent of the grounds actually occupied with trees—these will be carefully corrected in the *complete list* to be published next year; and in the mean time we earnestly request every nurseryman to give us all the information necessary early next summer, of others as well as their own nurseries. Those who fail to do so, cannot properly complain of omission. As some have hesitated to furnish facts in relation to other nurseries, it is perhaps hardly necessary to state that the names of all such contributors of facts will be held strictly confidential, more particularly as it relates to the *extent* of nurseries, which we are especially desirous to receive.

#### —MAINE.

J. W. Adams, Portland, has increased his nursery, and added 2,000 feet glass structures.

#### MASSACHUSETTS.

Eliphalet Stone, Dedham, 10 acres.

#### CONNECTICUT.

N. H. Lindley, 2 ms. north of Bridgeport.

#### NEW-YORK.

J. W. Bailey, Plattsburgh, 20 acres.

C. P. Bissell & Salter, Rochester—35 acres, mostly grapes and small fruits.

Ellwanger & Barry, Rochester, have increased their nursery to 500 acres, closely planted with trees.

T. C. Maxwell & Co., Geneva, have increased their nursery to 160 acres in trees—200 are devoted to nursery purposes, and two propagating houses with 3,000 feet of glass are added.

O. B. Maxwell & Co., Dansville, successors to Maxwell, Bristol & Co.—100 acs.

Edward Merritt, Pawling, Dutchess Co. —new.

B. Millard, Pittsford, Monroe Co.—1855 —18 acres.

Geo. H. Moody, Lockport, 25 acres.

Elisha Moody, 6 miles east of Lockport, 30 acres.

Ramsdell & Loud, Egypt, Monroe Co., 20 acres.

Richardson, Warren & Co., Olcott, Niagara Co.

C. W. Seelye, Rochester, 40 acres.

George Sherman, Westfield, Chaut. Co.

E. W. Sylvester, Lyons, Wayne Co., 15 acres.

Thomas & Herendeen, Macedon and Union Springs, have increased their nurseries to 80 acres.

#### NEW-JERSEY.

C. Davis, Jr., Phillipsburgh, opposite Easton—1858—8 acres.

George B. Deacon, near Burlington—1840.

James McLaen, Roadstown, Cumberland Co., 9 acres.

## PENNSYLVANIA.

Wm. Bright, Rising Sun.  
 Evans & Luitweiler, York—1858—45 acs.  
 Thomas M. Harvey, Jennerville, has sold to Isaac Jackson & Co., except the grape department, which is conducted on a large scale—140 sorts.  
 Wm. M. Hastings, Lebanon, Lebanon Co.  
 O. T. Hobbs, Randolph, Crawford Co.—grapes a speciality.  
 Hoopes & Brother, successor to J. Hoopes, Westchester, 40 acres.  
 Isaac Jackson & Co., Jennerville, 30 acres.  
 J. Knox, Pittsburg—small fruits.  
 L. Maupay & Co., Rising Sun—greenhouses and ornamentals.  
 S. Miller, Lebanon, Lebanon Co.—grapes and small fruits.  
 J. S. Negley, Pittsburg—mostly ornamentals.

## VIRGINIA.

Franklin Davis, Staunton—40 acres.

## GEORGIA.

Fleming & Nelson, Augusta—new.

## MISSISSIPPI.

W. H. Burford, Cuddy Hunk, Calhoun Co.—6 acres.

## KENTUCKY.

A. L. Caldwell, Demosville.  
 J. S. Downer, Elkton.  
 John C. Gaddis, Newport—new.  
 Ormsby Hite, Louisville.  
 Wm. M. Housley, Bowling Green.  
 J. & W. G. Johnson, Cedar Creek—15 acs.  
 A. Mattison, Paducah.  
 John A. McKee, Cynthiana.  
 B. E. Randolph, Hopkinsville.  
 R. S. Reeves, Keaysburg.

## TENNESSEE.

L. C. Lishley, Nashville.  
 Montgomery & McGredy, Nashville.

## OHIO.

E. Bonsall & Brother, Salem—25 acres.  
 Clark & Stalter, Lancaster, is now Clark & Hunter.  
 Francis Clymer, Gallon, Crawford Co.  
 Joseph C. Coe, Sidney, Shelby Co.  
 Charles W. Davis, Troy.  
 Jas. Denniston, Eaton, Preble Co.  
 A. Fahnestock & Sons, Toledo, added 50 acres to last year.  
 E. W. Harrington, Yellow Springs—20 acres.  
 Joseph Harris, St. Clairsville, Belmont Co.—12 acres.  
 George Hikes, Dayton.  
 Andrew Hikes, do.  
 W. F. Lewis, Shaler's Mills, Knox Co., 6 acres.  
 W. B. Lipsley, Cardington, discontinued.  
 McReady & Berry, Oxford—25 acres.  
 S. B. Marshall, Massillon—15 acres.  
 Miller & Swan, Enon, Clark Co.  
 Joseph Morris, Cardington—6 acres.  
 L. S. Mote, West Milton.

George R. Mumma, Dayton.

M. M. Murray, Twenty-Mile Stand, Warren Co.  
 G. Perdue & Sons, New Martinsburgh, Fayette Co.  
 James B. Pullen & Son, Lebanon, Warren Co.  
 John Purdon, Urbana.  
 E. I. & J. M. Vandervoort, New Antioch, Clinton Co.  
 Joel Wood, Martin's Ferry.

## MICHIGAN.

Bragg, Curtis & Co., Paw Paw—1857—20 acres.  
 D. Cook, Jackson, discontinued.  
 C. C. Cooley, Hudson—6 acres.  
 Harwood & Dunning, Jackson—1854—30 acres.  
 J. E. Inglefritz, Monroe.  
 H. F. Penniman, Battle Creek—15 acres.  
 W. L. Randall, Adrian, deceased.

## INDIANA.

Albertson & Wright, Canton, Washington Co.  
 L. T. Bullock, Shelbyville, Shelby Co.  
 J. Coggeshall, Jonesboro', Grant Co.  
 J. J. Conly, Richmond—10 acres—greenhouse.  
 J. Fawcett, New-Albany—peaches.  
 Fletcher, Williams & Loomis, Indianapolis—70 acres.  
 A. Floyd & Son, Lafayette—greenhouses, &c.  
 James Ford, Princeton, Gibson Co.  
 John (not Peter) Fulhart, Munice, Delaware Co.  
 Hays & Hubbard, Columbus.  
 D. & A. Huddleston, Cottage Grove, Union Co.  
 Wm. Jones, Wabash, Wabash Co.  
 E. Kelsey, Peru.  
 Lee & Wooley, Kokomo.  
 N. Lewis, Greensburg, Decatur Co.  
 Millhouse & Lipsley, Butlerville—new.  
 Wm. Pickett, Deming, Hamilton Co.  
 A. M. Purdy, South Bend—20 acres.  
 Z. S. & W. A. Rogan, Clayton, Hendricks Co.  
 Simson, Tenbroeck & Co., Vincennes—1351—25 acres.  
 Frederic Schnell, Indianapolis—greenhouse, &c.  
 N. Smith, Abington, Wayne Co.—evergreens.  
 A. Stone, Winchester.  
 D. Swinebont, Logansport.  
 J. W. Tenbroeck, Rockville, Parke Co.—1846—10 acres.  
 Trueblood & Lipsley, Salem, Washington Co.—11 acres.  
 Jesse White, Arno, Hendricks Co.—1854—7 acres.  
 Wm. Wildman & Co., Montezuma, Parke Co.  
 E. Y. Teas, Richmond—10 acres.  
 J. C. Teas, Raysville—25 acres—a very general collection.

## ILLINOIS.

V. Aldrich, Tiskilwa—13 acres.  
 B. O. Curtis, Paris, (5 ms. from,) Edgar Co.—20 acres.  
 J. Huggins, Woodburn—20 acres.  
 Huntingdon & Woolworth, Rockford.  
 J. T. Little, Nachusa, Dixon Co.—30 acres.  
 M. Myers, Magnolia.  
 James Rees Ridge Farm, Vermillion Co.  
 Prof. J. B. Turner, Jacksonville.  
 Adnah Williams, Galesburg, 20 acres.

## IOWA.

Owen Albright & Co., Bangor, Marshall Co. (not Keokuk.)  
 W. S. Finley, Davenport, successor to Finley & Dwire.

Suel Foster Muscatine, fruit and ornamental and green-house—20 acres.  
 Isaac Negus, Muscatine, (3 miles north of,) fruit—extensive.  
 Greenbury P. Wood, Spring Dale, Cedar Co.

## MISSOURI.

Carew Sanders & Co., 5 miles west of St. Louis—20 acres.  
 Siegerson's nursey, discontinued.

## KANSAS.

Hugh Campbell, Topeka.

## OREGON.

Henderson Lewelling, Milwaukie.  
 Wm. Ladd, Oregon City.

## RURAL ECONOMY.

**RAZOR STROPS.**—Oxide of tin, as many know, has a fine sharpening quality, and is extensively used for coating the leather of stropps. When they have lost their efficiency, rub them briskly for a short time across a tin vessel, and enough will be imparted for the intended purpose.

**MARKING BAGS.**—This is easily done by applying black paint with a brush through holes cut as letters, through a piece of pasteboard. But the pasteboard, unless inconveniently thick, curls at the corners after a time, and the letters are defaced. Tin plate is much better, but it is difficult to cut the letters in it. Thick *sheet-lead* is, however, just the thing, and any person who can use a knife may cut the letters through it after they have been accurately marked.

**BAD WATER IN NEW WELLS.**—Water otherwise good, is sometimes made bad in new wells by dissolving impurities from the stones used to wall them. We knew a case of this kind, where in a few weeks the water became so fœtid that no animal, however thirsty, would touch it. The cause was suspected and the well cleaned; the second filling of water was much better; the process was repeated, and after the water was drawn out the third time it became perfectly good. It has since, for many years, been noted for its excellent water.

**QUALITY OF DIFFERENT KINDS OF WOOD.**—The celebrated experiments of Marcus Bull of Philadelphia, many years ago, gave the following results, showing the amount required to throw out a given quantity of heat:

Hickory,.....	4 cords.	Pitch pine,.....	9 1-7 cords.
White oak,.....	4 $\frac{3}{4}$ "	White pine,.....	9 1-5 "
Hard maple,.....	6 $\frac{3}{8}$ "	Anthracite coal,.....	4 tons.
Soft maple,.....	7 1-5 "		

**PAINTING TOOLS.**—Every farmer should keep a pot of paint and a brush ready for use in his work-shop. On rainy days, paint all tools, hoes, rakes, forks, plows, harrows, cultivators, spades and shovels. Be particular to apply the paint well at the cracks and joints, where moisture

might penetrate. Repeat the process frequently. This will cost but little, and save many hard-earned dollars. A light-colored paint, as yellow ochre, will become less heated in sunshine than one of darker hue.

**CRACKS IN STOVES**, are easily and effectually stopped by a paste made of ashes and salt with water. A harder and more durable cement for the same purpose is made by mixing iron filings, sal ammonia and water.

**DRYING WOOD**.—Every one who uses a wood stove, has discovered that there is a great difference between the value of wood that is well or poorly dried. The following may be given as a scale of the different modes of drying, the best being named first:

1. Kiln-dried.
2. Seasoned several years in a dry ventilated building.
3. Sheltered a year under a good roof.
4. Corded up in open ground.
5. Corded up in the woods and shaded.
6. Partly seasoned, soured by fermentation or water-soaked.

Most kinds of wood cut in winter, and left in large logs in the woods, becomes more or less soured and injured. If wood could be cut and split in summer, when the weather would dry it rapidly, the wood would be greatly increased in value; but as this is usually impracticable, the next best is to cut and split it in winter as fine as will be required, and then cord it up in a wood-house, well sheltered from rains, but admitting the free circulation of the air.

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## DAIRY ECONOMY.

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**WINTER BUTTER**.—The different modes of treating the cream and milk in winter, to make good butter, are greatly inferior in their results to the effects of giving the cows themselves a regular supply of sugar beets or carrots, the latter, as we think, being much the best. They will nearly double the ordinary amount of milk, and increase its richness, while the butter it produces has that yellowness and fine flavor peculiar to that commonly made from pastures. It is always a loss of quantity for butter to come too soon by churning; but sometimes its gathering is too long delayed after the minute granules of butter are formed. The process may be often hastened by dropping into the churn at this period, a small lump of butter, which serves as a nucleus around which these granules quickly coagulate.

**DAMP STABLES**.—A farmer discovered after taking possession of a newly purchased place, that his horses were becoming poor, diseased, and incapable of much labor. His cows became sickly, their milk diminished, the butter was bad, four lost their calves, and two died of scours. The dampness of the stable was the suspected cause. It was low, under trees,

and with a northern aspect. It was replaced by another on a dryer spot, when the difficulty ceased.

**TO MAKE CATTLE THRIVE IN WINTER.**—There are certain requisites to be constantly observed, namely, the following:

1. To feed *regularly*, and preventing fretting for expected meals.
2. To give enough, but never over-feed.
3. To feed often, and moderately at a time.
4. To furnish constantly a supply of good water.
5. To shelter from storms.
6. To rub them clean, and give clean litter.
7. To give them a portion of carrots or beets daily.
8. To keep their stables properly ventilated and free from bad air.

**STABLING COWS.**—Different experiments show that stabling milch cows during an average of northern winters, increases their milk about *one-third*. In very severe weather the milk will be doubled; while in mild days less advantage results.

**TO WINTER VILLAGE COWS.**—One hundred bushels of carrots may be raised on ten square rods of *very rich ground* in favorable seasons, and in almost any season on sixteen square rods, or four rods square, one-tenth of an acre. They will keep a cow all winter in the finest condition in connection with some hay, and furnish rich milk and butter. A few square rods of sorghum will supply fodder nearly all the autumn, of the richest character, but should be cut short in a stalk-cutter.

**WINTERING CATTLE.**—Every farmer should reserve his best hay for the latter part of winter and spring. Let the animals rather improve instead of their falling away as warm weather advances. Let them enter the pasture in good condition. It is an old axiom, "cattle well wintered are half summered."

**GREEN AND DRIED FODDER.**—The following are the results of experiments made many years ago in New-England, to determine the loss of weight by the drying of different grasses. They will prove interesting to graziers. The experiments were made in 1822 and 1823. The white clover of 1822 grew in the shade; that of 1823 in the sun:

	1822	1823
100 lbs. green white clover gave, .....	17½	27
" " red clover, .....	27½	25
" " herds' grass, (timothy), .....	40	39
" " cornstalks, .....	25	25
" " red-top, .....		46
" " couch grass, .....		48
" " fowl meadow, .....		53

**PACKING BUTTER.**—Let the firkin contain as much as possible—that is, pack as *solid* as the work can be done.

**FEEDING HAY TO ANIMALS.**—Much fodder is sometimes wasted by giving too much at a time. The breath of the animals condense upon it in cold weather and render it unpalatable, and they refuse it. Feeding often and but little at a time is true economy.

## RULES FOR BUSINESS.

HOW TO SUCCEED IN BUSINESS.—Ricardo's rules were :

1. Cut short your losses.
2. Let your profits run on.

In order to do this, one must have *experience*—and to avoid a too costly experience, begin small. Feel your way. Bonaparte had a quick and powerful mind; we may learn from him, observing to do good with our knowledge, instead of evil as he did. When in Egypt, he and many of his officers were riding out in a dark evening on the sea beach, where it was very wide. Suddenly the tide came in rapidly, and the water grew every moment deeper where their horses stood; they could not see which way was dry land, they became alarmed and bewildered, and destruction threatened them. Bonaparte seemed never to fail for an expedient. He ordered all to form a circle, with horses' heads outwards. They did so. He now ordered all to ride ahead; if any found the water growing deeper, they were to turn about; if any found it growing shallower, they were to ride on, and all the rest to follow. This brought them to dry land. It is so with business. Proceed cautiously in different directions; if failure results, wheel about; if success attends, go ahead. This is the way to carry out Ricardo's rules, "Cut short your losses—let your profits run on."

ANOTHER REQUISITE FOR SUCCESS.—*Principle*—stern, unflinching principle, is the best foundation for successful business. Those who have it not, can hardly carry out on all occasions the great law for comfortable, safe and prosperous progress through the world, namely, "Honesty is the best policy." A careful estimate has been made that on an average every dollar which a man makes by cheating, he loses at least twenty, and some say at least a hundred dollars, by the bad name which he sooner or later surely builds up for himself. If detected in fraud, his course is at once arrested; if not detected, he goes on till some gross commission either sends him to prison, or imparts such an odor to his character that every man of integrity shuns him. We have known men of very moderate talents appointed to important and lucrative trusts, on account of their known faithfulness and honesty, when much "smarter" men of doubtful character, could get no employment.

GETTING RICH BY SPECULATING.—We once inquired of an old resident of New-York city, who had seen much of the active business men of that place during most of the present century, if he had known one who had pursued a business strictly of the character of the speculator for thirty years, that came out rich. He said he did not know any. "All our rich men have accumulated their wealth by gradual and constant accessions." We have known many men who were pointed out as "immensely rich"

through speculation, but in every case that we can recollect, they afterwards failed.

**A RICH ESTATE.**—The best legacy which a man can leave to his children, is *the ability to take care of themselves*. Fit them for active, responsible business, and they have at once an income; but this income is as much greater in value to them than the same income left in money, as activity and useful employment are better than idleness and lounging and dissipation. Give a young man good moral habits and a good practical thorough school education, (which by the way need not necessarily be acquired at schools,) and he can secure a salary of perhaps two or three hundred dollars at first, and in successive years up to a thousand dollars. He is then worth a thousand dollars a year—the interest at six per cent. on over sixteen thousand dollars, his real value counted in money. But a poor young man who can make a thousand dollars a year, is worth far more than a young spendthrift who has sixteen thousand dollars, because he is more useful in many other ways, and is making himself happy instead of miserable.

**“WHAT BUSINESS SHALL I FOLLOW?”**—This question is often asked, and the proper answer may be, Any useful and legitimate business. That is usually the best business for a man which he can perform best. He must be well fitted for whatever he undertakes. After that, success depends upon **THE MAN**, and not on the business. We have known some men of deficient energy and capacity who failed with the most favorable commencement; and others who, under great difficulties, persevered without faltering until eminently prosperous.

But it is all-essential to *stick to your business*. Several years are often required to attain a proper knowledge of all the ramifications of a trade. A man who was clearing five thousand dollars a year, remarked, “for the first five years I made almost nothing”—by that time he had accumulated great experience. Another, a person of high capacity, changed his occupation eight times in fourteen years—he began rich and is now poor.

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**HOW TO LENGTHEN THE SEASON.**—Farmers in the North often complain that the season for labor and growth is too short. They may lengthen it by underdraining. Land, which under ordinary treatment must lie untouched in spring several weeks for the water to run off and dry up, is rendered dry in two or three days if well ditched, giving the farmer the control of his land and the privilege of working it from the opening of spring.

**CARE OF CARRIAGES.**—Those who would keep their buggies and carriages in good order, should place a wrench on every nut at least once a month. This will save nuts, save bolts, and prevent rattling, and wear and tear.



## GRAFTING KNIVES.

A correspondent of the COUNTRY GENTLEMAN furnishes the accompanying drawings of grafting-knives. He says: There is a great gain in

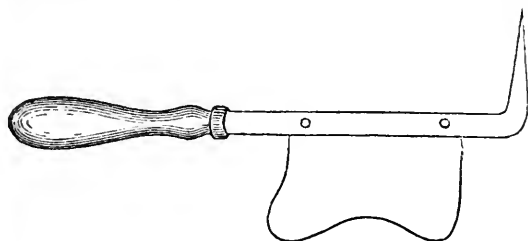


Fig. 167.

using a tool best adapted to its work, and I think those unacquainted with

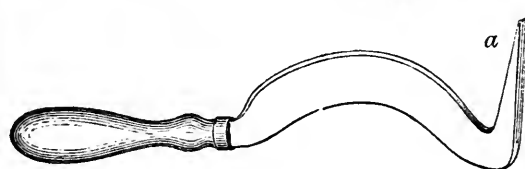


Fig. 168.

fig. 168, will, after an explanation of its advantages, desire to procure it. Fig. 167 is taken from April number of the American Agriculturist. Fig. 168 is the knife used by most western grafters. I have handled both. The wedge point, *a*, should be made of steel, well tempered and not of iron, (as was the one I purchased, and which gave me much trouble by bending,) for the point, in pressing open the slit just before placing the graft, receives a considerable strain.

Fig. 167 would be as good as fig. 168, if you could always be in a favorable position to handle it; but limbs are sometimes very difficult to get at. In such cases, fig. 168, from its form, is preferable, and a man can in a day accomplish more with it, and with greater ease, for in driving in the wedge point *a*, there is no projecting knife-blade in the way of your mallet, (which should be a round piece of hard wood,) to interfere with the direction of the blow, or worse still, in some awkward positions, there is a risk of hitting your hand against the blade. I mention this feelingly. No. 168 is frequently made too thick in the blade, but when properly made, is a very satisfactory tool to work with, much

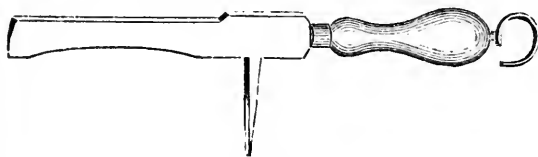


Fig. 169.

more so than the other, according to my experience.

Another correspondent of the same paper says: I send you a rude draft of a good grafting-knife

and chisel, (fig. 169.) Those who have used them, say that the advantage of this form is in having the instrument *balance* when the wedge is in the stock, so that it does not fall out. The hook is for hanging on a limb.

## AUTUMN AND SPRING TRANSPLANTING.

Autumn and spring each have their peculiar advantages for setting out fruit trees. The advantages of autumn transplanting are, the soil becomes well settled about the roots, and the trees are prepared to make an early start in the spring. The disadvantages are that trees are always made more tender by removal for the endurance of the first winter; and the soil hardens on the top into a crust, and the trees will not then grow so well as when the soil has been lately stirred in setting out, as in spring. Hence, tender trees in severe climates should not be transplanted in fall, unless they can be protected by a shelter from the winds or by a screen of evergreens, and unless the ground is dry and well drained, naturally or artificially, so as to avoid the injurious results of freezing about the roots. Hence, also, that numerous class of cultivators who never cultivate their young trees at all, should always set in spring, for in doing so the trees will be more apt to have a mellow soil about them, during the early part of the season, than if the soil has become hardened by setting all winter.

Unless the locality exposes them much to cold wintery winds, and to late fall rains, which cannot drain off, we prefer setting so hardy a tree as the apple in autumn—intending, of course, to keep the soil mellow by cultivation the following summer. Far more depends on good after-culture, than on any time or mode of setting out. Ten times as many trees die of subsequent neglect, as from any want of care and skill in transplanting.

As for the best crops to plant among young trees, we should prefer to leave the earth entirely bare, and kept always mellow, for a distance from each tree as far on *each* side as the height of the tree; but those who cannot be persuaded to do this, should plant only *low, hoed crops*, such as potatoes, beets, turnips, &c., and avoid everything that is sown, whether grain or grass.

PRODUCT OF THIRTY ACRES.—A. J. Perkins reported some years ago in the *Maine Farmer*, the following amount of crops which he had raised from thirty acres, viz: 700 bushels of potatoes, 80 bushels of barley, 25 bushels of beets, 15 bushels of wheat, 10 bushels of beans, 4 tons of mowed oats, 16 tons of hay, 40 bushels of corn, 20 bushels of carrots, 75 chickens and turkeys, and a large quantity of garden vegetables. One hog was killed weighing 390 lbs., 400 lbs. of butter were made, and 3 cows, a yoke of oxen, 2 heifers, 2 steers, 8 sheep, and 4 pigs, were kept on the place. These products, besides the keep of the animals, at present average prices, we find to amount to more than *six hundred dollars*.

## EARLY MELONS AND SQUASHES.

Melons, cucumbers, and squashes, as gardeners well know, are very difficult to transplant. Their roots quickly spread in every direction, and they are sensitive to the mutilation they must necessarily receive when the work is done in the ordinary manner. Various expedients have been resorted to. One, which has succeeded tolerably well, is to plant the seeds in an inverted piece of turf, embedded in the earth of a hot-bed, and before many leaves are made, to remove the young plants, with the pieces of turf, to the open ground. There are but two difficulties here. The turf does not allow the plants to become large enough before removal; and grass is apt to spring up from the pieces.

A better way is to make small open baskets, set them in the hot-bed, and plant the seeds within them. The baskets do not impede the roots, and when the plants are large enough, the whole, basket, earth and plants, is removed and set in a hole previously cut in open ground. The baskets

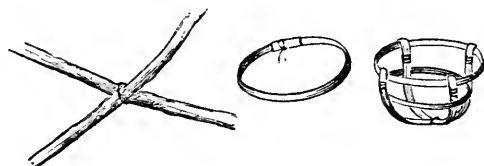


Fig. 170.

Fig. 171.

Fig. 172.

are easily made by tying together with twine, as shown in fig. 170, two basket splints, basswood or other bark; then with another piece tied together at the ends, form the hoop, fig. 171; thirdly, bring the ends of the two first-mentioned pieces down over this hoop, tying by twine, and the basket is made. (fig. 172.) If the soil is light and friable, it will be necessary to interweave a few more splints or twigs; but if tenacious, a more open basket will do. An active hand will make many of these baskets in an hour; and they will not only give earlier results, but save largely from squash bugs and other insects.

**THE MOST PERFECT DRAIN.**—Tubular tile, with collars, will outlast all other modes of laying drains. The water will enter freely under the collars, at the joints, but no portion of the soil can enter, except it be in turbid water. The water will not be turbid, if the tile is three feet below the surface, but will be thoroughly filtered in passing through that depth of soil. Shallow drains, for this reason, last only a few years, and then become choked with deposits. Broken horse-shoe tile, just large enough to encase the pipe tile, forms good collars for the joints. Nothing secures the tile from settling out of place equal to collars.

**MILKING IN SILENCE.**—At the Farmers' Club at West-Cornwall, Ct., one of the members observed that no talking should be allowed while milking was going on. Another said he had discharged a man because he would talk and interrupt the milking in his dairy, and in three days the increase of milk was equal to the man's wages.

## W O O L T A B L E .

A correspondent of the *COUNTRY GENTLEMAN*, furnishes the following description of a wool table which he has used several years with satisfaction. It consists of four boards, six feet long and one foot wide, with the exception of the board for the bottom of the box, which is ten inches. This is large enough for Merino fleeces weighing four to six pounds; twelve inches would be sufficient for the largest coarse-wooled fleece. These are laid on two pieces of 3 by 5 scantling, three feet ten inches long, and the first, *a*, and third one, *b*, (fig. 173, the bottom of the box,) are nailed; the other two boards, *c*, *c*, are fastened to *b* with hinges; *d* is a piece of board nailed at the end of *b* to bring the sides of the box (*c*, *c*) against, which are held there by catches.

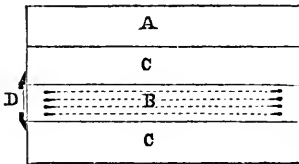


Fig. 173.

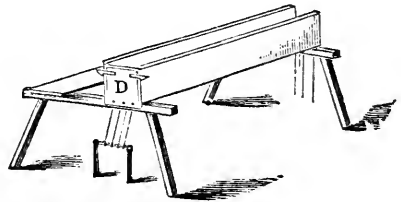


Fig. 174.

It is supported by four legs, which are movable, and when stored away occupies but little space. The twine is passed up through the bottom of the box near *d*, (fig. 174,) and across the bottom in grooves, so that the wool will not disturb them, and fastened by drawing them down in notches made with the saw. The dotted lines show the grooves.

In using, the fleece is laid on in the usual way, and the sides rolled together; then the sides of the box are raised and held by the catches, (forming a box;) the fleece is then rolled so as to leave the shoulder exposed to view, and tied; the catches are then raised, and the sides of the box drop, leaving the fleece at liberty on top of the table.

The advantages of this table over those commonly used with a box at the side, are, the box at the side is in the way when rolling the fleece; it saves the trouble of working the fleece in and out of the box, besides often tearing it, and is much easier to construct, and less expensive.

**MILKING YOUNG COWS.**—A recent agricultural writer has said that young cows, the first year they give milk, may be made with careful milking and good keeping, to give milk almost any length of time deemed desirable; but that if allowed to dry up early in the fall, they will, if they have a calf at the same season, dry up at the same time each succeeding year, and nothing but extra feed will prevent it, and that but for a short time.

## CLEANING SEED WHEAT.

JOHN JOHNSTON of Geneva, one of the most thorough and successful farmers in this country, as all our readers know, says that he quit raising chess *twenty-eight* years ago—by never sowing it. He has not raised a bushel of it in all that long period on his extensive wheat farm. Thirty-seven years ago he obtained eight bushels of chess in every hundred of wheat. His mode of cleaning seed is the same in substance that we have practiced thirty years ago, but will bear repetition, and we therefore give it as recently described by him:

My plan is to take out the fanning-mill riddles; some call them screens; I call the lower one only a screen—it takes out mustard seed and cockle *in part*. After the riddles are out, take off the shaking rod, or at least the one nearest the wings or fans. Then let one man turn the wings or fans by the crank or handle, as usual; let another pour the wheat into the hopper from a basket or any other vessel—a tin-pail answers very well—let him pour the wheat in regularly and not very fast, if much chess. Let the man turning keep up a steady wind; he need not turn very fast. Have a boy, or a girl, or a man, or a woman if you choose, to take back the clean wheat as it comes down from the mill, and I will guarantee that every chess seed will be blown out. The man pouring in the wheat ought to be *boss*, to make sure that the man turning does not slack up too much, or that he don't stop turning until the wheat and chess are all out of the hopper, else it may fall down amongst the clean wheat. If the wheat is 60 lbs. to the bushel or over, very little, if any, will be blown out with the chess. As considerable will lay on the cockle and mustard screen, when that is going to be put down, it is safest to scrape back the upper part with the hand, because if there is chess anywhere among the wheat, it will be there. Now if this is done precisely as I direct, and if the wheat is not made entirely free of chess, unless three chess seeds are sticking together, which is sometimes the case with the top seeds on the main stalk, in which case there may be some left in the wheat; still a little more wind will blow them out. If any man will try it and cannot do it, send for me, and if I cannot do it to perfection, I wont ask them to pay my traveling expenses.

TIME OF HARVESTING WHEAT.—An Illinois correspondent of the Am. Agriculturist, incited by a statement of the advantages of early cutting, tried the experiment on a field of 50 acres last season. The bulk of the crop first cut, weighed  $62\frac{1}{2}$  lbs. to the measured bushel. The part of the field left until fully ripe before cutting, gave wheat weighing but 58 lbs. per bushel—making a difference of nearly one hundred bushels on the whole field in favor of early cutting—from ten to fourteen days before full maturity.

## TO MAKE FARMING PROFITABLE.

EVERY beginner in farming, by securing the following essentials, will succeed :

1. Buy no more land than there is capital enough to pay for, with one-third more surplus—for a small farm, free from debt, with plenty of means to stock it, enrich it, and carry on its work, will yield more than a larger one, encumbered with debt, conducted feebly in every part, with bad fences, poor implements, bony animals, weedy fields, and thin crops.
2. Lay out the fields in best order—so as to admit a systematic rotation, and to give ready access to every field at all times without passing through other fields.
3. Provide good fences and necessary gates—and valuable time will not be lost in driving out intruding animals, nor crops lost by their depredations.
4. Furnish good farm buildings, to secure properly the crops, and to afford shelter to animals.
5. Select the best animals and the best implements that can be secured for a reasonable price.
6. Bring the soil into good condition by manuring and draining, and keep it so by a judicious rotation.
7. Effect a clear and systematic arrangement of all the work, so that there shall be no clashing or confusion.
8. Employ diligence and energy, and adopt careful management.

**PUMPING WATER UP A SLOPE.**—Below is an inquiry published some weeks since, to which we have been favored with the following answer:

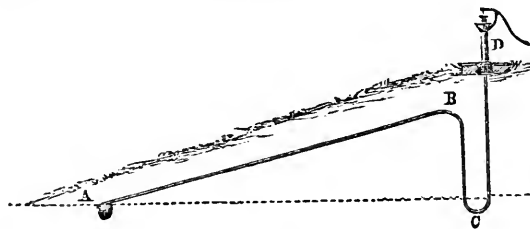


Fig. 175.

Can I bring water 6 or 8 rods by a suction pump, if the pump stands on ground 6 feet above the surface of water in the well or spring? Would it be better and cheaper than to build a cistern?

*Answer.*—Lay the pipe in the direction A B C D, (fig. 175,) or in any other direction touching A C D. C being lower than A, water will not flow back to it. Lay below frost. A. Spring—D. Pump—Dotted line, Level.

## PACKING TREES FOR TRANSPORTATION.

SEVERAL million fruit trees are every year purchased by the farmers of our country. A large majority of these are conveyed long distances from the nursery by railway. Much of their safety from injury on the road, and their consequent success when set out, depends on the manner of packing. Trees may be packed so as to open from the bundle or box, after being tumbled over iron rails a thousand miles or more, as fresh, plump, healthy, and uninjured, as the moment they were lifted from the mellow soil; and they *are* sometimes packed so as to become bruised, barked, and hopelessly shrivelled, before they have travelled a tenth part of that distance.

The farmers who pay the three million dollars yearly for fruit trees, should understand well the difference between good and bad packing.

Whether encased in bundles or boxes, it is absolutely essential that trees be protected from bruising, and that the roots be kept constantly moist from the moment they are dug up, till they reach their destination. The first named object is accomplished by sprinkling straw through every portion of the mass of trees; and the latter by first dipping the roots in an artificial bed of thin mud, and then imbedding them in damp moss. The mud or the moss alone may answer for very short distances, (the moss should, however, never be omitted;) but as there are frequently unexpected detentions, the best nurserymen always pack about as well for a journey of fifty miles as for two thousand. The additional labor is but small—the benefit may be great.

*Packing in boxes*, which is always best for long distances, does not require so much practice, although as much care as in bundles. If the trees are all well encased in straw, or properly protected by it on every side and through every part; the roots shielded from the dry air as already stated; and sufficient pressure given to them to prevent chafing and rattling, they cannot become easily injured. The boxes, if large, need the additional strength of iron hoops at the ends or corners.

*To pack a bundle*, first provide two simple blocks of wood, like that shown in fig. 176, into which two diverging stakes are inserted, loosely, so as to be withdrawn easily. Place these a few feet apart, to form the

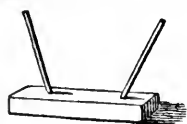


Fig. 176.

trough for building the bundle. Lay the trees in this trough, perfectly parallel, and with the roots together, sprinkling straw among the stems and branches, and damp moss among the roots as the bundle progresses, until enough are ready. Fifty medium sized trees will

make a fair-sized bundle. Then tie it up with three or four twisted straw bands, as tightly as one man can conveniently draw. This may be facilitated by using first a broad leather strap to draw the bundle

together. The strap may be 2 inches wide, 8 feet long, with a buckle. The bundle is then ready for receiving the straw.

Next, place upon and across the little truck or wagon represented in fig. 177, four strings or cords, then a layer of rye straw, to form the outside coating.

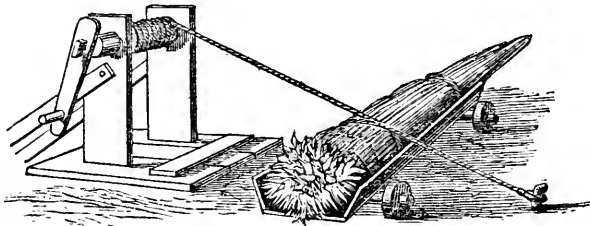


Fig. 177.

As the bundle is longer than the straw, the latter must be spliced, which is effected by first placing a layer towards the place for the roots of the trees, and then another layer overlapping this, towards the tops. Place within the side boards, other portions of straw, and finally cover the top, observing now to lay the straw first on the tops, and lastly on the roots. Then tie together the ends of each of the four strings, which will hold the straw in place. Raise the bundle a few inches by placing beneath it short pieces of scantling, to admit passing the cord under. Then apply the rope connected with the windlass, as shown in fig. 177, by simply passing it once around the trees. A few turns of the crank will draw the bundle with great force compactly together—at which place pass a strong cord (one-fourth or one-third of an inch in diameter,) and secure it by tying. Slacken the rope; move truck a foot, tighten the rope again, and add another cord. In this way proceed from bottom to top, till the straw is so firmly secured by the cords, that no handling, however rough, can displace it. By tying each cord separately, the rest will hold the straw, if one happens to become worn off or cut. Add moss to the exterior of the roots, encase the moss in damp straw, and sew on a piece of strong sacking or gunny cloth, and the bundle is completed, as shown in fig. 178.



Fig. 178.

The former practice among nurserymen, was to draw the bundle together by dint of stout pulling by hand; but the present mode by the use of a windlass, is not only many times more expeditious but much better—as it was formerly almost impossible to bind on the straw in so firm and secure a manner, as to withstand all the kicks, thumps, and rough-and-tumble handling of modern railway hands, without displacement.

The following dimensions may be useful to those who wish to construct this packing machinery: Windlass 3 feet high to top—posts 15 inches apart inside—cylinder 4 inches in diameter—rope about 18 feet long. The truck is about 2 feet wide between the wheels—8 feet long—the axles 6 feet apart—wheels 7 inches in diameter.

When trees are always boxed, they may be secured advantageously in small bundles by this mode, for placing in the boxes.



# RARE AND BEAUTIFUL FLOWERS.

B. K. BLISS, Seedsman and Florist,  
 SPRINGFIELD, MASS.,

WOULD respectfully inform his Friends and Patrons that his new Descriptive Catalogue of Flower Seeds for 1860, will be published early in February, and will be found to embrace all that is new and most desirable among *hardy, half-hardy* and *tender Annuals, Biennials, Perennials, and Green-House Seeds*, alike suitable for ornamenting of the Flower Garden, Pleasure Grounds, Shrubberies and the Conservatory, of each of which a full description is given, with ample directions for culture. He would invite particular attention to his choice collection of *Double Hollyhocks, Balsams, French and German Asters, Carnation and Picotee Pinks, Calceolarias, Cinerarias, English Pansies, German Stock, Cockscombs, Primula Sinensis, &c.*, which are received direct from the parties who grow these plants for the English and Continental Exhibitions, by which he is able to ensure to purchasers pure and genuine seeds, of the best sorts in cultivation, raised from Prize Flowers only.

## FLOWER SEEDS BY MAIL.

It is now six years since we commenced putting up select assortments of Seeds for sending by Mail, that those who reside at a distance might enjoy equal facilities for procuring a fine display of flowers at a moderate cost, with those who reside nearer market. These collections are now favorably known in every part of the United States and Canadas, and he will continue to give especial attention to this branch, to render them complete and satisfactory in every respect. They will be found to embrace many novelties, and only such sorts as are of real merit, and well worthy of cultivation. They are equally adapted for the requirements of those who have large, as well as others who have only small gardens. The uninitiated may therefore order them without fear of disappointment, and the experienced cultivator will find them equally acceptable. Full directions for culture will accompany each package, which will be sent *postpaid* to any address in the Union at the following prices:

- |   |        |
|---|--------|
| <b>Assortment No. 1</b> —consists of 20 choice varieties of Annuals,.....   | \$1.00 |
| <b>No. 2</b> —consists of 20 ch'ce variet's of Biennials and Perennials, .....  | 1.00   |
| <b>No. 3</b> —consists of 10 extra fine varieties of Annuals and Perennials, embracing many of the new and choicest in cultivation, .....   | 1.00   |
| <b>No. 4</b> —consists of 5 very choice varieties, selected from Prize Flowers of English Pansies, German Carnation and Picotee Pinks, Verbenas, Truffaut's French Asters and Double Hollyhocks,..... | 1.00   |

Purchasers remitting \$3, will receive the four assortments postage free.

The following additional assortments (his selection) will also be sent, free of postage, at the prices annexed:

- |  |        |
|--|--------|
| <b>Assortment No. 5</b> —contains 15 very select varieties of Green-House Seeds,.....                                  | \$3.00 |
| <b>No. 6</b> —contains 100 varieties of Annuals, Biennials and Perennials, including many new and choice varieties, .. | 5.00   |
| <b>No. 7</b> —contains 50 varieties of Annuals, Biennials and Perennials,.....   | 2.50   |
| <b>No. 8</b> —contains 20 varieties of hardy Annuals, Biennials and Perennials, for sowing in the autumn,.....         | 1.00   |

All orders must be accompanied with the cash. Remittances can be made in current Bills or Postage Stamps.

## THE FOLLOWING CATALOGUES

Are published during the year, and will be forwarded to all applicants on receipt of a three-cent postage stamp:

- No. 1—SEED CATALOGUE**—published the 1st of February. A Descriptive List of FLOWER, VEGETABLE and AGRICULTURAL SEEDS; also of small fruits, viz: *Grapes, Strawberries, Raspberries, Currants, Blackberries, &c.*
- No. 2—GENERAL PLANT CATALOGUE**—published April 1st; containing a Descriptive List of choice Dahlias, Gladiolus, Hollyhocks, English Carnation and Picotee Pinks, Verbenas, Petunias, Geraniums, and many other *Bedding and Green-House Plants*.
- No. 3—BULB CATALOGUE**—published Sept. 1st; containing a choice collection of Double and Single Hyacinths, arranged in their several colors; Tulips, in many varieties, both Double and Single; Polyanthus Narcissus, Crown Imperials, Jonquils, Snow Drops, Lilies, &c.

PLANTS AND SEEDS carefully packed for all climates.

Address

B. K. BLISS, SPRINGFIELD, MASS.

# SPLENDID VERBENAS FOR 1860.

**DEXTER SNOW, Verbena Grower,  
CHICOPEE, MASS.,**

**R**ESPECTFULLY solicits the attention of all those desirous of obtaining a  
Splendid Collection of this Indispensable Bedding Plant,  
to his unrivalled list, comprising all the

**NEW FOREIGN VARIETIES,**  
together with the  
**CHOICEST AMERICAN PRODUCTIONS,**  
including some  
**VERY FINE SEEDLINGS,**  
raised by him the past summer.

*Among the New Foreign Varieties to be found in his collection, are the following :*

Leviathan, Topsy, Emperor, Etonian, (a very fine purple,) Sir J. Outman, Jean Bard, (extra fine,) Prima Donna, (very large and fine,) Cherub, Cynthia, Mrs. Turner, Lady Bird, Eclipse, Vesta, Earl Shaftsbury, Lady Seymour, Lady Havelock, Capt. E. Pettinger, Madam Chaure, Pactole, Renie des Amazone, Lord Lyons, Lord Macauley, Carractacus, Norfolk Rival, Bacchus, (a splendid dark maroon, darker than Uncle Tom and far superior,) Phœbus, Bedding Purple, Penthee, Beauty of Castile, Hon. Miss Neville, Madam Mezeries, Variegated Defiance, &c.

The last named is a magnificent variety, its foliage richly blotched and striped with golden yellow—one of the prettiest varieties for the vase yet out, and should be in every collection.

During the past season the subscriber has selected from his entire collection, while in flower, some 60 or 70 of the very best and most distinct varieties, such as are of strong robust habit and good bloomers, and has arranged them in packages as follows:

No. 1—12 distinct varieties,.....	\$1—same by mail, post-paid,.....	\$1.12
No. 2—24 “ “ .....	2— “ “ “ .....	2.25
No. 3—60 “ “ .....	5— “ “ “ .....	5.50

These packages will include a share of the New Seedlings, together with the Foreign varieties. Package No. 3 will include the entire set of New Seedlings, also all the choicest of the new Foreign varieties; thus forming a finer collection of Verbenas for the money than can be procured elsewhere in this country. Purchasers from a distance can get their plants by mail, at one-third the expense of transportation, and if *ordered early in the season*, (as they should be,) there is no danger of losing a plant. Last season the subscriber forwarded upwards of 8,000 plants by mail. These were sent as far west as Missouri, Iowa, and Wisconsin, and as far south as Alabama and Florida. To those who do not always succeed in growing the Verbena, I would say, get your plants as early in the season as possible, (say 10th of March,) repot them into pint pots and place in a hot-bed; these by 1st of May, will make extra large and vigorous plants, that will afford immediate satisfaction, and bloom profusely the entire summer; try it once, and my word for it, you will never have cause to complain of poor plants. One great cause of failure with many in growing the Verbena, is, they defer getting their plants until very late in the season, at which time they are very likely to get plants that have stood in small pots so long as to become pot bound; consequently so checked in growth that they do not get into flower before the hot weather of July is upon them, which, with the root louse, is pretty sure to use them up; therefore get your plants early, put them out in new ground, or where they have not been grown before, and they will give entire satisfaction.

The subscriber strictly adheres to the *exclusive* culture of the Verbena, making a speciality of it, and now has in his collection 300 named varieties, for description of which see Catalogue for 1860, which will be ready for distribution January 1st, and forwarded to all those enclosing their names. Address

**DEXTER SNOW,  
CHICOPEE, MASS.**

THE subscriber offers for sale at his NURSERIES in Dorchester and Roxbury, Mass., an extensive assortment of

## FRUIT TREES, GRAPEVINES, ETC.

IN THE DEPARTMENT OF FRUIT TREES,

May be found almost every variety of known merit, many of which have been proved under his own personal inspection, and from which those offered for sale have been propagated.

### THE COLLECTION OF PEARS

Is not surpassed in excellence or extent of variety, and to which is added every new Foreign or Native sort as soon as promulgated.

### PEAR TREES OF EXTRA SIZE,

Engrafted on their own roots, or on the Quince, can be furnished and such as will soon commence bearing.

### SCIIONS,

For Exportation or for the Home Trade, can be supplied from Fruit-bearing Trees.

Selections when desired, will be made by the subscriber.

Address the subscriber at BOSTON.

MARSHALL P. WILDER.

## ALBANY NURSERY.

JOHN WILSON of the ALBANY NURSERY, would call the attention of all those intending to purchase Trees, Plants, &c., to his stock of

### FRUIT AND ORNAMENTAL TREES,

Shrubs, Roses, Grapevines, Currants, Gooseberries, Raspberries, and other hardy plants; and also of Greenhouse Plants, of which he has a great assortment; and to his stock of Bedding-out Plants, suitable for spring planting, embracing *Verbenas* of the newest and most showy varieties; *Dahlias*, a great and superb collection; *Pansies*, *Daisies*, *Geraniums*, *Petunias*, *Heliotropes*, *Fuchsias*, &c., &c., all of which he is prepared to sell on as reasonable terms as any other establishment.

The renowned WILSON'S ALBANY STRAWBERRY, a single plant of which the past season, yielded the enormous quantity of 370 well-formed berries, originated on these grounds: Plants of which can be supplied at \$1.50 per 100, or \$10 per 1000. The summer of 1859 has but proved the excellence of this STRAWBERRY more thoroughly, and has placed it among the very first of all the known varieties, both old and new.

JOHN WILSON,

ALBANY, N. Y.

## THE ALLEN RASPBERRY.

THE best hardy Raspberry in Cultivation—of large size, high flavor, and very productive.

"The Allen Raspberry is one of which a great deal may be expected, as exhibited with us, for its large size, bright red color, firmness for carriage, uniformity of yielding, and complete *hardiness*." E. J. Hooper, Sec. Cincinnati Horticultural Society, in August Horticulturist.

The "Allen" took the first prize in a large competition of Raspberries at the Cincinnati Show in June last.

Geo. Seymour & Co. of Norwalk, Conn.—extensive berry growers—after trying fifty plants in bearing, ordered a thousand plants more of me, remarking that "for all good qualities combined, the 'Allen' is the best Raspberry we have seen or cultivated."

Wm. Parry of Cinnaminson, N. J., near Philadelphia, ditto, substantially to Messrs. Seymour & Co.

"Our agent, one of the oldest fruit dealers in Washington Market, New-York, informs us that no better Raspberry comes into market than the 'Allen.'" H. & J. Carpenter, Ponghkeepsie, N. Y.

Price \$40 per 1000—\$5 per 100—\$1 per dozen plants, well packed, and sent per express, or other conveyance, as directed, after 1st October. Orders with money enclosed will be promptly answered. L. F. ALLEN, BLACK ROCK, N. Y.

## FRUIT AND ORNAMENTAL TREES.

THE undersigned beg to announce to Nurserymen, Dealers in Trees, Orchardists, and Planters generally, that they have always on hand, and prepared to

**FURNISH ON THE MOST REASONABLE TERMS,**

**STANDARD AND DWARF FRUIT TREES** of all kinds.

*GRAPES, new and old*, all desirable varieties.

*CURRENTS, GOOSEBERRIES, RASPBERRIES*, and other Small Fruits  
—all the most valuable sorts known.

**DWARF TREES** for Orchard Houses.

**ORNAMENTAL DECIDUOUS TREES.**

**EVERGREEN TREES.**

**FLOWERING SHRUBS.**

*ROSES, PÆONIES, DAHLIAS, PHLOXES, &c.*

**BULBOUS FLOWER ROOTS** of all sorts.

**STOCKS** of all kinds for Nurserymen, and in short,

### **Everything in the way of Nursery Stock.**

The Grounds comprise 500 Acres of Land, all closely planted with Nursery Stock in the highest state of cultivation, and all under the direct supervision of the proprietors.

**TREES AND PLANTS** packed in the best manner for all parts of the United States and Europe.

### **THE FOLLOWING CATALOGUES**

Will be sent *gratis, prepaid*, to all who apply and enclose one stamp for each.

No. 1—Descriptive Catalogue of Fruits.

No. 2—Descriptive Catalogue of Ornamental Trees, Shrubs, Roses, &c., &c.

No. 3—Descriptive Catalogue of Dahlias, Green-House and Bedding Plants, &c.

No. 4—Wholesale Catalogue for Nurserymen, Dealers, and others who purchase in large quantities.

**ELLWANGER & BARRY,**

MOUNT HOPE NURSERIES, ROCHESTER, N. Y.

## THOMAS & HERENDEEN'S NURSERIES,

**AT MACEDON, WAYNE CO., AND AT UNION SPRINGS, CAYUGA CO., N. Y.,**

**N**OW occupy Eighty Acres closely planted with Trees, and contain an extensive collection of

**APPLES**—consisting of about forty of the finest select varieties ;

**PEACHES**—affording a succession of the best sorts for two months ;

**CHERRIES**—comprising all the well proved and valuable new kinds ;

**PEARS**—Dwarfs and Standards, the best chosen varieties ;

**PLUMS**—containing a full list of approved sorts ;

besides an ample supply of *Raspberries, Gooseberries, Currants, Strawberries*, and the smaller fruits generally.

Their trees are not only of vigorous, handsome, and healthy growth, but are propagated with great care to insure accuracy, and exclusively of such sorts as have been amply proved by fruiting—their list of Apples alone being selected from specimen orchards of several hundred varieties in bearing.

Their **ORNAMENTAL DEPARTMENT** contains the best

### **HARDY IMPORTED AND AMERICAN EVERGREENS,**

Ornamental Trees, Shrubs, and Herbaceous Flowering Plants, &c.

All orders addressed to **THOMAS & HERENDEEN, Macedon, Wayne Co., N. Y.**; or if for **STANDARD PEARS**, to **J. J. THOMAS, Union Springs, Cayuga Co., N. Y.**, will meet with careful and prompt attention, and packing will be performed in the most secure manner for safe conveyance to any part of the continent. In all cases where desired, selections will be made with scrupulous care by the proprietors.

# PARSONS & CO.,

AT FLUSHING, NEAR NEW-YORK,

OFFER a general assortment of well-grown TREES AND PLANTS, both for  
**FRUIT AND ORNAMENT.**

We give careful attention to the filling of all orders for even the smallest quantity, and wholesale buyers will also be supplied on very favorable terms. For the

## VARIETIES OF THE DIFFERENT FRUITS

We cultivate, we refer purchasers to our CATALOGUE OF HARDY TREES AND PLANTS. They will find there enumerated, also, the large assortment of

## Hardy Ornamental Trees and Plants,

Which for variety, size and quality, will be found to be inferior to none in the country.

We invite the attention of THE TRADE to our large and thrifty stock of

## EVERGREEN AND DECIDUOUS PLANTS,

Of small size. These we can offer at such prices as, when freight, charges and risks of transportation are taken into account, will be found to be lower than the rates at which such Plants can be imported from Europe. Among them are :

Norway Spruce, Seedling and transplanted of many sizes, Hollies,	Erect Yew, Taxodium pendulum, Cotoneaster, Rhododendrons,	Siberian Arborvitæ, of small size, at low rates, Stuartia pentagyna, Andromeda arborea,
---	--	--

And many others. We grow both

## FOREIGN AND NATIVE GRAPES,

In large quantity and of fine size. In both classes will be found the new and valuable sorts. Those commencing or adding to their stock of

## GREEN-HOUSE PLANTS,

Will find with us all that they need. We have now a large and very

## CHOICE COLLECTION OF ORCHIDS,

Many of them of great rarity and beauty.

We will, upon application to us by mail, forward our Catalogue of Green-House Plants, our Catalogue of Hardy Trees and Plants, and our Wholesale Catalogue.

## TO FRUIT-GROWERS.

THE subscribers offer for sale

**60,000 PEAR TREES,**

(a part on the Quince Stock,) embracing nearly all the varieties *worthy of general cultivation*; also

## Apple, Cherry, Peach and other Fruit Trees.

EVERGREEN and other ORNAMENTAL TREES, Shrubs, Roses, Buckthorns, Rhubarb, Herbaceous Plants, Tulips, &c.

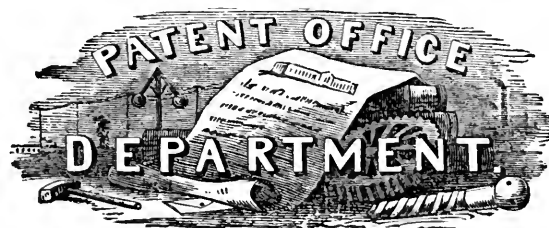
CURRENTS in 29 varieties; Gooseberries, Raspberries, Strawberries of all the *new and choice kinds*.

GRAPEVINES—Delaware, Diana, Rebecca, Union Village, &c.

Catalogues sent to applicants.

**SAML. WALKER & CO.,**

ROXBURY, MASS.



## INVENTORS,

Look to your Interests! !

**H**OW TO GET A PATENT, or the Inventor's Instructor. New Edition. Now Ready. Send 6 cents for a copy to

**FOWLER & WELLS,**  
Solicitors of American and  
Foreign Patents.  
308 BROADWAY, NEW-YORK.

# Trees, Shrubs and Plants,

## FRUIT AND ORNAMENTAL,

COMPRISING APPLES, PEACHES and CHERRIES, both Standard and Dwarf; PEACHES, PLUMS, QUINCES, &c. GRAPEVINES, both Native and Foreign; GOOSEBERRIES, CURRANTS, (including *La Versailles*,) BLACKBERRIES, RASPBERRIES, STRAWBERRIES, &c.

### CONCORD, REBECCA AND DIANA GRAPEVINES,

By the hundred or dozen. Also the following by the dozen or less: *Delaware, Union Village, Hartford Prolific, Marion, Herbemont*, &c.

### Hardy Deciduous and Evergreen Ornamental Trees,

Of all the most popular varieties.

ROSES—the best of all the different families, both new and old. Hardy and Green-House Plants. Address **WILLIAM ADAIR, DETROIT, MICH.**

## New Hardy Grapes for Sale.

REBECCA, Diana, Delaware, Concord, Anna, Raabe, To Kalon, Canby's August, Hartford Prolific, and other varieties. Also

### FRUIT TREES,

Angers Quince Stocks, Gooseberries, Currants, Blackberries, Raspberries, Linnæus Rhubarb, Downing's Colossal, Asparagus Roots and Strawberry Plants. A large stock of NORWAY SPRUCE and AMERICAN ARBORVITÆ.

**WM. BROCKSBANK, Prospect Hill Nursery,**

HUDSON, COLUMBIA Co., N. Y.

## Owasco Lake Nurseries,

**AUBURN, N. Y.**

**COLLINS & CURTIS BROS., Proprietors.**

(SUCCESSORS TO H. COLLINS.)

FRUIT AND ORNAMENTAL TREES, at Wholesale and Retail. A good stock of Apple, Pear and Cherry now on hand. Dealers supplied on favorable terms. Particular attention given to the cultivation of young EVERGREENS for Nurserymen.

TREES AND PLANTS, collected from the woods, at reasonable rates.

APPLES grafted to order during the winter, for spring planting.

Send for our CATALOGUES.

### Anna, Delaware, Child's Superb,

LOUISA, REBECCA, AND OTHER  
NATIVE GRAPEVINES,

FOR SALE AT LOW PRICES.

Send for a Circular.

**D. S. HEFFRON, UTICA, N. Y.**

## EARLY POTATOES, AND PLENTY OF THEM.

“THE YANKEE PROLIFIC” POTATO—fit for market June 28th—yields 32 to 34 marketable tubers, and 10 to 20 smaller ones, to each hill. No rot. They have had two years' trial. Seed at the rate of \$1 per peck, with instructions how to secure a large yield of any Potato, sent by railroad or express to any address, upon the receipt of the money. Address

**JOSEPH A. PAIN, Editor of “Clyde Times,”**

CLYDE, WAYNE Co., N. Y.

# EAST NEW-LONDON NURSERIES, NEW-LONDON, CONN.

THE proprietor of this establishment invites the attention of Amateurs and others to his fine healthy stock of

## Fruit Trees, Shrubs, Plants, &c., &c.,

Consisting in part of all the leading varieties of APPLES; French, English and American STANDARD AND DWARF PEARS, 1, 2, 3 and 4 years from the bud, CHERRIES, very choice varieties.

GRAPES—hardy varieties, including the Delaware, Rebecca, Concord, Hartford Prolific, Union Village, Anna, Northern Muscadine, and many others of approved merit.

STRAWBERRIES—all the leading varieties, including the Hooker, Wilson's Albany and Peabody's Seedling. The New-Rochelle or Lawton BLACKBERRY.

RASPBERRIES—a large assortment, including Brinckle's Orange, Catawissa, Queen of Fontenay, French Double-Bearing and Bagley's Perpetual.

GOOSEBERRIES—Houghton's and the Mountain Seedling, neither of which were ever known to mildew.

CURRENTS—the Cherry, White Grape, Victoria and others.

RHUBARB (PIE PLANT)—the Linnæus, Cahoon's Mammoth, Prince Albert, Victoria, Early Scarlet, &c.

Also, *Ornamental Evergreens, Choice Flowering Shrubs, Grapes for Hot-house culture, Camellias, Roses, Bulbous Roots, Carnations, Geraniums, Verbenas, Fuchsias, &c., &c., &c.,* all true to name.

Orders will be carefully packed and forwarded at the lowest Nursery prices.

N. B. Our facilities for forwarding goods by either steamboat or railroad are unsurpassed.

**WM. H. STARR, Proprietor.**

**H. E. CHITTY, Manager.**

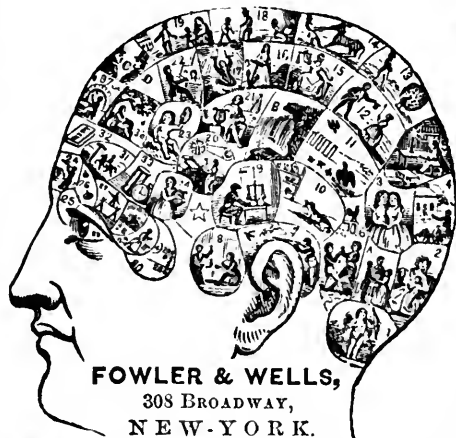
## Superior Whale-Oil Soap,

MANUFACTURED expressly for Garden and Orchard use, and warranted to destroy the *Rose and Pear Slug*, and most insects that infest trees, shrubs, flowers, &c., &c.

The above article is put up in sealed quart, one-half gallon, and gallon cans, at 25, 40 and 75 cents each, with a discount of 30 per cent. when purchased in quantities.

N. B. Full Directions for its application to Fruit Trees, Vines, Shrubs and Flowers accompany each package. Pamphlets relating to its uses, application and benefits, furnished on receipt of stamps to prepay postage. Address

**H. E. CHITTY, EAST NEW-LONDON (CONN.) NURSERIES.**



**FOWLER & WELLS,**  
308 BROADWAY,  
NEW-YORK.

## LIFE ILLUSTRATED

A first-class Weekly PICTORIAL Newspaper, devoted to Entertainment, Improvement and Progress. One of the best Family Newspapers. \$2 a year.

## WATER-CURE JOURNAL:

Devoted to Hydropathy, its Philosophy and Practice; to Physiology and Anatomy; and those Laws which govern Life and Health. \$1 a year.

## PHRENOLOGICAL JOURNAL:

Devoted to all those Progressive measures for the Elevation and Improvement of Mankind. \$1 a year.

The above—all three—will be sent a year for \$3. Subscriptions may commence now. Address **FOWLER & WELLS,** 308 BROADWAY, NEW-YORK.

# VEGETABLE SEEDS BY MAIL.

20 Varieties for One Dollar.

WISHING to give those who reside at a distance, an opportunity to test the quality of our VEGETABLE SEEDS, (which we are confident will compare favorably with any ever offered in this country,) we have prepared small packets which will be sent by mail, postpaid, as follows :

**20 Varieties for \$1.00--45 Varieties for \$2.00.**

The seeds to be of our own selection. None but the *most desirable varieties* will be sent.

To those who wish for VEGETABLE SEEDS in larger quantity, we would recommend the following collections, *suitable for large or small Gardens*, which will be carefully packed to bear transportation to any part of the world. These packages will be forwarded by Express or otherwise, as the purchaser may direct. The collections are offered as follows :

**No. 1—COMPLETE COLLECTION**—Sufficient for a large Garden for one year's supply—comprising 12 quarts of Peas of the very best sorts for succession—6 varieties each of Beans, Cabbage, Turnips, Corn—4 varieties each of Lettuce, Onions, Radish, Muskmelons, Watermelons, Cucumbers—3 varieties each of Tomatoes, Cauliflowers, Celery, Broccoli—with a full supply of Spinach, Beet, Carrot, Cress, Parsley, Parsnip, Salsify, Egg Plant, Peppers, Endive, Rhubarb, Sweet and Pot Herbs, and many other sorts of Culinary and Vegetable Seeds in liberal quantities,.....\$10.00

**No. 2—COMPLETE COLLECTION** for a moderate-size Garden, comprising 6 qts. of Peas, and most of the other varieties in proportion, ..... 5.00

**No. 3—COMPLETE COLLECTION** for a small Garden, ..... 3.00

The quantities included in the above collections will be found detailed at length in our new Vegetable Seed List, which will be issued in January, and sent to all applicants who enclose a postage stamp. Address **B. K. BLISS,**

SPRINGFIELD, MASS.

## “Wilson’s Albany Seedling!”

BEST

YIELDS

AND

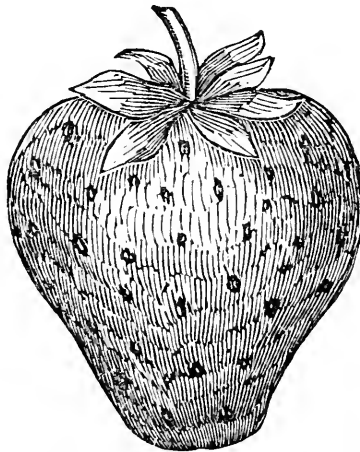
OVER 200

MOST PROLIFIC

BUSHELS

STRAWBERRY.

PER ACRE.



**THIS UNRIVALLED BERRY** has, in 1859, on my grounds, exceeded all previous ones in size, quality and productiveness. Numberless specimens from 4 to 4½ inches circumference—some still larger. Plants of this kind set out early in spring, will bear the same season. Selected, strong new plants, warranted true, of the very best quality, well packed, and delivered in Albany, \$7 for 1000; \$4 for 500; \$3 for 350; \$2 for 225; or \$1 for 100. Orders with cash promptly attended to. Descriptive Circulars sent to applicants enclosing stamp. Address

**WM. RICHARDSON, RIVERVIEW, ALBANY, N. Y.**

Some kinds of Nursery Stock will be taken in exchange, if early application is made.



# R. L. ALLEN,

NOS. 189 & 191 WATER STREET, NEW-YORK,


The Largest Manufacturer and Dealer in all kinds of

**Agricultural and Horticultural Implements,**

IN THE UNITED STATES.

UPWARDS of One Hundred Patterns of Plows, (including a new series of the latest improved Polished Steel Plows,) Harrows, Cultivators, Horse Hoes, Rollers, Seed Sowers, Horse Rakes, Mowers and Reapers, (of every make,) Threshers, Fan Mills, Horse Powers, Hay Presses, Corn Mills, Corn Shellers, Hay Cutters, Cider Mills, Churns, Pumps, Allen's Patent Potato Diggers, Improved Farm Grain Mill, (for horse or steam power.) &c., &c.

ALLEN'S PATENT IMPROVED MOWING MACHINE, and his COMBINED REAPING AND MOWING MACHINE, are the most perfect ever invented.

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**Field and Garden Seeds of every Description.**

FERTILIZERS.—Dried Blood and Wool, Peruvian Guano, Bone Dust, Superphosphate of Lime, Plaster, Poudrette, &c.

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THE leading object of this establishment is the propagation on a large scale, of

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Especially adapted to our Southern Climate. One hundred acres of Orchards and Vineyards are planted with all the varieties of Fruit that have been originated and brought into notice. The collection of

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

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**COLLECTION OF PEARS,**

Is not surpassed in the Union.

**ORNAMENTAL TREES AND SHRUBS**

In large varieties, and of the newest and rarest kinds. ROSES cultivated on a large scale, and only varieties of first order.

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THIS Nursery was established in 1835, and now contains

**140,000 Grafted Apple Trees,**

Principally of varieties that have been tested by us, and found to be well adapted to this latitude. Also

**150 Varieties of the Finest Peaches,**

Together with an assortment of the best

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And in fact, everything usually found in a well regulated Horticultural establishment.

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**DOWNER'S PROLIFIC SEEDLING STRAWBERRY**

Is without a rival in America, and is now, for the first time, offered for sale.

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FOR FALL PLANTING.

THE subscriber will receive early in September, a large and well selected assortment of the above, selected particularly for his Retail Trade, by the most experienced Florist in Holland, consisting of the finest varieties of **HYACINTHS,** Double and Single; **TULIPS,** Double and Single; early and late blooming varieties **POLYANTHUS NARCISSUS, CROWN IMPERIALS, JONQUILS, SNOW DROPS, CROCUS, LILIES, RANUNCULUS, ANEMONES, GLADIOLUS, &c., &c.** Catalogues, with full Directions for Culture, will be sent to all applicants enclosing a three-cent stamp.

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For the convenience of those who desire a fine collection, but are unacquainted with the varieties, he has put them up in collections as follows, with full directions for culture.

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- 20 **DOUBLE AND SINGLE HYACINTHS** (all named flowers,) suitable for culture in glasses or pots.
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- 12 **DOUBLE JONQUILS.**
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- 4 **PEONIES,** all distinct varieties.

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ONE-HALF OF EACH of the above varieties, with the exception of the Peonies.

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- 3 **NARCISSUS.**
- 3 **JONQUILS.**
- 25 **CROCUS,** fine mixed.
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**A**BOUT 30 Acres are here devoted to the cultivation of Choice FRUITS, and most of the leading varieties may be seen in bearing during the fruiting season, affording a good opportunity to ascertain the most profitable kinds for extensive cultivation. Strawberries, Raspberries, Blackberries, Asparagus Roots and Rhubarb Plants, at low rates in large quantities; and 50,000 best quality PEACH TREES, well grown and healthy, and 12 acres more recently budded, on ground never before occupied with Peach Trees, for sale in fall of 1860.

Descriptive Catalogues gratis.

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**35,000** BEST Market varieties N. J. Peaches; 150,000 Native and Imported EVERGREENS annually grown for the Trade. No disease known in these Nurseries.

Also Apple, Pear, Peach, Orange Quince and Mazzard Cherry Seeds.

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**U**NSURPASSED in the variety of its collection of hardy Trees and Shrubs. All the best varieties of FRUITS are carefully cultivated. *Dutch Bulbs, Dahlias,* and all other kinds of Bedding Plants, *Green House* and other *Flowers.* *Tree and Fruit Seeds,* embracing 250 kinds. *Osage Orange, Rhubarb, Asparagus,* and Seedling Stocks in large quantities, at low rates. Catalogues gratis.

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**I**MPORTER, Breeder, and Dealer in Thoroughbred

**North Devon and Ayrshire Cattle.**  
Distant from New-York City, Two Hours per Morris and Essex Railroad. Address at No. 45 Fulton-st., New-York.

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**O**FFERS for sale 200,000 ANGERS QUINCE STOCKS;

50,000 Apple Trees, assorted;  
20,000 Evergreens in variety;  
60,000 Mahaleb Cherry Stocks—fine.

Also a large stock of DWARF PEARS, 2 years from bud, and a fine lot of large bearing trees.

Also a good stock of STANDARD PEARS, Standard and Dwarf CHERRY, and a fine assortment of Hybrid Perpetual Roses and Ornamental Trees.

The above collection is every way desirable, and are true to name, which is not always the case.

## Gloaming Nursery.

**T**HIS Nursery contains the largest variety of Southern Seedling FRUITS of any in the United States; a large portion of which have been collected from the original trees by the subscriber, and by him tested and worked into the Nursery.

Our varieties of WINTER APPLES are very choice, and at very reasonable prices. For particulars see Catalogue, which will be sent gratis to all applicants.

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## HARDY NATIVE EVERGREENS.

Nursery-grown Trees, or from the Pastures in the Spring.

**“TRADE LIST”** of *Hemlock, Am. Arborvitæ, &c.*, now ready; including American and Broad-leaved English Elms, Sugar Maple, Buck Thorn and Houghton's Am. Gooseberry—all grown in quantities at low prices.

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This modification of my Power Presses is of recent date, and is fast winning "unqualified commendations" from all who examine it.

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**Genuine Prince Albert Potatoes**

*For Sale for Seed for 1860.*

**N**EVER ROT, cook mealy, and have weighed 1 lb.  $\frac{1}{2}$  oz. each. Prices as follows, for cash only, delivered at the H. R. R. Station at Tivoli. 1 barrel of 2 $\frac{1}{2}$  bushels, \$4-5 do., \$18-10 do., \$35. Direct letters to **T. S. CLARKSON,**  
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**I**MMENSE stock of Fruit Trees, Evergreens, Small Fruits, Nursery Stocks, &c., including largely the celebrated "Ohio Nonpareil" and "Grimes Golden Pippin," the latter having fruited 60 years in succession. Send for Catalogue.

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**A** GENERAL assortment of **FRUIT AND ORNAMENTALS.** Apple Grafts, 1 to 3 ft., \$25-5 to 7 ft., \$95 per 1000. Per 100: **GOOSEBERRY,** Houghton, \$4; **RASPBERRY,** Orange, \$7; **STRAWBERRY,** Wilson's Albany, \$1.50; **TULIPS** of 20 fine named sorts. Single and Double, \$4. **RHUBARB,** Linnæus, large roots, \$10; **APPLE STOCKS,** grafting size, 10,000, \$30, &c., &c. *Terms cash.* New Bulb and Wholesale Catalogues out.

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**A** GENERAL and desirable stock of

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Grown in the best manner, and of well tested varieties, adapted to greatest profit.

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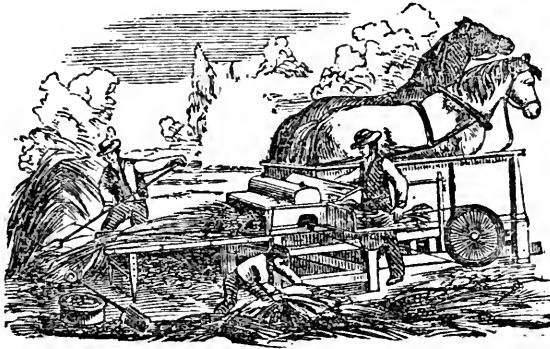
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SOLE PROPRIETORS AND

**Manufacturers of Emery's Patent Improved**

### RAIL-ROAD HORSE POWERS,

ALSO

### LEVER POWERS,

FOR FOUR, SIX, AND EIGHT HORSES, TOGETHER WITH

All kinds of Agricultural Machines to be propelled by Horse Power.

**A**LL Powers and Machines manufactured at these Works, are constructed in all respects so as to operate in unison, and with the utmost or maximum results and force of the horses, and with the least loss of power and least possible strain upon the several parts, among which may be named as leading ones :

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**SAWING MILLS**, with Circular Saws for Cutting Fire-wood, Slitting Boards, Plank, &c., for fencing and building purposes ; also with Machine Cross-cut for cutting Logs for Wood, Shingles, Staves, &c ; also Mills for making Shingles.

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**CIDER MILS** for Power and Hand use, with and without Press attached. These Mills and Presses are of a superior style and utility to any others in use.

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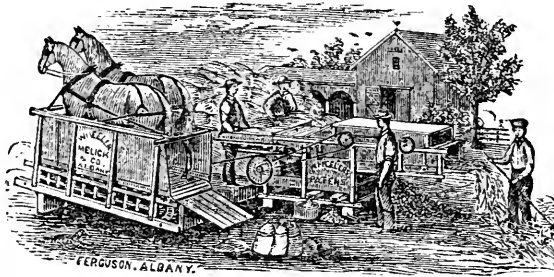
**STALK AND STRAW CUTTERS** for Horse Power—a strong and durable Machine, and adjustable to any length cut from  $\frac{3}{8}$  to  $1\frac{1}{2}$  inches.

**CLOVER MILLS AND CLEANERS**.—This is a new Machine comparatively, and is believed to be one of the best Machines for the purpose ever made ; can be driven by one, two, or more horses at a high or slow velocity, and do equally good work, and with wet and bad, as well as good condition, of the clover chaff. It cleans the seed as it does the grating, and delivers it fit for market.

Together with a large and selected assortment of **AGRICULTURAL IMPLEMENTS**, as Plows, Harrows, Cultivators, Dog Powers, Churns, Cheese Presses ; also Forks, Hoes, Shovels, &c, always on hand at the lowest manufacturers' terms.

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AGRICULTURAL WORKS.



WHEELER, MELICK & Co., Propri'rs,  
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MANUFACTURE

WHEELER'S PATENT RAILWAY CHAIN  
HORSE POWERS,

FOR ONE OR TWO HORSES,

WHEELER'S (Improved) PATENT  
COMBINED  
THRESHER AND WINNOWER,  
OVERSHOT THRESHER AND SEPARATOR,

And other Farming Machines for Horse Power Use.

THE subscribers are Inventors of all the above MACHINES, and give their entire attention to the manufacture of them; and having had a large experience in this business, feel warranted in saying that

**THEIR MACHINES ARE UNEQUALLED.**

They call especial attention to their

**IMPROVED  
THRESHER AND WINNOWER,**

OF WHICH

**OVER 400 WERE SOLD IN 1858!**

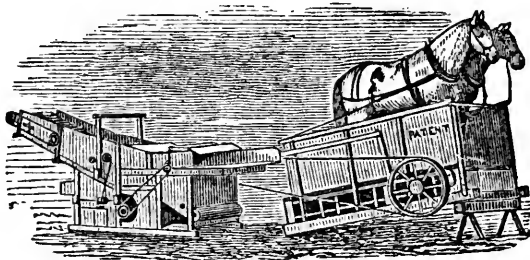
Satisfying all purchasers that they were far superior to any Machine in use for

**Threshing and Separating and Winnowing,**  
AT ONE OPERATION.

CIRCULARS, containing List of Prices and full Descriptions and Cuts of each Machine, with statements of their capacity for work, will, on application, be sent by mail, postage free.

Liberal discounts are made to Dealers. Responsible Agents are wanted in sections where we have none. Address

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# SCHENECTADY AGRICULTURAL WORKS.

G. WESTINGHOUSE & CO.,  
PROPRIETORS,  
MANUFACTURERS OF

Improved Endless Chain and Lever  
HORSE POWERS,

**Combined Threshers and Winnowers,**  
THRESHERS WITH VIBRATING SEPARATORS,  
CLOVER MACHINES,  
WOOD SAWS, (both Circular and Drag,) &c.

THE subscribers have had an extensive experience in the manufacture and operations of this class of Machines, and are confident that as improved and now offered to the public, their Machines have no superior.

**THEIR ENDLESS CHAIN POWERS,**

For one, two and three horses, have no equal for stillness and ease of running, and for convenience of changing the gearing from side to side.

**THE LEVER POWERS,**

For from four to eight horses, are made of iron, and are simple, strong, and convenient to move about.

**The Threshers and Winnowers Combined,**

Have the most effective arrangement for separating grain from the straw in use, which, together with an excellent Winnowing apparatus, and the Overshot Thresher, makes them a complete Machine. They are made of sizes adapted to the Two and Three-Horse Endless Chain and Lever Powers; also different sizes with Undershot Threshers.

**THE OVERSHOT THRESHERS**

Have a patented arrangement, which effectually prevents grain and dust from being thrown into the feeder's face, thus avoiding what has been considered the greatest objection to Overshot Threshers.

**THE VIBRATING SEPARATORS**

Have Fork Straw Shakers attached, which are considered indispensable by all who have used them.

Correspondence will receive prompt attention, and to all applicants will be sent our Circular with full Description and Price List of Machines made by us.

Liberal discount will be made to Dealers, and to responsible parties who will make sales for us, a fair commission will be allowed.

Orders filled with despatch. Address

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(SUCCESSOR TO PEASE & EGGLESTON,)

PROPRIETOR.

HAVING purchased the interest of RICH'D H. PEASE, Esq., in the business, the subscriber offers the Agricultural community a superior variety of Implements, all of which have been tested, and found to be equal if not superior to those made by the oldest manufacturers in the Union, and are warranted to work satisfactorily in every respect. Below are noted some of the latest improved

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We keep constantly on hand all the Machines required by the Farmer and Planter, and desire a continuance of the patronage so liberally bestowed on the late firm.

☞ Circulars sent gratis on application.

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Successor to PEASE & EGGLESTON,

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## EXCELSIOR AGRICULTURAL WORKS, TIVOLI HOLLOW, ALBANY, N. Y.

CHAS. E. PEASE, Proprietor.

### FARMERS, if you want the VERY BEST HORSE POWER AND THRESHER

In use, it can be furnished you from the above establishment. The experience of years in manufacturing these machines, warrant saying

**THEY ARE UNEQUALLED.**

They have been

**Thoroughly Tested in every Section of the Country,**  
and have proved themselves "Excelsior."

Price of Two-Horse Power, Thresher and Separator complete, .....	\$160.00
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The Latest Improved Thresher and Winnower, warranted to excel any like machine for two horses,.....	125.00
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Also HAY CUTTERS, CORN SHELLERS, PLOWS, HARROWS, and a general assortment of

### AGRICULTURAL IMPLEMENTS,

All got up in the most substantial manner, and warranted to give satisfaction. Before buying elsewhere, all persons are requested to examine my machines, which will speak for themselves. Liberal inducements are offered to the Trade, and Circulars cheerfully sent on application. Address **CHAS. E. PEASE,**

EXCELSIOR AGRICULTURAL WORKS, ALBANY, N. Y.



STOVES! STOVES!! STOVES!!!

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110 BEAVER-STREET, ALBANY, N. Y.



## THE "ECONOMIST"

COOKING STOVE FOR WOOD OR COAL,  
WITH OR WITHOUT SAND OVEN.

THE GREAT STOVE OF THE DAY!

It has Received the First Prize wherever Exhibited.

## THE "STAR OF THE NORTH,"

ROUND AND OVAL,

THE ORIGINAL SMOKE AND GAS BURNER,  
*FOR PARLORS, HALLS, OFFICES, & C.*

Patents Granted Mar. 6th, 1849, Oct. 28th, 1856, & June 22d, 1858.

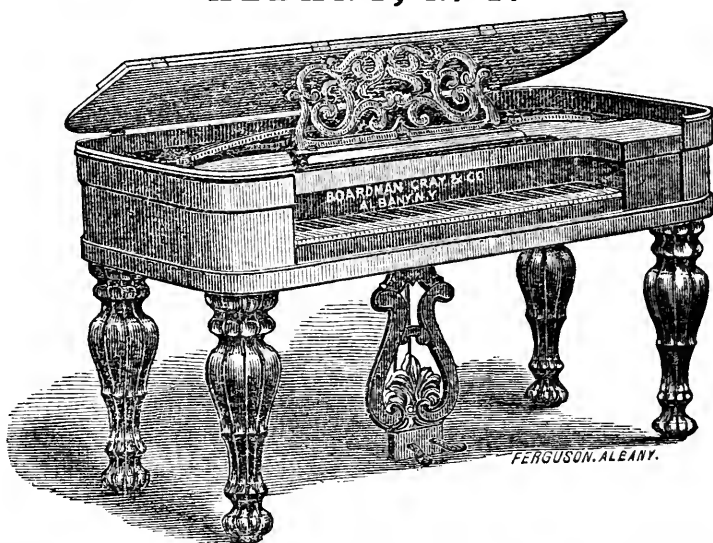
This Stove will give more heat, with a given quantity of Coal, than any other Stove in the world. We challenge competition.

ALSO PORTABLE AND STATIONARY HEATERS,

And a General Assortment of Stoves, &c., &c.

W. & J. TREADWELL, PERRY & NORTON.

PIANOS FOR \$150,  
 WARRANTED GOOD IN EVERY RESPECT,  
 MADE BY  
**BOARDMAN, GRAY & CO.,**  
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**T**HE subscribers having been induced after repeated application, to make a PIANO at a low price, to meet the wants of many now deprived of the luxury, have perfected such an instrument, suitable for

SMALL PARLORS, SITTING-ROOMS, &c.,  
 Finished in Rosewood—a Beautiful Piano at  
**ONE HUNDRED AND FIFTY DOLLARS!**

These Pianos are FULLY WARRANTED, and have all our Late Improvements.

Circulars Furnished on Application, giving Full Particulars.

They also furnish a

**HANDSOMELY FINISHED PIANO,**  
 Adapted for School Practice and Purposes, at  
**ONE HUNDRED AND TWENTY-FIVE DOLLARS!**

(SEND FOR CIRCULARS.)

Our Regular Styles of LARGE PIANO FORTES, 6 $\frac{3}{4}$ , 7, and 7 $\frac{1}{4}$  Octaves, we continue to make with all the Late Improvements, at from \$300 to \$500, according to Size and Finish. Large Discounts made to Cash Buyers.

Illustrated Price Lists and Circulars furnished on Application.

All our Piano Fortes have our Great Improvement,

**THE INSULATED IRON RIM,**

Making them the Best and Most Durable in the World.

SEND FOR CIRCULARS.

Perfect Satisfaction Guaranteed, or Money Refunded.

**BOARDMAN, GRAY & CO.,**

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# COMMERCIAL NURSERIES.

(ESTABLISHED 1830.)

H. E. HOOKER & CO., Proprietors.

THE Grounds of these old established and responsible Nurseries now comprise 200 acres in a thorough state of cultivation. The stock is unsurpassed in extent and in health and beauty of growth. Long and valuable experience enables us to grow trees and plants in the best manner; and with an extensive collection of specimen and bearing trees, we are confident in promising entire accuracy in labeling varieties. Our facilities for packing are so complete that we can assure the safe transportation of packages to any part of the Union. *We respectfully refer the public to our old patrons.*

The stock includes the following staple items: (For a more extended list see Catalogues.)

## STANDARD FRUIT TREES FOR ORCHARDS.

APPLES, PEARS, CHERRIES, PEACHES,  
PLUMS, NECTARINES, QUINCES.

## DWARF TREES FOR GARDENS.

APPLES on Paradise Stocks, (bear immediately after setting.)

PEARS on Quince Stocks, including handsome bearing Trees.

CHERRIES on Mahaleb Stocks.

## Small Fruits in Great Extent and Variety.

CURRENTS, STRAWBERRIES, GOOSEBERRIES,  
RASPBERRIES, BLACKBERRIES, &c.

RHUBARB, ASPARAGUS, &c.

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All the NEW HARDY NATIVE SORTS, including among others:

Diana, Delaware, Clinton, Concord, Garrigues, Hartford Prolific, Logan, Rebecca, To Kalon, Union Village, Northern Muscadine, King, Fragrant Harrison, and many others.

Some of these we consider great acquisitions and *no kumbug*.

ISABELLA, CATAWBA and CLINTON by the large quantity, and all the FOREIGN VARIETIES for house culture.

## IN THE ORNAMENTAL DEPARTMENT,

Will be found every variety of

DECIDUOUS ORNAMENTAL TREES, SHRUBS AND VINES,  
EVERGREENS, ROSES, HEDGE PLANTS, &c.

As a Speciality, we call attention to our large supply of

## AMERICAN ARBORVITÆ

*Plants for Screens*, which are in fine condition to transplant, and by easy management will soon form a most beautiful hedge, dense and perfectly impervious to the sight.

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# NOTICES OF

## THE COUNTRY GENTLEMAN AND THE CULTIVATOR,

### FROM SUBSCRIBERS AND THE PRESS.

As witnessing that the purposes of our Publications are successfully carried out, both to our readers, who have already the evidence of their contents, and to strangers who may on introduction like to look over our Credentials before they take us to their homes as a Family Friend and Counsellor, we subjoin below a few extracts from the Letters of our Correspondents, and the Notices of the Press. THE COUNTRY GENTLEMAN is a large quarto, and forms two volumes of 416 pages each, per year—price \$2, in advance. The annual volume of THE CULTIVATOR contains nearly 400 pages, and is furnished at the low price of FIFTY CENTS. Both Journals are amply illustrated, and neatly printed, on fine and durable paper.

#### EXTRACTS FROM LETTERS.

From a gentleman in Massachusetts, distinguished for his scientific attainments, and his practical skill as an agriculturist—"If the hearty approbation of a single reader is of any worth to you, you have mine most heartily, I assure you."

From a subscriber in Western New York—"I think the Country Gentleman the BEST PAPER for farmers I have yet seen."

From a subscriber in Ohio—"I think the Country Gentleman decidedly the best Agricultural paper in the country, and I have seen and read many."

From another subscriber in Ohio—"I value the Country Gentleman as the BEST OF SIXTEEN Agricultural papers which I take."

From a subscriber in Maine—"I like your paper more and more every day."

From a subscriber in Illinois—"I prefer the Country Gentleman to any of the Agricultural papers I am acquainted with."

From a subscriber in Connecticut—"It is perhaps unnecessary for me to say how much I have been pleased and instructed in reading the Country Gentleman."

From a gentleman in Vt., distinguished both as a writer and an Agriculturist—"The Country Gentleman is, BY FAR, at the head of the Agricultural Journals of the United States."

From a subscriber in Michigan—"I cannot get along without it—in fact, it is the best paper I ever read."

From a subscriber in Kentucky—"Of all the papers I have ever read, there is none in comparison to the Country Gentleman—you need not ask me for what, for it is FOR EVERY THING."

From a subscriber at Concord, Mass.—"Your paper is indubitably the best paper in the country."

A subscriber at Pittsburgh, Pa., speaks of The Country Gentleman as "the leading periodical of the country, useful and practical."

#### NOTICES OF THE PRESS.

*Wayne County Whig*—"We are acquainted with no paper which better justifies the use of an elegant and appropriate title than THE COUNTRY GENTLEMAN. It is not only a model of typographical taste, but it is filled with well written and valuable articles, on every topic of interest to the practical agriculturist, whether of acres or of rods. It is a paper of which Mr. Tucker, the veteran and pioneer of agricultural publications in New-York, may be justly proud. We commend it with the greatest cordiality, to the attention of our readers."

*Jacksonian, Pontiac, Mich.*—"It has never fallen to our lot to meet with a more interesting and readable paper of the kind than *The Country Gentleman*. Taking into consideration the great amount of reading matter in its columns, and the fact of its issuing weekly, it is the cheapest paper devoted to the same subject in the world, and we wish it God-speed with a hearty good will."

*Vermont Chronicle, Windsor, Vt.*—"Its patrons may rely on the Conductor's ability and enterprise, judgment and taste, and purity of moral sentiment. It is a beautiful and every way excellent paper, and we cannot doubt its success."

*Ohio Cultivator, Columbus, Ohio*—"Mr. Tucker is the most experienced and successful publisher of agricultural papers in the Union, having been nearly a quarter of a century in the business."

*The Hudson Gazette* pronounces it "decidedly the best agricultural publication in the country."

*The Winsted Herald* says—"On all matters pertaining to the occupation of the Farmer and the Horticulturist, as well as to Domestic Architecture and the Country Fire side, it is without a rival."

*The Herald and Free Press, Norristown, Pa.*, says of *The Cultivator*, that it is "well known as among the best works of the kind in the country."

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