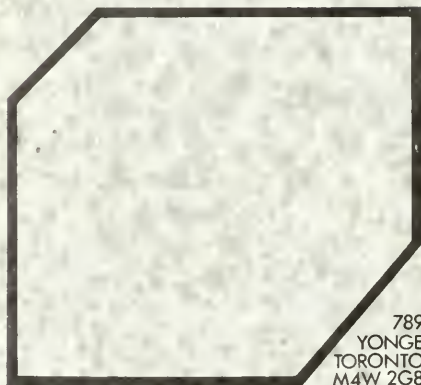


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INDEX TO VOLUME XVI

OF

THE CANADIAN HORTICULTURIST.

A		PAGE
Abutilon.....	284	
Abundance Plum.....	70, 189, 263	
Acadian Owl.....	93	
Agawam Blackberry.....	44	
Agricultural Life, Incentives to.....	209	
Alexander Apple.....	1 112	
American Linden.....	394	
American White Elm.....	334	
Anemone Pride.....	348	
Anjou Pear.....	58, 112	
Anomatheca Freezia.....	20	
Antonovka Apple.....	350	
Apple Barrel, A New.....	39	
" Boreis, Fighting.....	264	
" Composition of the.....	338	
" Crop, The.....	384	
" Crop in Waterloo, The Big.....	14	
" Crop of Nova Scotia.....	294, 361	
" Export.....	96, 374	
" Growing in Quebec.....	202	
" Market, The British, 36, 328, 367, 444		
" Orchard, Renewing an Old.....	23	
" Orchards, Manuring.....	89	
" Rot.....	172	
" Scab, Treatment of.....	48, 125, 155	
" Stock, Seeds for Raising.....	406	
" Smith's Cider.....	435	
Apples as Medicine.....	25	
" at the World's Fair.....	362, 363	
" " " Quebec.....	199	
" Boxes for.....	203	
" Cheap Storage for.....	380	
" for Exportation, Handling.....	171	
" from British Columbia at the World's Fair.....	400	
" Hardy in East Angus, Que.....	19	
" Hybridizing.....	148	
" in Nova Scotia.....	384	
" Most Useful in Nova Scotia, Varieties of.....	256	
" near Montreal.....	151	
" Picking.....	156	
" Pruning.....	135	
" Requisites.....	344	
" Six Best.....	254	
" Wintering.....	51	
Apple Tree Aphis.....	171	
" Tree Borer.....	270, 440	
" Trees, Moving.....	406	
Approach, The.....	23	
Arabka Apple.....	359	
Awards in Horticulture, Canada's Num- erous.....	415	
Azalea, Treatment of the.....	300	
Australian Everbearing, or Crimson Strawberry.....	261	
B		PAGE
Baldwin, An Improved.....	188	
Bananas and Oranges.....	433	
" for the Table.....	225	
Bank's Red Gravenstein Apple.....	420	
Barrel, A New Apple.....	39	
Barrow-Maker.....	103	
Bar Seckel Pear.....	184	
Basic Slag.....	123	
Baskets for Small Fruits.....	71	
Beans.....	272	
" Table for Assorting.....	268	
Beauty of Naples Plum.....	405	
Beech Timber.....	92	
Bee Keepers, Hints to Amateur.....	27, 104	
" Keeping and Horticulture.....	106	
" " Hints for July.....	257	
" " " for August Man- agement.....	292	
" Raisers, Hints for.....	65	
Bees after the Honey Flow.....	324	
" and Fruit.....	66	
" Indispensable to Fruit Growers..	224	
Beitigheimer Apple.....	14	
Belle de Boskoop Apple.....	138	
Berries, Propagation of.....	33	
Beurre Bosc Pear.....	255	
" d'Anjou Pear.....	58, 112	
" Giffard Pear.....	59	
Bingham Plum.....	405	
Birds, Insectivorous.....	123	
Black Aphis of the Peach.....	269	
Blackberries, Culture of.....	43, 82	
" Varieties of.....	44	
Black Knot.....	158, 300	
Blenheim Orange Apple.....	113, 299	
Blossoms, The Sterility of.....	123	
Blue Spruce.....	186	
Boiken Apple.....	402	
Bones and Unleached Ashes.....	304	
Bones, Dissolved.....	305	

	PAGE
Fruit Display from British Columbia at the World's Fair.....	400
Fruit Display from Ontario at the World's Fair.....	230, 401
Fruit Display from Prince Edward Island at the World's Fair.....	401
Fruit Display from Quebec at the World's Fair.....	401
Fruit Experience at Sandwich.....	73
“ Garden, Experience in a.....	302
“ Grower, Death of a Prominent..	60
“ Growers' Association of Nova Scotia.....	412
Fruit Growers, Some abuses of.....	95
“ Growing Compared with Grain growing.....	375
Fruit Growing in Nova Scotia.....	248
“ “ in Quebec.....	426
“ “ in the Annapolis Valley.....	371, 411
Fruit Growing, The Business of.....	438
“ Handling.....	322
“ Houses and Fruit Rooms.....	277
“ How to Secure Yearly Crops of.....	342
“ Products of the United States.....	425
Fruits, Disappearance of Varieties of... 136	
“ Spurs and Fruit Trees.....	351
“ Trees, Washing the Bark of.....	253
“ Utilizing.....	208
Fungicides and Insecticides, Combined.	144

G

Garden, Mistakes Made in the.....	433
Gas Line.....	419
Gem Cultivator for Strawberries.....	111
Giant Bermuda Freesia.....	20
Gideon Apple.....	188
Girdling Grape Vines.....	78
Glass, Substitutes for.....	45, 92
Good Wishes.....	73
Goosberries.....	213
“ and Currants.....	60
“ and Currants, Summer Pruning of.....	218
Gooseberries, Propagation of.....	381
“ Pruning.....	213
“ “ and Propagation..	132
Gooseberry Mildew.....	49, 126, 170
Grading and Packing for Market.....	258
Grafting.....	73
Grape Diseases.....	126
“ Pruning the.....	187
“ Growing for Market.....	317
Grapes, Difference in.....	176
“ Exhibiting.....	71
“ from the Central Experimental Farm at the World's Fair..	401
Grapes, How to Pack.....	325
“ in Quebec.....	131
“ Marketing.....	395

	PAGE
Grapes, Selection from the Catalogue of.....	4
“ Worthy of Trial.....	408
“ Training.....	150
Grass for the Lawn.....	180
Grass-seed, Sowing.....	154
Greenfield's Seedling Apple.....	188
Grenville Strawberry.....	97
Grimsby Park.....	243
Grindstone, In Setting a.....	376
Grouping Trees.....	424

H

Handling Fruit Properly.....	322
Hazlenuts, Native.....	184
Heating by Hot Air and Hot Water..	109
Header for Barrels.....	306
Hedge, A Live.....	31
Hedges.....	5
Herbaceous Paeonia.....	191
Hibiscus.....	72
Hill's Chili.....	81
Hints for Bee Raisers.....	65
Hints to Amateur Bee Keepers.....	27, 104
Hint Worth Remembering, A.....	270
Home Grounds, Laying out.....	280
Holtermann, Mr. R. F.....	293
Honey at the World's Fair.....	436
“ Bee in Relation to Plant Life...	219
“ Strawberry.....	261
Hop in Gardens, The.....	396
Hops, Fertilizing Value of Spent.....	443
Honey, How to Sell.....	323
Horticultural Society, A World's... 362	
Horticulture and Bee Keeping.....	106
“ in Nova Scotia, Experimental.....	362
“ in Public Schools.....	157
Hot bed, Making ¹ A.....	83
Hotbed Sashes, Cloth and Paper... 30	
Hot Water Heating.....	164
House Yard, The.....	23
House Yard, Plant of.....	143
Howell Pear.....	333
Hybridizing.....	174
Hybridizing Apples.....	148

I

Ice and cold storage on the farm.....	379
Ink for zinc labels.....	227
Intermixing varieties.....	249
Implements, Storing.....	438
Isabella Grape.....	327
Italian Bees.....	182

J

Japan Plums.....	121
Jessie Strawberry.....	261

	PAGE		PAGE
Judging.....	15, 73	NEW OR LITTLE KNOWN FRUITS—	
Judging at the World's Fair.....	273	Bank's Red Gravenstein Apple... 420	
Juneberry, The Western.....	18	Antonovka Apple..... 359	
		Arabka Apple..... 359	
K		Bar Seckle Pear..... 184	
Keiffer Pear.....	9	Belle de Boskoop Apple..... 138	
Kensington Grape.....	403	Brilliant Grape..... 184	
Kerosene Emulsion.....	169	Canada Reinette Apple..... 17	
Kerosene for Insects, New Method of applying.....	29	Cyclops Pear..... 63	
King of the Pipplns.....	63	Dempsey Pear..... 67, 402	
Kniffen System of Pruning.....	52	Fameuse Seedling Apple..... 18	
		Gideon Apple..... 188	
L		Greenfield's Seedling Apple... 188	
Labels.....	149	Greenville Strawberry..... 97	
Land Plaster.....	365	Improved Baldwin..... 244	
Lawn, Care of the.....	225	Longfield Apple..... 360	
Lawn Management, General.....	50	Lubsk Queen Apple..... 36i	
Lawn Rake, The.....	104	McMahan's White Apple..... 137	
Lawn Roller.....	24	Pioneer Currant..... 19	
Leaf Blight of the Currant.....	166, 187	Recumbent Apple..... 402	
Lettr from Russia, Error in a.....	17	Russian Fruits..... 193	
Letters from Russia.....	193	Switzer Apple..... 359	
Little Dandy Sprayer.....	51	Vermont Beauty Pear..... 184	
Lime for heavy land.....	32	Western Juneberry..... 18	
Lime in the garden.....	418	Night Blooming Cereus.... 98	
Lime, The value of.....	309	Nitrate of Soda for Strawberries..... 110	
Lime Tree.....	394	North America Bee Keepers' Assoc'n, Twenty-fourth Annual Meeting of... 436	
Livingston's Dwarf Tomato.....	290	Northern Orchard, A..... 426	
Longfield Apple.....	204, 360	“ Spy Apple..... 370	
Lubsk Queen Apple.....	361	North West Greening.... 205	
Lucretia Dewberry.....	113	Notes from Grand Isle, Que..... 303	
		“ “ the World's Fair, 159, 195, 230, 273, 296, 314, 401, 402	
M		Nourishment..... 60	
Mammoth Squash for World's Fair, How I grew the.....	423	Novelties..... 149	
Manure for small fruits.....	109	Nut Trees, Grafting..... 156	
Manure, Utilizing rain water with....	211	Oil of Sassafras..... 130	
Manuring Apple Orchards.....	89	One Judge System..... 73	
Marijasa Lilies.....	287	Onion Plants, Setting..... 103	
Marls.....	419	Onion Seed..... 268	
Melons with Strawberries, Planting....	410	Ontario Apple..... 108, 318	
Michigan Horticultural Society.....	55	Orchard, Care of the..... 354	
Minnewaska Blackberry.....	45	“ Cultivation of the..... 383	
Monilla.....	330	“ Fertilizing the Apple..... 122	
Moore's Arctic Plum.....	301	“ Making the..... 350	
Moth Destruction.....	225	“ Renewing an old Apple..... 25	
Mountain Rose Peach.....	81	Orchards need Cultivation..... 255	
Mulch and other Fertilizers.....	364	Oregon Grape..... 18	
Mulberry, The.....	103	Ostrakof Glass Apple..... 402	
Mulching, Hints on.....	94	Our Book Table. 35, 75, 114, 189, 228, 260, 332, 367, 407, 442	
Muriate of Potash.....	332, 356		
McIntosh Red Apple.....	369	P	
McMahan Apple.....	77, 134, 137	Paeonia, The..... 191	
		Palms..... 144	
N		“ for home decoration..... 145	
Netting for Trees.....	94	“ Propagating..... 69	
		Pampas Grass for decoration..... 326	
		Pansies..... 360	
		Parasite of the Tomato Sphinx..... 441	
		Parker Earle on the Strawberry..... 417	
		Peach crop of the United States..... 289	

	PAGE
Peach Culture	79
“ Growing	177
Peaches	41
Peach Yellows	56
“ “ Will fertilizers either prevent or cure?	312
“ Tree borer	278
“ Trees, pruning	217, 225, 391
“ Culture, Some Jottings on	391
Pear Leaf Mite	259
Pears and Peaches, Pickled	370
“ Concerning	335
“ Extracts from Catalogue of	4
“ for Market, Six	47
“ in Grass	289
“ Notes on Early	59
“ on Apples, Grafting	189
“ on Talman's Sweet	71
“ Packing	356
“ Treatment of	192
“ “ “ Winter	88
Pear Spot, Treatment of	125
“ Tree Psylla	87
Pears, Trees diseased	147
“ “ Pyramid	61
Pedigree in Seeds	434
Peppermint Culture	318
Peterboro' Fruit Growers' Association	155
Pierre Guillot Rose	259
Picking Apples	156
“ Ladder for	146
Pioneer Currant	19
Planting too thickly	175
Plum, Best and most profitable market	186
“ Curculio	176
“ Culture	246
“ Earliest and Latest for profit. . .	186
“ Knot and Yellows, Act regarding	68
“ Rot	126
Plums from British Columbia at World's Fair	401
Plums, Japan	149, 397
“ Money in	397
Plum Trees, Care of	151
“ “ Pruning	150
“ “ Treatment of	260
Poems—	
Autumn	368
Autumn Thoughts	408
Night-Blooming Cereus	126
The Snowdrop	152
Winter Roses	36
Poison Ivy or Sumach	428
Ponderosa Tomato	64
Potash for Peaches, Orchards and Gardens	331
Potatoes, Shipping Early	291
Princess Louise Apple	401
Prince of Wales Plum	112, 189
Processional Caterpillar	115
Produce outdoors. Keeping	58

	PAGE
Propagation of Berries	33
“ “ Gooseberries	381
Protection for Young Trees	19
Prune, Where and how to	393
Pruning	21
“ Fruit trees	134, 266
“ in Summer	336
“ Kniffen system of	52
“ Peach trees	391
“ Trees	215
“ “ in cold climates	30
Prunus Simoni	265
Purple Beech	358

Q

Quebec Apples at the World's Fair	199
Question Budget	34, 74, 111, 151, 227, 407, 442
Quince Rust	427

R

Radish Pods	360
Radishes, Money in	422
Rambling Notes	5
Raspberries at Ottawa, Notes on	308
“ How to raise successfully	381
“ Pruning	253
“ Spraying among	187
“ Varieties of	69
Raspberry Culture	70, 133, 212
“ Tips	406
Recumbent Apple	402
Red Apert Apple	402
Red Astrachan Apple in Chicago	326
Red Birch	105
Red Cohosh, The	393
Reasons why some Fruit Trees do not set their Fruit, The	336
Red Gravenstein	362
Red Spider	227, 345
Red Spider in India	431
Re-potting	28
Rhubarb	385
Roads and Walks	378
Rockerries	357, 405
Rock Elm	307
Rock Phosphate	365
Rose Bushes, Pruning	101
“ Insects Affecting the	179, 180
“ Leaf Hopper	122, 250
Roses	51
“ A Selection of Hardy	292
“ in Canada, How to Succeed with	118, 178
Roses, The Protection of	S, 101
Rules for Judges in Horticulture	296
Russian Apples, Notes on some Good	359
“ Fruits, Nomenclature of	113

S

	PAGE
Saccharin.....	144
Sage for Market.....	54
Sale of Canadian Apples in Chicago.....	295, 296
Saw-Whet.....	93
Scott's Winter Apple.....	204
Scroeder's Muscat Hybrid Crab.....	194
Seeds of Evergreens.....	103
Sheldon Pear.....	37, 112
Shipping Early Potatoes.....	291
Shot-hole Fungus.....	177
Sierra Snow Plant.....	253
Small Fruits.....	81, 82
" " Manure for.....	109
Snyder Blackberry.....	44
Some Prominent Canadian Horticulturists—	
Wellington Boulter.....	310
N. J. Clinton.....	91
John Craig.....	200
J. K. McMichael.....	386
Linus Woolverton.....	10
Souvenir d'Esperen pear.....	58
Spraying.....	176, 214
" Apparatus, Novel.....	366
" for 1893, Outline of Work.....	9
" Experience with.....	50
" Good Results from.....	84
" Pumps.....	72, 100, 148
" Suggestions Regarding.....	124
" vs. Jarring.....	217
Squash Bug.....	187
" Cultivation of the.....	423
Stark Apple.....	112
Step Ladder, Harris'.....	185
Sterility of Blossoms.....	123
Stoat's Monarch Rhubarb.....	64
Stock Influencing Scions.....	401
Storage of Apple, Cheap.....	380
Strawberries at Ottawa, Notes on.....	308
" Fertilizing and Cultivating.....	134
" In California, Leading.....	
Varieties of.....	261
" Marketing.....	430
" Manuring.....	29
" Nitrate of Soda for.....	110
" Report on.....	331
" Tool for Cultivating.....	111
Strawberry Growing, Profitable.....	90
" Leaf Blight.....	318
" Parker Earle on.....	417
Striped Beetle.....	187
St. Thomas Notes and Comments.....	100, 173
Sumach or Poison Ivy.....	428
Superphosphate of Lime.....	365
Sweet Peas.....	173
Switzer Apple.....	359

T

Taylor Blackberry.....	44
Tell's Chapel on Lake Lucerne.....	76
Ten Block System.....	62

PAGE

Thinning.....	135, 356
" The Theory of.....	235
Thompson's Early Raspberry.....	320
Thrip of the Rose.....	179
Three-leaved Gold Thread.....	392
Three Judges or One.....	15
Tip-Top Melon.....	290
Tomato Growing.....	199
Tomatoes.....	45
" Training.....	237
Trade between Belgium and Canada.....	327
Trees and Shrubs, Ornamental.....	424
" Dwarfed.....	432
" in Grass.....	253
" on the Lawn, Grouping.....	424
" Protection for Young.....	49
" The use of Shade.....	337
" Weeping.....	267
Triomphe de Grand Strawberry.....	261
Tuberoses, Growing.....	136
Tuberous Begonias.....	192, 254

U V

Unleached Ashes and Bones.....	304
Vegetable Novelties.....	102, 290
Vermont Beauty Pear.....	184
Vinegar Making.....	336
Vines, Hardy Climbing.....	150
Virginia Creeper.....	285

W

Wagener Apple.....	4 06
Walks and Roads.....	378
" How to Make.....	24
Washing the Bark of Fruit Trees.....	253
Watering House Plants.....	59
Water Lily in a Tub.....	181
Weaver Plum.....	409
Weeder, An Effective.....	206
Weeping Trees.....	267
Western Juneberry.....	18
Western New York Fruit Growers.....	79, 121
Wheat Land Peach.....	15, 52
White Ash, Treatment of Seeds of.....	32
White Cohosh.....	393
Whitewash for Interior Walls, Color- ing.....	389
Williams' Strawberry.....	63, 189, 265
Wine Exhibit at Chicago, Canada's.....	327
Winter Meeting, The.....	3, 438
" Roses.....	36
Wire Gate, A Combination.....	256
Wolf River Apple.....	34, 86
Workshop, The Fruit Grower's.....	46
Wragg Cherry.....	230

Y

Yellows and Plum Knot, Act Regard- ing.....	68
Yellow Willow.....	186

LIST OF CONTRIBUTORS, VOL. XVI.

	PAGE.		PAGE.
Allan, A. McD.	421	McKnight, R.	27, 104
Ball, J. Raymond.....	102	McMichael, J. K.	291
Beadle, D. W.	139, 236, 269, 312, 347, 392	McNeill, A.	155
Beall, Thos.	101, 164	Nicol, D.	93, 143, 175, 207, 267, 324, 394,
Bunbury, Geo.	95	Niemetz, J.	428 193
C. J. F.	254	Patterson, G. Mead.	60, 131
Chapais, J. C.	426	Randall, G. J.	64
Craig, Prof. J.	124, 137, 138, 216, 257, 303, 308, 409,	Robertson, N.	15, 145
	420	Roy, Simon.	19
Fear, Miss Ellen.	302	Reif, L. A.	19
Fletcher, Prof. Jas.	18	Simmers, A.	429
Foote, L.	209	Smith, A. M.	56
Freeman, W. A.	89	Stewart, J. D.	5
Gagnon, O.	211	Tweedle, J.	169
Goff, E. S.	9	Wade, M.	101
Graham, A. W.	100, 173	Warnock, Wm.	423
Hick, Walter.	244, 254	Watkins, S. L.	253, 287
Hilborn, W. W.	134	Webster Bros.	118, 144, 178
Holtermann, R. F.	106, 183, 210, 257, 292, 324,	Wilson, T.	431
	436	Wright, A. A.	19
Hull, A. G.	22	Woolverton, L.	1, 3, 23, 29, 37, 39, 51, 52, 62, 66, 67, 68, 77, 79, 84, 87, 91, 98, 108, 117, 121, 146, 153, 155, 159, 170, 184, 185, 191, 195, 199, 200, 226, 229, 230, 243, 256, 258, 263, 273, 293,
L. A. W.	238		Etc.
Lyon, T. T.	50		
Manning, W. H.	357		
Morden, E.	133		

CONTRIBUTORS TO OPEN LETTERS.

	PAGE.		PAGE.
Allan, A. McD.	112	Lee, W. H.	189
Boyd, Alfred.	331	Leonard, Wm.	299
Brodie, R.	150	Little, John.	331
Coate, F. W.	113	McKnight, R.	112
Coleman, Francis.	261	Memetz, Jaroslav.	113
Dalgarno, John.	73	Race, T. H.	112
Gagnon, D.	336	Tool, J. H.	112
Gray, Geo.	73	Trotter, R.	189
Halloway, Thos.	152	W. S. T.	188
Hick, Walter.	113	Warnock, Wm.	73
Jones, Hugh.	189	Watkins, S. L.	261
Kerman, D.	332	Wylie, W. H.	261

CONTRIBUTORS TO QUESTION DRAWER.

	PAGE.		PAGE.
Beadle, D. W.	109	Morton, J. A.	148
Cline, G. W.	186, 405	McKnight, R.	74
Craig, Prof.	186, 188, 227, 259, 260, 300, 330, 364, 405, 440,	Panton, Prof. J. H.	365
	441	Parker, S. C.	299
Fletcher, Prof.	441	Shutt, Prof.	441
Hilborn, W. W.	109	Wolverton, L.	31, 32, 33, 34, 69, 70, 71, 72, 109, 110, 111, 147, 148, 149, 150, 187, 188, 365,
Hoskins, T. H.	30		Etc.
Morden, E.	74		

INDEX TO ILLUSTRATIONS.

	PAGE		PAGE
Abundance Plum, (Colored Plate).....	263	Forsythia (colored plate).....	117
Acadian Owl.....	93	Fruit House and Fruit Rooms.....	377
Alexander Apple, (Colored Plate).....	1		
Annapolis Valley, In the.....	444	Gate, A Combination Wire.....	20
" " The.....	371	Giant Bermuda.....	170, 171
Apple Blossoms.....	413	Grasse Vicinity, Along the Road.....	241
" Orchard in the Annapolis Valley,		Grasse, View of the Country About... ..	239
An.....	374	Greenville Strawberry.....	97
Apple Storage.....	380	Grimsby Park :	
" Tree Aphid.....	171	On the Beach.....	243
" Picking, Annapolis Valley.....	414	Park House.....	243
Archway, A Hop-covered.....	396	The Temple.....	244
		Grindstone, Setting a.....	376
Bank's, Red Gravenstein.....	421		
Barrel, A New.....	30	Hale, Mr. J. H.....	80
Barrow Marker.....	103	Header for Barrels.....	306
Barry, W. C.....	79	Herbaceous Pæonia (colored plate).....	191
Bees :		Holtermann, Mr. R. F.....	293
Drone.....	224	Howell Pear (colored plate).....	333
Queen.....	224	Houseyard, Plan of.....	143
Worker.....	225		
Belle de Boskoop Apple.....	138	Kniffen System of Pruning.....	55
Black Aphid of the Peach.....	269, 274		
Blackberry.....	42	Maplehurst Fruit Farm.....	11
Black Pekin Egg Plant.....	252	"Maplehurst," the Home of the Secre-	
Blomidon and Minas Bay from Wolf-		tary.....	12
ville.....	375	Marker, A Good.....	103
Borer of Peach Tree.....	278	Mildew of Gooseberry.....	170, 171
Boulter, Mr. Wellington.....	311	Moore's Arctic Plum (colored plate).....	301
Brighton Grape (colored plate).....	153	McIntosh Red Apple.....	369
		McMahan's White Apple.....	77
Canada Rienette, Apple Section of....	16	" " Section of.....	137
Celery Culture.....	218	McMichael, Mr. J. K.....	386
" for Winter Use, Plan for Keep-			
ing.....	341	Night Blooming Cereus.....	98, 228
Cemetery, The Country.....	53, 54		
Clinton, Mrs. N. J.....	91	Oil of Sassafras, Making.....	131
Cocoon on Sphinx Caterpillar.....	441	Orchard in Bloom.....	412
Cold Storage Building.....	397	" " Blossom, From a Window	
" " House, Ground Floor of..	6	on the Annapolis Railway.....	372
" " " Perspective View			
of.....	8	Pæonia, Herbaceous (colored plate).....	191
Cold Storage, Section of.....	6	Pear Tree in Fruit, Dwarf.....	61
" " " Wall.....	7	" " Psylla.....	87
Craig, Mr. John.....	200	Picking Apples; Annapolis Valley.....	414
Currant, National Growth of the.....	128	Plum, Double.....	193
" Pruning.....	127	Poison Ivy.....	428
" When Properly Teated.....	129	Processional Caterpillar.....	115
Cyclamen, The.....	432		
		Rain Water with Manure, A Device for	
Drive, Curved.....	24	Utilizing.....	211
" Making a.....	24	Red Spider.....	345
		Rocky Mountains.....	262
Entrance of a Suburban Homestead..	23	Roller for Lawn.....	24
Evaporator, Section of.....	343	Rose Leaf Hopper.....	250
" The Farmer's Favorite.....	342	Roses, Pruning Budded.....	119
Fence, A Living.....	31	Saw-Whet.....	93
Fertilization by Bees.....	220, 221	Schröder's Muscat Hybrid Crab.....	194

	PAGE		PAGE
Sheldon Pear (colored plate)	37	Water Lily in a tank	181
Snowdrop	152	Weaver Plum (colored plate)	409
Sprayer, The Little Dandy	51	Woolverton, Mr. L.	10
Spraying Apparatus, A Novel	366	Workshop, The Fruit Growers'	46
" Pump	148	World's Fair Views—	
" Results from	84, 85	Administration Building	196
		Agricultural Building	163
Table for Sorting Beans	268	Art Palace	316
Tell's Chapel	76	Bird's-eye View	160
Ten Block System	62	Canada's Vegetable Exhibit	275
Trees on the Lawn, Grouping	424, 425	Canadian Pavilion	198
		Electrical Building	276
University of Chicago, Bird's Eye View		Fisheries Building	231
of	159	Fruit Exhibit, Nova Scotia Section	233
Virginia Creeper	429	Horticultural Building	231
Virginia Creeper between trees, Fes-		Illinois State Building	315
toons of	286	Japanese Houdan	315
" " on Pillar on Lawn	285	Manufactures and Liberal Art	197
" " Screen and Archway		Map of Building and Grounds	159
of	286	Minery, The	162
		U. S. Coast Line Battle Ship	234
		Wragg Cherry (colored plate)	229





Stuber Lith Co. Troy, N.Y.

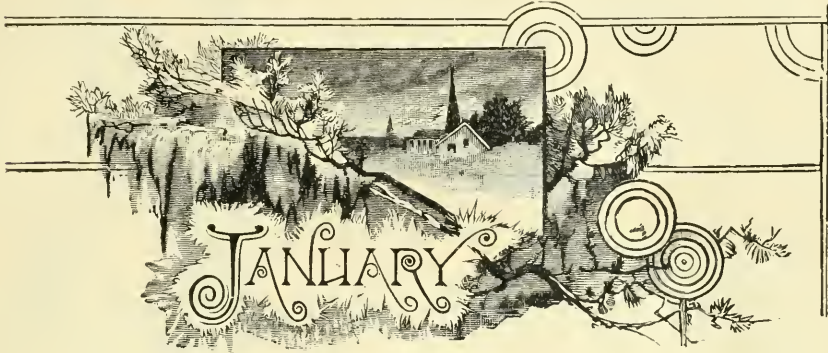
ALEXANDER.

THE
Canadian Horticulturist

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1893.

No. 1.



THE ALEXANDER APPLE.

QUR colored plate gives a fine representation of one of the staple varieties of fall apples cultivated in the northern portion of Ontario. It is of Russian origin, and, as might be expected, it is very hardy, although not equal to the Duchess. It is of large size and handsome appearance, which commends it to buyers, and makes it a very profitable variety to grow for market, in those sections where the climate is too severe for the Gravenstein.

In our list of autumn apples recommended for cultivation, we find this variety included in the list for most of the northern counties, for instance, the following is the list of fall apples commended to planters in Stormont, Dundas and Glengarry; Alexander, Fameuse, Gideon and St. Lawrence: in Lanark, Renfrew, Carlton and Russell; Alexander, Montreal Peach, Wealthy and Haas.

It is called Alexander from a Russian Emperor of that name, and one of its synonyms is Russian Emperor. It is also called Aport.

Downing gives the following description of it:—A very large, showy Russian variety. Tree vigorous, spreading, productive. Fruit very large, regularly formed, conical. Skin greenish-yellow, faintly streaked with red on the shaded side, but orange, brilliantly streaked and marked with bright red in the sun. Calyx large, set in a deep basin. Stalk rather slender, three-fourths of an inch long, planted in a deep cavity. Flesh yellowish-white, crisp, tender and juicy, with a rather pleasant flavor. Good October to November.

It will be interesting to our readers to note what is said of this apple by

our correspondents in various parts of the country. R. Brodie, of St. Henri, Que., wrote of it some years ago: "We generally sell the Alexander as soon as they are well colored in the fall, as we get a good price, averaging \$3 per barrel for them."

Mr. R. W. Shepherd, of Montreal, says, "In this section it does well, but the tree is only fairly hardy. It bears good crops after once well established in the orchard. The fruit for cooking is much appreciated by hotel and restaurant keepers, but the experience of growers here is, that in a season like the last, when the fall St. Lawrence is a good crop, it being a much better fruit for all purposes, the Alexander, which crosses the market about the same season, is almost unsaleable. Some seasons, however, the Alexander proves quite profitable in this market. On the whole, it may be considered a desirable variety to plant in limited quantities."

G. C. Caston, of Craighurst, in the County of Simcoe, says, "The tree of the Alexander is quite hardy here, free grower and an abundant bearer. The fruit is free from fungus scab, colors well, and attains great perfection. The quality of the Alexander is only fair for cooking, and lacks flavor for a good dessert apple. Yet, on account of its size, clean skin and fine appearance, it is, at present, one of the most salable of our fall apples. It will keep fairly well till Christmas."

Thomas Beall, of Lindsay, Victoria County, writes, "The Alexander is the most profitable autumn apple grown here, because of its great size, beautiful color and known good cooking qualities. It always commands a high price. The tree is very healthy, and bears well with good treatment. It is more free from fungus diseases and insect enemies than most other varieties."

D. Nicol, of Catarqui, County of Frontenac, writes, "The Alexander gives good satisfaction in this district. It is a good cooking apple, and an abundant bearer. It sells well when carefully handled. The tree is one of the hardiest we have. I would not recommend it for shipping purposes, because it is easily blemished."

A. McD. Allan, of Goderich, in the County of Huron, writes, "The Alexander is a fine, clean, thrifty grower as a tree, an early and good bearer, with fine-looking fruit where the land is kept in good heart. The apple is not only very attractive, but good as a cooker, and, if care in picking and shipping is exercised, it would reach Britain in good order, and bring fine prices. It would suit that market well, and it does fairly well in our own markets."

"You are a sweet peach," said a Pittsburg young man to a Pittsburg maiden.
 "And you a regular peach crop."
 "What do you mean by that?"
 "A chronic failure."

THE BRANTFORD MEETING.



SINCE a verbatim report has been taken of this meeting, to be sent out from the Department of Agriculture to all our members early in 1893, it is unnecessary to give any detailed account here of the work accomplished at our last annual winter meeting. Notwithstanding the unfavorable weather the local attendance was large, and the efforts of our directorate to encourage the fruit growing industry of the section, seem to be fully appreciated.

Principal Dymond presided at the welcome meeting at the Institute for the Blind, and showed us every possible courtesy, favoring us with a rich musical treat in the performance of several instrumental and vocal selections of classic music by the pupils. Mayor Secord, in well-chosen words, welcomed us to Brantford, and President Pettit in his address spoke hopefully of our work, and called upon the directors to aid him in making a creditable display of fresh fruit at Chicago, during the coming summer.

There was a large attendance for the day meeting at the Court House. The greater part of the first morning was spent discussing Prof. Craig's paper on "Plums Native to America." The classified list appearing in our report, with illustrations, will be exceedingly valuable for reference. The afternoon was largely occupied with apple growing, spraying, windbreaks, and bee-keeping as an adjunct to fruit growing. Mr. Holterman, who read the paper on this latter subject, did not advise a fruit grower to undertake bee-keeping if his time were already pretty fully occupied; in such a case it would probably not pay, but otherwise there is money in the business, even at the present low prices for honey. In his own case the profits of two years had about equalled the whole value of his stock of ninety-five colonies, worth, say, \$700. Besides this the fruit grower has the special advantage of the usefulness of bees in the fertilization of the fruit blossoms. In reckoning his profits he had reckoned his time at \$1.25 per day.

Prof. Pantou's lecture Wednesday evening, on "Enemies in Horticulture," illustrated with stereopticon views, was much appreciated, and will be put in shape for our report. Some excellent music was contributed by local talent, which much enlivened the meeting. In reply to a question on the best six varieties of apples to cover the whole season, Mr. A. McD. Allan, gave the following list: Duchess, Gravenstein, Ribston, Blenheim, King, and Ontario;

and if one wished four good specialties for the English market, he would recommend the Ribston, Blenheim, Gravenstein and King.

On Thursday morning the importance of a fruit experimental work was emphasized by Mr. A. M. Smith, and the matter was placed in the hands of a committee of which he is chairman. Mr. D. W. Beadle, of Toronto, as Chairman of the Committee on Pears, presented a revised report of the Catalogue of Pears, for guidance of judges. We give selections from it :

	Dessert.	Market.	Total Value.
Bartlett	8	10	18
Clapps.....	7	8	15
Souvenir	4	7	11
Buffam.....	4	4	8
Doyenne Boussock.....	6	8	14
Kieffer.....	3	5	8

This report was received from the committee, but laid over for further criticism.

An important part of the afternoon's work was the report of the Committee on Grapes, brought by George W. Cline, the chairman. The report of last year was carefully reviewed by the Committee, giving values of the various kinds, for use in judging collections. Here is a selection or two :

Variety.	Color.	Season.	Quality for Table.	Shipper's Value.	Market Value.	Total.
Agawam	R.	L.	8	10	9	27
Brighton	R.	E.	9	6	8	23
Champion	B.	E.	2	5	5	12
Concord	B.	M.	7	6	8	21
Empire State ..	W	L.	3	4	4	11
Lindley.	R.	E.	10	9	9	28
Niagara.....	W.	M.	8	5	9	22

But another important part of their work was in a list of grapes recommended for cultivation for profit in the various districts of the Province. Thus, for the vicinity of Brantford, the following list was given : Black—Worden, Concord, Roger's 4 and 44, Moore's Early ; Red—Delaware, Lindley, Agawam and Brighton ; White—Niagara and Pocklington.

Few changes were made in the directorate, A. H. Pettit still continuing President. For Prince Edward County, Mr. Wellington Boulter, President of the Ontario Packers' Association, takes the place of the late lamented P. C. Dempsey, and Alexander O'Neil, of Windsor, succeeds Mr. N. J. Clinton.

The next meeting will probably be held in Peterboro'.

RAMBLING NOTES.—III,

HEDGES.



SOME years ago a dense, neatly-trimmed Barberry hedge inclosed a pretty good sized plot, and was looked upon as one of the chief attractions of this neighborhood. Somehow or other—and I leave the solution to wiser heads than mine—the farmers living in this vicinity began to think that the said shrub was the cause of rust on their wheat. Personal argument and press editorials favoring the opposite opinion proved of no avail to dispel the impression. The feeling gradually became intense and widespread against it, and rather than let them remain in the belief that there was growing on the premises something detrimental to their interests, I allowed them to destroy it. A “bee” was speedily formed by some stalwart sons of the soil, and in a very short time every vestige of their supposed leaf spotted enemy, root stump and branch, was left in ashes; and *still there is rust*. Immediately afterwards the ground, formerly occupied by the demolished hedge, was replanted with Japan Quince, and when reviving nature begins to assume her verdant mantle of green, it is almost needless to remark, how the eye loves to wander to and linger upon its rich and abundant bloom of lovely scarlet flowers. Dwarf Box makes a handsome edging for gravel walks if allowed the partial shade of overhanging branches, while its evergreen freshness gladdens the hearts of those born and nurtured on the “tight little island” beyond the seas. Buckthorn does well on an adjoining farm, and proves an impenetrable barrier to stock, and a safe retreat in summer months for the noisy, pugnacious sparrow. Roses, and particularly hybrid perpetuals, some twenty-five of the leading sorts, “in the rosy time o’ the year,” is a sight for lovers of the beautiful to halt and admire. As this theme however has been lovingly and professionally treated by enthusiasts, whose names are now household words in floricultural literature, it will be prudent on my part to make my bow and gracefully retire from the field, especially as our local rosarian’s poetic nature will soon be all aglow, when describing the queen of flowers in all her unapproachable loveliness. One word regarding another favorite. Taking for granted that your thousands of readers have a dearly prized solution of the many gems that sweetly deck our mother earth during the season of their floescence, let me simply suggest one (if it isn’t in their collection already), namely *Yucca filamentosa*, or, as it is commonly called, Adam’s needle. The plant is perfectly hardy and easily propagated by division of the roots. It throws up amidst its narrow pointed leaves an erect stem three or four feet high, bearing aloft for weeks in July a delightful profusion of creamy-white bell-shaped flowers. Once seen in bloom its place is secured amongst garden novelties.

Russeldale.

J. D. STEWART.

CONSTRUCTING A COLD STORAGE HOUSE.



SINCE a good many of our most enterprising fruit growers are considering the advisability of building cold storage houses, in order to prolong the season of certain perishable fruits such as Bartlett pears, we give an article which recently appeared in the American Agriculturist, with the engravings :

As usually constructed, cold storage ice houses are built with two stories ; the first story for the keeping of goods, and the second being filled with ice. The floor between is arranged with openings through which the air, chilled by contact with the ice, descends into the room. A flue is provided to conduct the warm air to the upper part of the ice chamber. It is dried by condensation of its vapor, and purified by contact with the ice, as it descends on being chilled. Drains with traps are required to carry off the meltage water, and to secure the water condensed from the warm air. Dampers, in the cold and

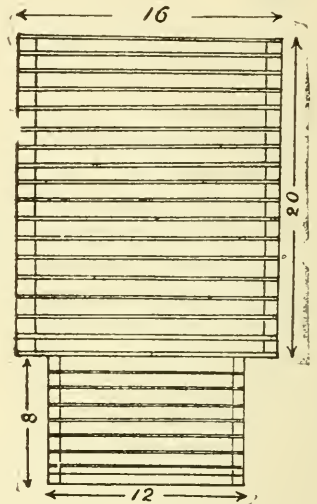


FIG. 485.—GROUND FLOOR.

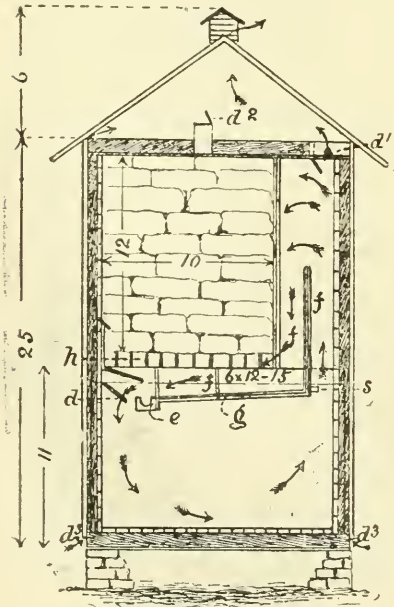


FIG. 486.—SECTION OF STORAGE HOUSE.

warm air flues, assist in controlling the circulation, and ventilators placed in the roof keep the loft free from dampness.

The walls, ground floor and ceiling are constructed as nearly non-conductive of heat as practicable. No cracks or any channels through which warm or cold air can pass are permissible. Drains, which carry off the water, are securely trapped to keep out the air. Vestibules with perfectly fitting doors are placed at all entrances. Windows are fitted with three or four sashes and air spaces between. Dryness in the storage room is secured by a sheet metal floor under the ice,

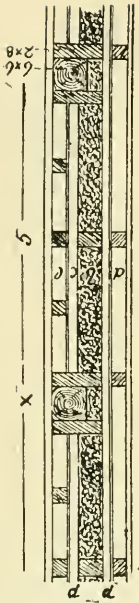


FIG. 487 — SECTION OF WALL.

usually galvanized iron, which forms a large pan or vessel in which all meltage water is collected. Water is very destructive to the ice, and the warm air is kept away from the top of the ice to prevent the moisture from being condensed there and settling into the ice. When the ice is low in the ice chamber, vapor may accumulate in the space above the ice. A ventilator in the top of the room is of service in conducting this away from the ice and keeping it dry. As the water from the melted ice will absorb air and gases, it is spread out over as large a surface as practicable, and the air is conducted over it to be purified. There are several plans by which these general features are accomplished in the construction of cold storage houses, some of which have been patented. The plans shown in the illustrations embrace the essential features of good cold storage construction.

The general arrangement of cold storage houses for any size is as shown in Figs. 485-488. Large houses require a girder and posts under the centre of the ice floor, and the air flues are best made double, with one set at each side of the girder along the centre of the room. The construction of the walls varies.

Walls filled with sawdust, charcoal, tan bark, or other non-conducting materials, have been in use for many years. Carefully conducted tests, however, have proved conclusively that a wall

of this description is inferior to a wall which contains dead air spaces, felt or paper linings, a section packed with mineral wool, and an outer circulating spaces *a* which are open to the outer air at the sill, and at the top open into air space. The wall shown in Fig. 487 gives good satisfaction. It comprises air the loft under the roof. Dampers (*d* Fig. 486) are placed at the bottom so they can be closed when desired. The next section of wall *b* (Fig. 487) is of dry sawdust, packed in place between walls of matched boards; the outer surfaces of these walls are lined with prepared waterproof paper. The inner section *c* contains dead air spaces which are about twelve inches square. The inner wall is of matched lumber, and the outer one is of weather boards. This construction keeps the sawdust dry and the walls free from dampness. There should be large flues *f* (Fig. 486) through which the air circulates. The drainage and meltage water is carried off by a trapped drain *e*. The galvanized iron floor can be flushed through openings *s* made for the purpose. A wooden backing *g* is placed below the iron floor. Wooden slats *h* hold the ice above the meltage water, and the outer air spaces carry off the heat imparted to the weather boards by the direct rays of the sun. When the air is humid or charged with moisture these air channels are tightly closed. The thickness of the walls may be varied with the capacity of the building. Additional sections of filling and dead air are required for larger houses where great quantities of goods are refrigerated. The cold storage house shown in Figs. 486 and 488

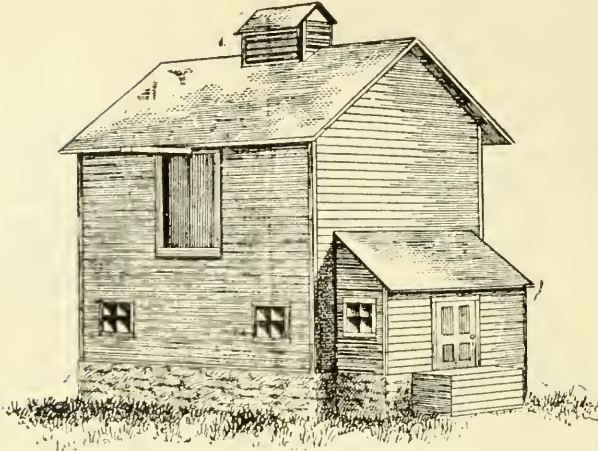


FIG. 488.—PERSPECTIVE VIEW OF A COLD STORAGE HOUSE.

forty tons of ice, and, with one filling, will be sufficient for all requirements for dairy, fruit and domestic use on a large farm. By regulating the outer air dampers, the circulation can be adjusted to meet all conditions. When these dampers are closed the ice wastes slowly.

THE PROTECTION OF ROSES.

Having tried many ways of protecting roses in winter, I have at last adopted the following method: About the first of December, according to weather indications, I trim the tops of my monthly roses, leaving a good strong growth above ground, a foot to eighteen inches, and in some cases even more. I then tie the branches together at the top and place from six to eight sticks around each bush. Then fill in between the sticks and the bush with fallen leaves, saved for the purpose, and after filling in well, tie the sticks close together at the top. I have tried this method four seasons and never have lost a rose bush which I considered healthy at the time it was tied up.

The branches keep perfectly wherever they are entirely covered or protected by the dead leaves. The sticks keep the leaves around them, and prevent their blowing away. Some litter should be spread over the ground between the plants so that it will not be frozen to any great depth. Where leaves cannot be procured, straw will be the next best material, but hay should never be used as it heats and burns the roses. In the latitude of Southern Ohio, roses should not be tied up before December, or they are apt to be killed before winter really comes, and they should not be untied before pleasant weather in April. If after that time cold frosty nights occur, the rose bushes should be thoroughly sprinkled with cold water in the morning before the sun shines on them. Young hybrid perpetuals should have the same protection as monthlies, and I always protect hybrid Teas the same as the monthly Teas.—American Agriculturist.

OUTLINE OF WORK IN SPRAYING FOR 1893.



OUR letter of the 5th instant, asking about spraying for apple scab, etc., is received. We believe our experiments have shown the Bordeaux mixture to be one of our best fungicides. We used a dilute form of it with good results last season, and would recommend your fruit growers to use it, as follows: Ten lbs sulphate copper (blue vitriol) per 100 gal. water, and about the same weight fresh lime or a little less. Dissolve in separate vessels and mix only when ready for use, as it is best if stirred constantly until sprayed on the trees or plants. For apples, spray with the mixture once before bloom after growth starts. Spray once or twice immediately after bloom for codlin moth, adding the necessary amount of Paris green or London purple. Another spraying or two with insecticide added to the Bordeaux mixture, may usually be profitably applied.

For grapes spray with sulphate copper solution before buds start, using 4 lbs. per 100 gallons water, but no lime. After bloom spray with Bordeaux mixture trees as above, at intervals of ten days to two weeks, until fruit is size of large nuts, when it may be best to use carbonate copper and aqua ammonia solution lest the Bordeaux mixture spot the fruit with the lime and make it appear badly. Our experience of last season demonstrates the value of spraying and confirms our belief, that it has "come to stay."

E. S. GOFF.

Horticulturist, Wisconsin Experiment Station.

THE people of this city have at last had a surfeit of Keiffer pears. The numerous orchards that have been planted have been rapidly coming into bearing, and the city has been flooded. The Italian fruit vendors, whose stalls occupy every foot of available sidewalk space in eligible localities, and whose carts swarm like locusts in our streets, bought them freely because of their fine appearance, and the public bought them—that is to say, each pear buyer bought one and then hated himself for an hour for thus squandering his nickle. The writer does not believe they will sell for as much as apples five years hence, and he most devoutly hopes the general planting of them in the North will be stopped. In the South, where the finer pears do not flourish, they may be grown with propriety.—Rural New Yorker.

A FEW days ago, we went into the markets and bought of a commission merchant 13 baskets (5 pounds) of Catawba grapes at 15 cents per basket. We must confess to a guilty feeling at buying them so cheap. There is mighty little for the grower in a five-pound basket of grapes which sells for 15 cents, out of which freight and commission charges are to be paid.

PROMINENT CANADIAN HORTICULTURISTS—XIX.

MR. LINUS WOOLVERTON, "THE SECRETARY."



IN accordance with the wish of the Directors of our Association, we give, in this number, an engraving of our Secretary and Editor, in order to introduce him more fully to the readers of this magazine, who are already well acquainted with him by letter.

He was born on the 12th of December, 1846, at Grimsby, Ontario. The family of Woolvertons to which he belongs is one of the oldest of this early settled Niagara district, and trace their family history back through two hundred years to England, where there are still found several places of the name. His father, Mr. C. E. Woolverton, who had himself received his education at Madison University, New York State, so highly valued university advantages, that he spared no pains to give his son a thorough college training. This course was fully appreciated by the son, whose thirst for knowledge and love of books has always been one of his leading characteristics.

After due preparation at Grimsby High School, and one year at the University of Rochester, he entered the University College at Toronto, taking the first scholarship (\$120) ever taken at senior matriculation, in the department of classics. During his course at the University, he gave much attention to the study of natural science, and this has been of the utmost advantage in later years to him in his horticultural pursuits. In due time he was granted the degrees of B.A., in 1869, and M.A., in 1870. His first thought then was to pursue the study of law, and, with this in view, he entered a law office in Toronto and spent a portion of the winter of 1869-70 in legal studies. In October, 1870, he married Miss S. F. Lorimer, daughter of the late Rev. A. Lorimer, B.A., then Librarian of the University of Toronto. For a term of fifteen years after graduating he held the position of examiner in Classics and English at Woodstock College: a position he felt obliged to relinquish on accepting the work of Secretary of our Association.

Just about this time, Mr. A. M. Smith's retirement from partnership in the nursery business with his father, made an opening for the son to come into his place and carry on a business to which he had already given some attention. The business was largely local and no agents were employed, as the demand for nursery stock in this fruit section was at that time very considerable. After a few years Mr. Woolverton became so enamoured with fruit growing, that he resolved to quit the nursery business and give his whole attention to the former; and, with the consent of his father, who gave up the whole farm to his management on the most generous basis also deeding him a portion of it, he gradually planted out one hundred acres in fruit trees. This farm, spoken of in these



Your truly
L. Woodcockton

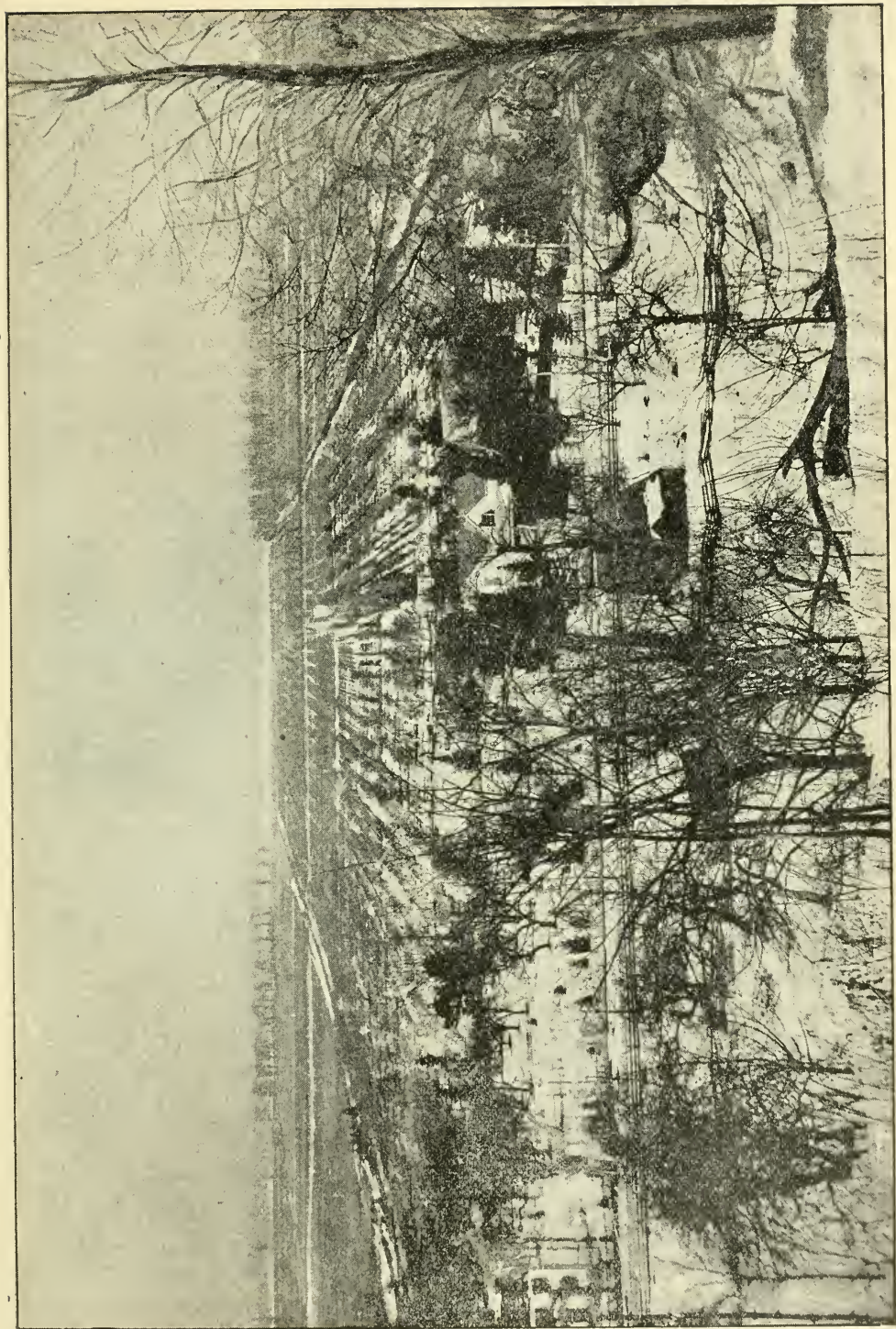


FIG. 489.—MAPLEHURST FRUIT FARM.

pages as Maplehurst Fruit Farm, is one of the largest of its kind in Ontario ; certainly no other has such a large variety of fruits of every sort under test. In grapes alone there are about ninety varieties, strawberries about fifty, and a large collection of cherries, pears, apples, peaches, plums, etc. ; and here is where the practical experience is gained, necessary for the proper and intelligent conduct of a horticultural journal. It was the consideration of his practical experience in horticulture, combined with his educational advantages, that led the Board of Directors of the Fruit Growers' Association to give him the appointment of Secretary and Editor, on the retirement of Mr. D. W. Beadle, the former Secretary.

Although Maplehurst Fruit Farm has already been shown in these pages, it will not be inappropriate to have it appear again in this connection, especially since it figures so prominently just now, in furnishing practical experience for the benefit of the Association. The photograph, from which the engraving was made, was taken about ten years ago, so that due allowance must be made for the growth of trees and many other improvements during that period. The management of this fruit farm requires much attention and would engross one's whole time ; but, by engaging a competent foreman, Mr. Woolverton has been enabled to give almost his whole time to our work.

For many years previous to his appointment, our Secretary was a regular attendant upon the meetings of the Association, having been present at Hamilton as a boy at some of the very first meetings, and almost regularly ever since. As a writer he was among the early prize essayists of our Association, as will be seen by consulting some of the older reports ; and to the earlier volumes of this journal he contributed a series of articles, entitled, "Horticultural Gossip." In 1885 he also wrote a series of articles for the *Canada Farmer*, entitled, "Seasonable Hints for Fruit Growers" ; and in 1886, a series for the *Farmers' Advocate*, entitled, "Hints for Amateur Fruit Growers." Last year he wrote an essay for the *Hamilton Scientific Association*, entitled, "Some Problems in Horticulture," dealing especially with the fungi affecting fruits, a body of which he had previously been made a corresponding member. Three years ago he was elected Vice-President for Ontario of the *American Pomological Society*, to whose report he has contributed considerable matter.

Lately, through the legacy from a relative, Mr. Woolverton has been enabled to build a beautiful house (Fig. 490), in which this Journal has for the present a convenient and suitable home. An engraving of a pen-and-ink sketch is given along with this article, since, under the circumstances, our readers will feel interested in a glimpse of the home of their Journal. The office occupies one of the principal rooms on the ground floor, opening out under the carriage porch on the west side, while the large attic is stored with back numbers, bound volumes, reports, electrotypes, etc., the property of the Association.

So much has the work of our Association grown, that an assistant is needed, and Mr. Woolverton is fortunate in having secured Miss Wilena Brodie for this

office, a competent stenographer and typewriter, to whose faithful care, it is only fair to say, is due the correct execution of the routine work of the Association, including the care of the books, mailing list and other important details. A.

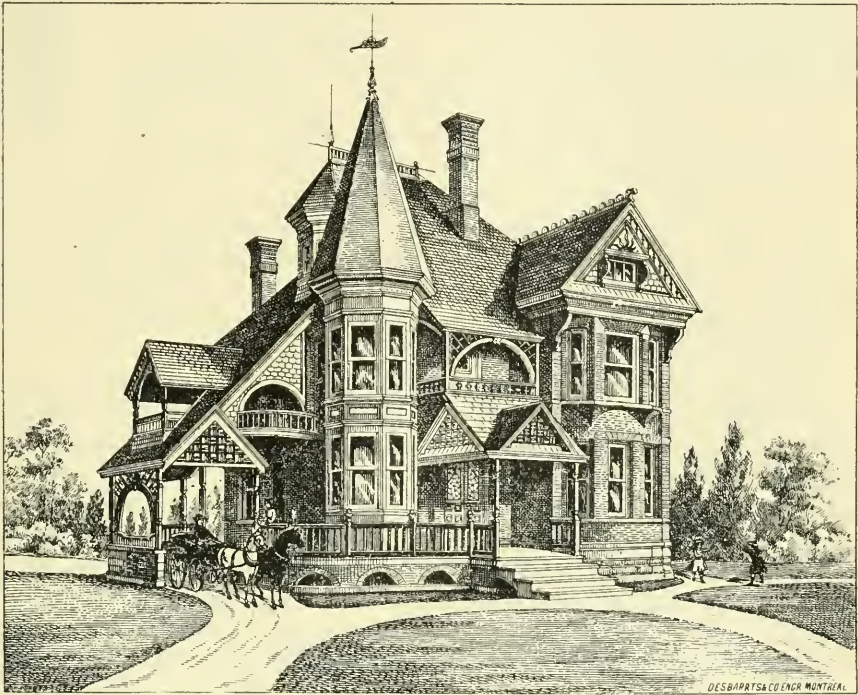


FIG. 490. — "MAPLEHURST," THE HOME OF THE SECRETARY.

DESPITE the advice given by some interested parties, we decidedly prefer spring to fall planting for grapes. The same is true of raspberries and blackberries. Fruit trees may be planted in the fall, but to secure the best results, the roots should be carefully looked after, making smooth cuts where the ends have been broken or mutilated. Unless this is done, they sometimes begin decaying before spring, while if they are cut smoothly, they will, as a rule, callus over before the ground freezes. It is well to do tree planting in the fall because of the pressure of spring work, which sometimes makes it difficult to accomplish in the spring.—Rural New Yorker.

THE French do all in their power to encourage thrift and saving among the common people. As a result the deposits in French savings banks are immense. In French schools instead of offering prizes of gaudy picture books as rewards of merit, a deposit of a few cents in a savings bank is offered.

THE BIG APPLE CROP IN WATERLOO.



THE past season's apple crop throughout Waterloo County has been the largest that ever has been harvested. Owing to the favorable weather which prevailed during September and the first half of October, the fruit was well developed, reaching its maximum size, and finely colored. Hitherto, in seasons of plenty, few purchasers for the export trade made their appearance in our markets, and, as a consequence, a large amount of the surplus crop was fed to stock, and made into cider, the home market not being of much account. The past season, however, was different, for quite a number of buyers were here, which induced a lively competition, and fair and remunerative prices obtained. Some were purchasing for the British markets, and others for the United States markets, the former only long keeping winter varieties, while for the latter, both fall and winter varieties of the best grades were largely sought after.

Many consignments were made to Chicago, some to St. Paul, to Iowa, and to Springfield, Mass. I am not in a position to give you the exact number of barrels shipped from the various railway stations throughout the county, but from what I have been informed at least 50,000 have left this fall. Owing to the scarcity of barrels (the coopers were not prepared for the emergency), a large number could not be got ready in time for fall shipping, and had to be stored for spring delivery. A local buyer here for the British markets has several thousand barrels on hand. A lively business has also been done in the purchase of cider for the Chicago market. A party in town has secured in the immediate neighborhood about 1,000 barrels, which he intends to ship as soon as the weather is favorable in spring.

Owing to the failure of the apple crop in the Western States, we had a good opportunity of getting rid of our surplus of fall apples (which, by the way, by far too many are grown in the province), otherwise we could not have disposed of them profitably, but the market for fall fruit does not often occur, consequently, we should plant such varieties that always find a ready demand in the British market, and are remunerative to the grower; the varieties being few, such as Spy, Baldwin, G. Russet, R. Greening, King and Blenheim. These are all good bearers, and the fruit will sell anywhere: the only early and fall apples that money can be made of are the Tetofsky, Duchess, Alexander and Gravenstein. A new Russian apple of recent introduction, namely, the Bietigheimer, is likely to become popular for home and export trade. The fruit is large, beautifully colored, and in quality good. It is hard enough to bear distant transportation.

A considerable amount of foreign money has been distributed through the county among the farmers, who are the principal apple growers, and which will evidently compensate for the low price obtained for wheat, which they complain of.

Berlin.

SIMON ROY.

THREE JUDGES, OR ONE.



IN your December number I notice this question, by Thos. Holloway : "Is the one judge system at fairs an advantage over three?" This is a question that has been much discussed, but so far no definite conclusion has been come to. I feel that the advice you append to his question is the sound one. And in support of this I will give an instance of it that came under my notice this fall. Three judges were appointed; two of them were local men, the other considered as an expert from a distance. After the prizes were awarded this expert returned to the building and openly declared he was not responsible for such judgment, pointing out the errors that had been made, and declaring he was overpowered by the two local men. So far astray had they gone that it was a noticeable feature amongst those that were acquainted with horticulture. Some went so far as to say ignorance could not do this, and imputed it to sinister motives as being the only possible cause. Now, had this one judge been left alone, his judgment would have been acknowledged as right, even amongst the competitors themselves. I have considerable experience with the working of horticultural societies, and know how hard a matter it is to please all parties where there is close competition and many parts in it. But when they are so far apart as this I have instanced, it tends only to disorganize and produce many inharmonious results which should not exist in such societies. So I say with you, appoint qualified judges for the different branches that now exist amongst horticulturists acquainted with the progress of the present age. The cost should be of little consideration, in consideration of the baneful effects of such bad judgment. Now-a-days a man may be a good judge on plants and yet have little or no conception of the florist's branch. Such are frequently associated together with professionals for one set of judges. The art is now so distinct that only a florist is capable of dealing with bouquets, roses, carnations, chrysanthemums, table, mantle, or other decorations especially belonging to their branch. Fruit has made so many changes in the past few years that it must be difficult to find men that have kept themselves up to the times. Vegetables may be less difficult, as the changes are more generally known. I perfectly agree with you; get proper judges at any cost if you wish to give confidence to exhibitors and the public.

Supt. Grounds, Ottawa.

N. ROBERTSON.

WHEATLAND PEACH.—Mr. E. Tyhurst, of Leamington, writes as follows concerning this peach:—"I have some trees of the Wheatland Peach set out for three years, but, so far, they have yielded very few specimens. They are medium in size, and of fair quality. I think it would be a fairly good peach for market; indeed I have no doubt that it will sell well, but I fear the tree will only be a medium bearer. It looks healthy, and possibly age may improve its productive qualities."

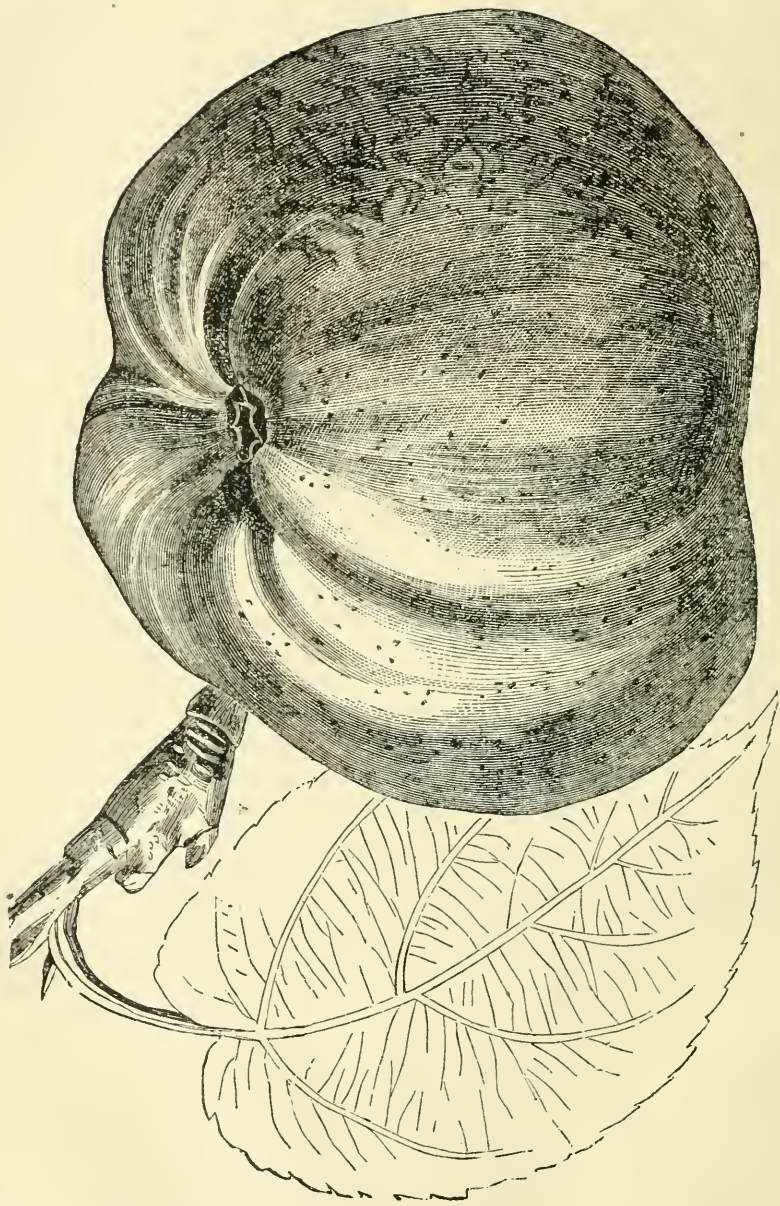


FIG. 494.—A SPECIMEN OF THE CANADA REINETTE APPLE.

❖ New and Little Known Fruits ❖

THE CANADA REINETTE.



IN view of the inquiry from our British Columbia friends with regard to the resemblance of the Canada Reinette to an apple there called the British Columbian, we give our readers a very good engraving of the former apple, which appeared in a recent number of the *Prairie Farmer*.

Downing in his "Fruits and Fruit Trees of America," gives no less than twelve synonyms of this apple, by which it has been known in Europe, and which shows how highly popular this variety has been in the old country. He thinks that it is not truly of Canadian origin, as a French writer describes the same fruit in the seventeenth century, and thinks possibly that it was first brought to Canada from Normandy, and carried back hence under its new name. It is a large, handsome fruit, a good bearer, the quality is excellent, and the tree is vigorous and productive.

Mr. Downing describes the fruit as follows:—Fruit, of the largest size, oblate, conical, flattened; rather irregular, with projecting ribs; broad at the base, narrowing towards the eye, four inches in diameter, and three deep. Skin greenish-yellow, slightly washed with brown, on the sunny side sprinkled with dots and russet patches. Stalk short, inserted in a wide hollow. Calyx short and large, set in a rather deep, irregular basin. Flesh nearly white, rather firm, juicy, with a rich, lively, sub-acid flavor. Very good to best. Ripe in December, and if picked early in autumn, it will keep till April.

THE RUSSIAN APPLE.

DEAR SIR, With thanks for copy of Ontario Reports, I take the liberty of calling your attention to two errors in "Letter from Russia," pp. 14 and 15: Bessemianka pear is so called not for its small seeds but because it is seedless: German name, *Sarmenlose*. P. 15, *Titovka* is by the description plainly not Tetofsky. *Titovka* (Titus), as I have it from Mr. Gibb, agrees with the description. The fruit is larger and better than Oldenburgh, but as yet, at least, not nearly so good a bearer. There are a number of *Aports*, *i.e.*, of the Aport family to which Alexander belongs. One I have, called by Mr. John Craig "Grand Duke Constantine," looks like Alexander, but is better in quality and keeps pretty well up to this time. I find I have at least four good Russians that are better keepers than Wealthy and as large and good.

Yours truly,

T. H. HOSKINS.

THE WESTERN JUNE BERRY.

SIR,—On page 378 of the December number of the HORTICULTURIST, Mr. A. C. Grant refers to the Western Juneberry, and the plate issued in your July number. The Western Juneberry is *Amelanchier alnifolia*, the Saskatoon of the North-West Indians. It is a far more valuable fruit than that of our eastern *Amelanchier Canadensis*, and has the very great advantage of ripening its enormous crop of berries all at the same time. *A. Canadensis* varies very much, not only in botanical points but in the quantity and quality of its fruit. But none can compare with the Saskatoon of the West, which was one of the most important ingredients of pemmican in the olden times.

The "Oregon grape" is one of the barberries of the division, sometimes called *Mahonia*. There are three of these which grow wild in the British Columbian mountains: *Berberis Aquifolium*, well known as a garden shrub in many parts of Canada and the Old World. It is a low growing shrub with pinnate thorny-edged evergreen leaves, and dense panicles of bright yellow flowers, which open early in spring, and are followed later in the year with clusters of purple berries, which resemble little grapes, and have given rise to the name "Oregon grape." This name, however, is not confined to this species, but is perhaps rather oftener applied to *Berberis nervosa*, a species with much shorter stems and longer leaves, duller in appearance, but no less beautiful. The berries are abundantly produced, and being covered with a bluish-white bloom, form very attractive objects in the mountain woods. *Berberis repens* resembles *B. Aquifolium* very closely, but is smaller in all its parts, and should perhaps only be regarded as a variety of *B. Aquifolium*.

Ottawa, Ont.

JAMES FLETCHER.

A FAMEUSE SEEDLING.

SIR,—I send you a sample of a chance seedling of the Fameuse, which I have named Compton Climax. It is a good keeper, and, as you will see, very crisp, tender and juicy. The tree is a free grower and an abundant bearer. I have five acres of young trees coming into bearing, among which are the new Russians, Nos. 277, 413, 290, 230, 245, 185 and 161, and Wealthy, Wallbridge, Fameuse, Alexander, Bottle Greening and Talman Sweet, which are making a rapid growth, but, for a market apple, I believe this new variety is going to compare favorably with any of the others.

JOHN CARR, Compton Station, Que.

This apple is of excellent quality for dessert purposes, almost undistinguishable from the Fameuse in flesh, except perhaps that its texture is less firm, and it appears to be a little earlier in maturity. In size and color the apple also resembles the Fameuse, but is not quite so productive. If, however, it proves to be free of spot, it might be a very desirable variety for dessert purposes during the month of November.

THE PIONEER CURRANT.

At our exhibition held here on the 22nd inst., Mrs. James New, of the township of Horton, placed on the tables a plate of very fine red currants, grown on one of her Pioneer bushes. These were a second crop, and as you will see by sample, (which I send under separate cover) were fully ripe and in every respect equal to first crop, *both in quantity and quality*. This to me is something very unusual—(especially in the cold north, where some people think nothing can be grown) in fact I never heard of the like before. Is it new to you? Perhaps the Pioneer variety is liable to act in this way. Mrs. New says that she has grown them now for seven years, and never had anything of the kind happen before. I may add that we never had so successful a fruit season as this, 547 plates of magnificent specimens having been placed on our exhibition tables.

A. A. WRIGHT.

Renfrew, Ont.

NOTE BY EDITOR.—The samples are of fair size, and the instance of such a full second crop is remarkable. It was probably brought about by some peculiarity of the season, but should it become a characteristic of the variety it will be quite worth notice.

APPLES HARDY IN EAST ANGUS, QUE.

SIR,—I have eight varieties of Russian apple trees four years planted. The varieties are Nos. 277, 290, 230, 245, 185, 236, 407 and 1227. They are all doing well except No. 290, which, although as hardy as the Wealthy and the Canada Baldwin, is a little too tender for this section. The latter varieties were killed to the snow line in the winter of 1890-1.

Of a dozen of the finer varieties of plums which I have tried, all have failed except the Saunders. Two of these which I set out four years ago had their blossom buds killed winter before last, but last winter being milder, they came through in better condition.

East Angus, Que.

L. A. RIEF.

PROTECTION FOR YOUNG TREES.—We have tried many plans to keep rabbits and insects from injuring young fruit-trees, but the best thing yet is tarred paper. We buy the paper as it is prepared for roofing, and cut it into strips about six inches wide by two feet long. It is easily and quickly wrapped about the trees, and is secured with wire or strings. The offensive smell of the tar drives insects away, and they will not get between the tree and the wrappings, as when rags and veneering are used. We wrapped 35 acres of trees in this way, and the paper has now been on two years. This is certainly worth a trial

—American Gardening.

FREESIAS.



HERE is no class of winter blooming bulbs that better deserve their popularity than freesias. They are beautiful and fragrant and so cheap that all can have them. Last, but far from least among their merits is the fact that they are easy to succeed with. Give a good soil and good drainage. Pot three or four in a four inch pot and place in the window where they are to grow, and with an occasional watering until they begin to bloom. it is almost impossible to fail. When the buds

begin to develop nicely give a little liquid fertilizer of some sort, but remember that in using these fertilizers the safe rule is "little and often." After blooming they require but little water, still it is advisable to lessen the quantity by degrees, in order to let the bulb fully mature before it gets thoroughly dry.

Perhaps the best of the freesias are those known as Giant Bermuda's. They are larger and stronger both in bulb and blossom, and it is poor economy to purchase cheaper ones. Plant any time from Sept. 1st, until the end of November, but don't fail to plant at least a few. When potted start them growing at once as they do not need to be kept in the dark while making roots, as the hyacinth and some other bulbs do.

There is another plant that in bulb, foliage and flower so closely resembles the freesia that is commonly called one. Its flowers are scarlet, with darker blotches, so it is spoken of as scarlet freesia, but its true name is *Anomatheca cruenta*. If this is wanted to bloom, as a companion plant with the others, it must be potted earlier, as it takes longer for it to come into bloom. It is slightly more expensive, but even one bulb adds greatly to the beauty of the collection. The Giant Bermuda freesias range in color from white to orange, some being solid colors, while others are blotched or shaded, and the one only serves to enhance the beauty of the other, as there are no shades to "fight" with each other.—EVA GAILLARD, in *Farm and Home*.



Fig. 495.—GIANT BERMUDA.

CULTIVATION OF EVERGREEN TREES.



T is wise to consider the habitat of each specimen and endeavor to supply similar conditions of soil and exposure, so far as is in our power. Because a tree succumbs in a given case, it will not do to pronounce its variety unsuited to our climate. Forests of timber trees of the Hemlock flourish far to the north of us, and yet the Hemlock is undoubtedly too tender for exposed positions in this vicinity. We should provide sheltering windbreaks for plants of doubtful hardiness. On the other hand we would not naturally select a too warm and sunny position for such dubious Firs of the Rocky Mountains as *amabilis*, *nobilis*, and *grandis*. We should infer that they would receive too much winter excitement and that a protected, but cooler and perhaps northern slope would secure more nearly favoring conditions. It is obvious that the Pines will take the lighter soils: the Spruces, Firs, and Junipers choosing the intermediate, while the Retinosporas and Thujas will thrive in even a wet soil, though by no means preferring this condition. Though there are increasing evidences of the hardiness of the Sciadopitys, yet I have observed that in full exposure to the winter sun its foliage is liable to lose its fresh, green color and to become brown. Specimens looking north and shaded from the sun do not have this appearance. There can be no question that the rich and varied colors of some of the newer varieties depend in a considerable degree upon the nourishment received from the soil. You have observed the deep, luxuriant color of the Purple Beech under high culture, in contrast with the dull brown of the same tree in a poor soil. Similar results may be expected with conifers. It is an exploded idea that they will not endure enrichment. Fresh horse manure is undoubtedly too hot for the surface roots, if applied in quantity, but cooler composts will heighten colors to a surprising degree. Youthful vigor may also be thus restored to older trees. I have found that the silvery sheen of the *Picea pungens* may be greatly increased if removed from a heavy soil to a floury, well enriched loam.

We are but beginning to appreciate how well-deserving of the highest cultivation are these enduring products of Nature. They are not limited to a brief glory of inflorescence; they are not confined even to an entire season. They are ever-verdant, furnishing a cool and varying shade in the heat of summer, and a sheltering warmth and cheerfulness, which can brighten and glorify even a winter landscape. W. C. STRONG, before Mass. Hort'l. Soc'y.

PRUNING. —The general rule to be followed in pruning most shrubs is, to remove old wood rather than new, as the latter is most productive of bloom. In pruning hardy roses, which may be done after November 15, thin the heads out well, leaving no weak or unhealthy growth. Moderate growers should be pruned closely.

BULBS FOR VASES.



THOUSANDS of vases standing upon lawns remain empty all winter. They might be filled at small cost with either hyacinths or tulips, and thus add a charm and cheerfulness to the home in early spring. In planting vases with bulbs, be sure they have perfect drainage. Let there be openings sufficiently large to allow a free escape of water at the bottoms of the vases. Over these openings place two or three inches of broken crockery or charcoal, and next a layer of moss or shavings, to keep the soil from clogging the drainage, in which case the earth in the vase would soon become sour and the bulbs diseased.

Soil for bulbs to be grown in vases should consist of equal parts of thoroughly decomposed horse-manure, turfy loam and fresh water sand. The bulbs can be planted two or three inches apart, so as to form a good, solid mass of bloom. Protect the vases with four inches of clean straw, put some bagging over the straw to keep it in place, and tie it neatly around the stems of your vases. Uncover the vases at the time recommended for uncovering the beds. When the bulbs are in bloom they need water at least twice a week. Be sure to soak the soil thoroughly, as the plants when in flower delight in plenty of moisture at the roots. They will also need staking. Galvanized wire of sufficient strength to keep the flower-stalks in place is much neater and better than sticks, and will last for years, if put away carefully when the bulbs are out in bloom.

When bulbs in the vases have ceased flowering they can be taken up, placed in some shaded spot, and lightly covered with soil. If no such spot is convenient, plant them in a sunny one and shake a little straw over them, taking care that it does not lie heavily atop. After a rain it should be shaken up to admit air and prevent rotting. When their leaves have all dried up, clean the bulbs off nicely, place them in bags or boxes, and set them in some cool, airy place until needed again for planting in the fall.—American Gardening.

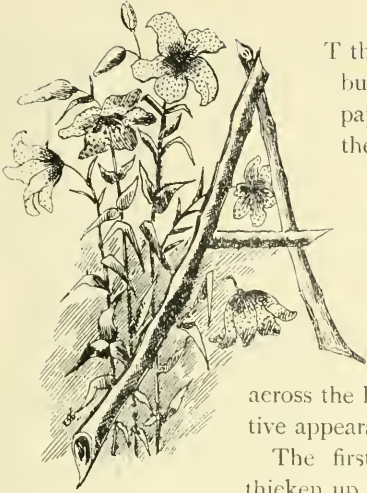
THE WHEATLAND PEACH.

Nine years ago I planted six Wheatland peach trees in my trial grounds. They made very fine trees but lack fruit; we never have picked over a 12-quart basket of fruit off any one tree in a season. We consider them not worth the ground they occupy, and have dug out all but two. Those are kept for variety. This last season they bore a basket and a half of very fine fruit; while a late Solway, in the same row, planted same year, same soil and cultivation, had nine 12-quart baskets of very fine fruit. I cannot recommend the Wheatland only for exhibition purposes, being large and good flavor, but not as well colored on our grounds as colored plate in December number of HORTICULTURIST.

St. Catharines.

A. G. HULL.

THE HOUSE YARD.



T this season very little outside work can be done, but it will be in order to draw out plans on paper for the improvements of the grounds about the home. So many of our country house-yards are arranged without any plan whatever; the paths and drives are just where the first carriages crossed the lawn. There are no edges either, and, consequently, the walks are not defined by any distinct mark. The borders along the boundaries are not wooded, while perhaps a few trees and shrubs are planted across the lawn itself, the whole having a bleak, unattractive appearance.

The first requisite in planting the house-yard is to thicken up the borders closely with trees and shrubs, so that all fences, barns and other objectionable objects are entirely hidden, leaving openings to show distant prospects of interest. Another consideration in planting the borders is to hide the house from the view of the public, except in its most attractive aspects, and, further, to screen from passers-by those portions of the lawn especially intended for lawn tennis or other games.

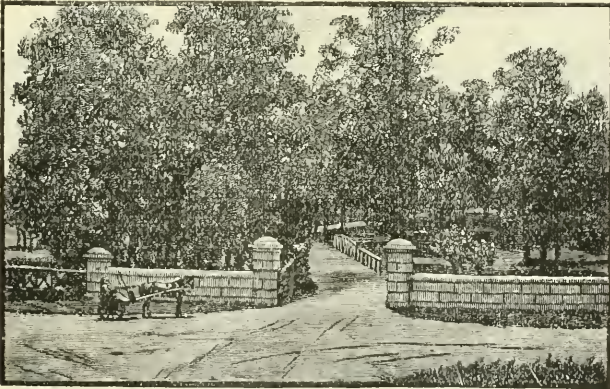


FIG. 496. ENTRANCE TO A SUBURBAN HOMESTEAD.

A beautiful entrance from the road may be made by planting groups of ornamentals about the front gate, such as is shown in Fig. 496, from which the carriage road leads by a gentle curve towards the house. Generally speaking, the entrance is placed too nearly in front of the house. The approach will be

much more interesting if the entrance is placed farther at one side. Fig. 497 shows how such a drive may be made with a fork so as to provide for a near cut to the carriage house, and enclosing thereby a group of ornamental trees and shrubs about which to turn, without backing the horse over the lawn.

Many people make the mistake of planning out more roads and walks than can be kept in order. No path or drive should be made that is not itself a necessity: for while gentle curves are admissible and add much to the beauty of the yard, utility must never be sacrificed to attain them.

The American Agriculturist gives a couple of diagrams which are helpful in this connection. One is a plan for preventing weeds from encroaching upon the drives and walks. It consists simply in cutting a narrow V-shaped trench along the edges of the walk, and filling it in with sifted coal ashes, well packed down, as shown in Fig. 498. A subscriber writes that he had had such a walk so protected for seven years, and it has proved a perfect barrier against all grass roots.



FIG. 497.

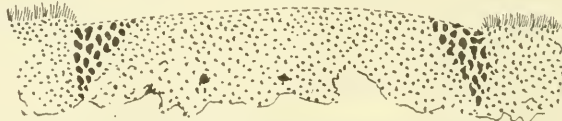


FIG. 498.

The other is a lawn and drive roller (Fig. 499), a home-made affair for rounding and hardening up the walks and drives, and, at the same time, clearing them from weeds, moss and grass. The rollers are light; 18 inches in diameter and three feet wide, with a seat for the driver bolted to the platform. Near his feet is an iron rod which connects with a scraper resting below on the ground. The scraper is made of a plank, two inches thick and six inches wide, bolted to

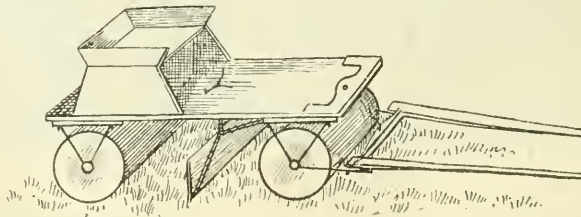


FIG. 499.

two irons by which it is drawn. It has a thin strip of steel bolted to its lower edge, which takes off more or less of the surface of the walk, according to the

pressure it receives from the feet above. This scraper can be suspended by a connecting rod when not required. The first roller is drawn by shafts hung directly on its axis, and turns on a king-bolt, allowing the scraper and the hardening roller to be turned or backed. This is very useful on new or uneven lawns to work in advance of the mower. For carrying urns, jars, earth, water, stones, etc., this roller is exceedingly useful, never cutting the lawns even when the ground is soft.

RENEWING AN OLD APPLE ORCHARD.

As regards setting young trees in an old orchard, there are many theories why they don't do better. Some claim that the necessary fertilizing ingredients in the soil have been already used by the old trees; others hold the ground is too full of roots of the older ones, etc. My observation leads me to believe that the failure is owing more to first-class neglect than anything else. A thrifty apple tree will grow and thrive wherever other trees has grown, if it has proper care and attention. The farmer is apt to pasture his orchard at various times during the summer with horses and cattle, and the smaller trees make fine scratching posts for such stock. My attention was called to this fact last September when passing through an old orchard in which there were about 30 trees three or four years old. It was in clover, and as I drove by I saw two old cows making their morning toilets on the young trees.

The owner of that herd and orchard who was driving the cows, will say young trees won't thrive in an old orchard—and they won't in his. His theory may be, that the land is too lean, and that young trees must have the best of care or be a failure every time.

Use plenty of wood ashes and keep the ground around the trees well loosened and there will not be much trouble in renewing an old orchard. Care should also be taken that the little trees should not be set in the shade too much, as sunshine has more to do with the growing of a good tree than anything else, except good soil. Anyhow I would not favor the resetting of an old orchard. I'd much rather set the trees by themselves, for the chances would then be better that they would get the food they need. Setting young trees among old ones is too much like putting little pigs with the big ones and expecting them to do well, which they never will do, for they can't stand the racket.—R. N. Y.

“I HAVE just been talking to a man who annually uses 3,000 pounds of fertilizer to the acre on potatoes,” said the writer to J. H. Hale. “And I'll guarantee he would rather use 1,000 more than 500 less,” he replied. Right you are, and every fertilizer farmer says the same.

❖ The Kitchen Garden. ❖

EARLY AND LATE CAULIFLOWERS.



FOR early cauliflowers to cut at the end of April, May and part of June. About the first week of January I take a box 18 inches long to 12 wide and three inches deep, I fill it with half loam and half sand well mixed, and press it down with a brick, I then sow the seed very clear, cover it up a quarter of an inch with same soil and press it down again, water it well and put the box near the glass in the greenhouse. When the plants are one inch long water no more on top, only to the roots. About the end of January, the plants having two or three leaves, I make a mixture of two parts of loam and one sand, and pot them in three inch pots, one in a pot, water well and place them near the glass again. Once in pots, keep them growing to avoid failure and, if too pot-bound before the frames are ready, re-pot in five inch pots.

By the second week of March the hot beds are made. Six inches of earth on the manure is needed. When the heat has passed through the earth, plant as soon as possible. Be careful not to break the ball of roots. I put 36 plants in a frame of three sashes, or 12 per sash. Press well round the roots and cover with the sashes. Of course frost must be kept out. They will not require water for a couple of weeks, the frames being kept closed at that period, the dampness of the frame is enough. Give light every day and a little air when fine during these two weeks; by that time they are generally well rooted, then begin to water, moderately at first, and soak them as soon as they bud until cutting.

The frames come in use in time for melons; after lifting them up the manure is taken from each side to fill up between the cauliflowers up to the first leaves.

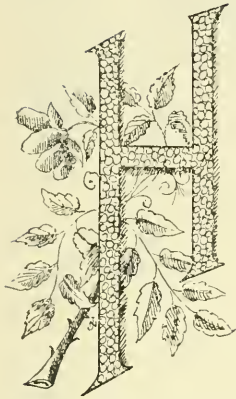
For late ones I sow the seed out doors in the middle of June; keep the black fly away with tobacco water or stems spread over the bed. When big enough, transplant where required to bear, one foot apart; by being thick the leaves grow straight up and give the head protection against the first frosts.

About the middle of October they are rooted up and put in frames head up, the roots to spread on the ground but not covered. Keep the frost out and give air at every opportunity.—JULES BETRIX, Montreal Horticultural Society, 1892.

JOSEPH HARRIS, of Moreton Farm, near Rochester, died the 18th November last. His famous "Walks and Talks," in the *American Agriculturist*, have interested thousands, and make him celebrated. So much was his ability appreciated that he was engaged by that journal as a constant contributor, at a salary of \$5,000 a year.

✿ The Apiary ✿

HINTS TO AMATEUR BEE-KEEPERS.—I.



HAVING been a constant reader of the *HORTICULTURIST* since its initial number was sent out, I have noted with pleasure its steady improvement, until now it is a credit to the editor, the publisher, and the Society whose organ it is. I am satisfied of the wisdom of devoting a portion of its columns to bee-keeping, because of the intimate relationship that exists between bees and fruit, if for no other reason; and I trust this "new departure" will be favorably received and worthily maintained. It should be borne in mind, however, that it is a different thing to write on bee-keeping for a journal specially devoted to apiculture from treating the same subject in a horticultural paper. In the one case the writer addresses himself

to an audience fully conversant with the practice and principles of the science, whilst in the other he speaks to people, a majority of whom are novices in the business. To be interesting and instructive, his treatment of the subject in hand must be regulated by the capacity of those for whom he writes to comprehend and appreciate what he says. Under existing circumstances, I think your correspondents should mainly confine themselves to discussing the initial steps in bee-keeping, and the primary principles of apiculture. Debatable points may profitably be kept in the background until first principles are exhausted and a desire for further knowledge manifests itself.

If there be any avocation to which bee-keeping may be profitably added, it is fruit growing. Farmers should keep bees, but not become bee-keepers in the ordinary sense of the term. They should keep bees to supply their families with an abundance of honey throughout the year. Beyond this, as a general rule, it will not pay them to go. The reasons for this are obvious enough; but those reasons do not apply to the professional orchardist. He can prosecute the business with as little inconvenience and as little tax upon his time as any one. The nature of his business confines him to the vicinity where his bees will be kept. In the season he will be on hand to capture and hive swarms as they issue, and then resume his work. He can harvest his honey without interfering much with his other duties. This is usually done after small fruit is marketed and before the harvesting of larger fruit begins. Then he has a good deal of spare time in winter, a part of which may be devoted to hive-making and other appliances used in the business of bee-keeping. As a rule, he will make a better bee-keeper than the farmer, because he is more accustomed to attend to details in small things, which counts not a little in the successful management of bees.

Apart from the beneficial results accruing from the work of bees on fruit bloom, most fruit growers may considerably augment their income by adding bee-keeping to their business.

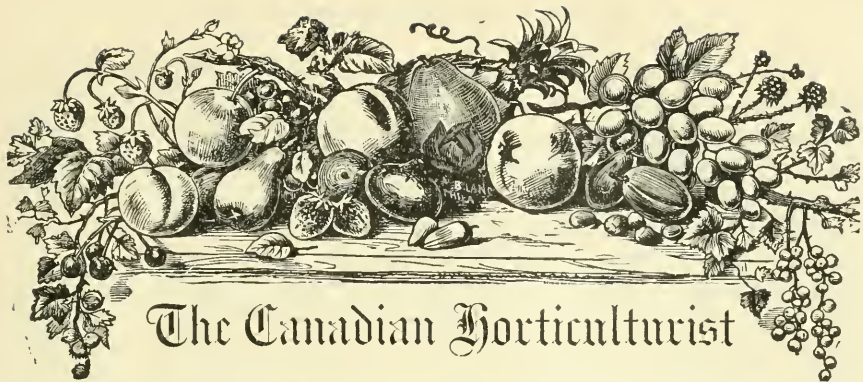
All this by way of introduction as to the best way to begin the business. It is not at all necessary—nor is it desirable—to incur a heavy outlay in starting; on the contrary, it would be unwise to do so. Bees multiply so fast that their increase will keep pace with the growing knowledge of their keeper on managing them. In time the problem with most people is, how to prevent becoming over well stocked. Two stocks are quite enough to begin with. These should be bought in the spring, and, if possible, purchased from a reliable neighbor. There is no extravagance in paying a good price for them, provided they are strong in bees and well provided with food against the time of need. A strong working force is the secret of getting honey. It is absurd to expect large results from a small working party. One strong hive is worth half a dozen weak ones. To collect and store honey in a short time—and the honey season is short—there must be a large working force in the field. A hive of bees is valuable or otherwise, just in proportion to its numerical strength, coupled with the presence of a young and vigorous queen. The novice will not be in a position to make a wise selection—hence, the wisdom in purchasing from one in whose honesty he has confidence. The price should be a secondary consideration; low priced things are seldom cheap. When approaching a man with the view of making a first purchase, don't do so with the question, "What do you want for a hive of bees?" As well ask him, "What price do you ask for a cow?" There is just as much difference in the value of one hive of bees as compared with another, as there is between one cow as compared with another. Some of both are dear at any price.

The beginner should start with not more than two or three stocks. He should commence in the spring. He will consult his own interest by buying from a man whose reputation for honesty is unquestioned. He should bargain for the best, and be prepared to pay a good price. This being done he may reasonably expect two swarms from each stock by the middle of August. For these he should provide hives similar to those in which the parent stocks are, and which may be purchased from almost any supply dealer. He should subscribe for the *Canadian Bee Journal* and provide himself with one or other of the standard books on bee-keeping advertised in its columns. The rest may be left for his zeal in the work, or his inquisitive disposition to find out.

Owen Sound, Ont.

R. McNAUGHT.

RE-POTTING.—Amateurs, as a rule, repot too often, and keep their plants in too large pots. It is of no use to give a plant fresh soil before its roots have pretty well occupied the old. There is a proper time to repot, and that is when the ball of earth is well surrounded by roots, a state that can be determined by tipping the plant out of the pot.—E. A. LONG, in *American Gardening*.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1 00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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NOTES AND COMMENTS.

MR. E. WILLIAMS, of New Jersey, suggests an improvement in the naming of strawberries. He would give female names to the pistillate varieties, and male names to the staminate. Such names would designate at once the character of the flowers to the cultivator, who would know at a glance to which class they belonged. Of course there are some varieties whose flowers are perfect, and perhaps neuter names might be applied to these. Certainly some such plan would be a convenience.

NEW METHOD OF APPLYING KEROSENE FOR INSECTS.—The Wisconsin Station Report for 1891, E. H. Goff, Horticulturist, gives a new method of applying kerosene for insects, which would appear to be of value to us. It consists in having a pump so constructed that lower valve seat allows the entrance of water through one opening and kerosene through another. The two liquids become mixed in passing through the valves and cylinder of the pump, and are finally broken up into an exceedingly fine spray by being forced through a good spraying nozzle. The mixture is, of course, mechanical and not absolutely permanent; but still it has been found sufficiently slow of separation for safe use upon plants. When the spray is collected in a glass vessel, the liquid appears milky white, and retains its milky proportion for hours. This mixture has been tested upon the foliage of the evergreen, rose, strawberry, grape, raspberry, blackberry, plum, etc.; and in no case did it prove injurious, unless the amount of kerosene exceeded ten per cent. This mixture was found to be equally efficient in destroying insects as the soap emulsion, and no more injurious to the foliage. It is more satisfactory as it passes through the pump more readily. As the kerosene acts rapidly upon the rubber piston of the pump, it is necessary to use a leather piston in the place of the rubber.

CLOTH AND PAPER FOR HOT-BED SASHES.—We have been experimenting during the last two years in using substitutes for glass for hot-bed frames, but have not been very successful. We have tried cloth saturated with pure linseed oil and heavy oiled paper prepared by a firm in Hamilton for this purpose, but neither of these were sufficiently durable to give perfect satisfaction. If we could succeed in using some such substitute, it would be much more economical than glass, and, at the same time much lighter to handle.

Prof. Bailey in his "Rule Book," gives a recipe for preparing oil-cloth or paper for this purpose, which, perhaps, would answer the purpose better than those we have tried. It is as follows:—Use a sash without bars, and stretch wires or strings across it to secure it as a rest for the paper. Procure stout manilla wrapping paper and paste it firmly on the sash with fresh flour paste. Dry it in a warm place, and then wipe the paper with a damp sponge to cause it to stretch evenly. Dry again and then apply boiled linseed oil to both sides of the paper, and dry again in a warm place.

❖ Question Drawer. ❖

PRUNING TREES IN COLD CLIMATES.

SiR.—When is the most favorable season for pruning trees at the north? Is fall or winter pruning commendable?

W.

Reply by T. H. Hoskins, Newport, Vt.

In localities where the thermometer does not go far below zero, I do not know of any serious objection to the rule, "prune when the knife is sharp" with the hardier Russians. The same rule is not objectionable in Canada. I might say it is generally applicable where the cold weather does not discolor the wood. Nevertheless a more thoroughly safe rule is to prune in the spring before the frost it out of the ground, choosing the time when there is still a little snow, or the surface is frozen. It is not pleasant to go out pruning in the wind. The reason why it is best, in the cold north, at least, not to prune late in autumn, is that the recently cut edges of bark are sometimes killed by freezing; while, if the work is done in the early spring, healing begins as soon as the sap starts; and when the limbs removed are not large, the wounds will be nearly healed over before fall. Wounds too large for that ought to be coated with thick paint soon after the cutting is done. A fine saw is better than a knife for all but small limbs, as the slight roughness left by the saw enables a thicker coating of paint, and prevents its scaling off. With these simple common-sense rules well tested by long practice, there ought to be no mystifications in the matter.

A LIVE HEDGE.

DEAR SIR,—In this section the woods are being cleared off and the wind has full sweep. If trees were used in connection with wire as fences, I think they might serve a double purpose of preventing stock from rushing on the wire and acting as a windbreak.

A. DAWSON, *Mohawk.*

A short time ago the Orange Judd Farmer gave an illustration of a living fence, cedar trees for posts. We re-produce this illustration, which we think will show our subscriber a good plan for carrying out his idea. Various trees have been used in this way. In the vicinity of Hamilton we have noticed fences supported by long rows of Lombardy poplars. These trees grow so upright and mark the divisions so definitely, that they not only answer the purpose of a

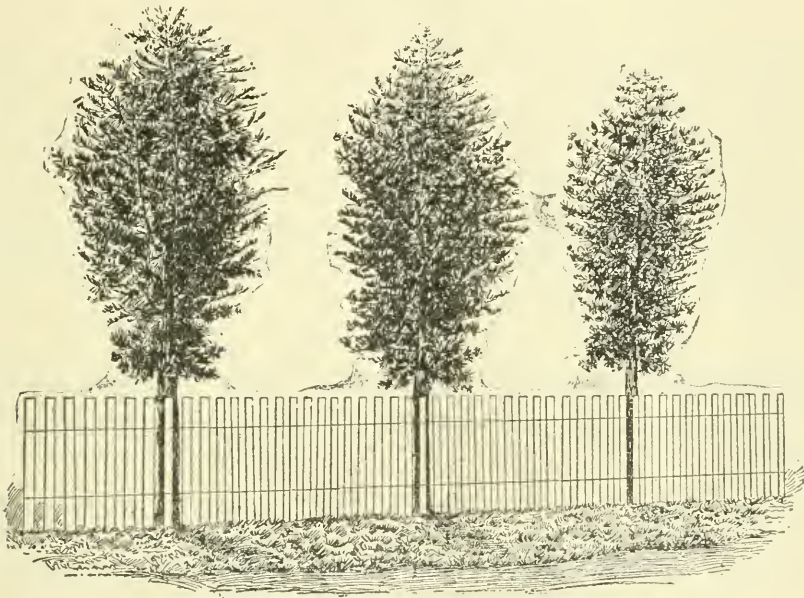


Fig. 500.—A LIVING FENCE. CEDAR TREES AS POSTS

fence, but, in spite of their stiffness, add to the beauty of the landscape. Red Cedar, White Cedar (*Arbor Vitæ*) and Balsam Fir are varieties which are suitable, because they are more dwarfish in habit, or can be made so by pruning. In earlier years cultivation will help the growth, until they have reached a height suitable for the support of the fencing. Then the tops may be cut off seven or ten feet from the ground and the limbs annually shortened. A writer in the Orange Judd Farmer says that he has set 150 rods of cedar trees for the express purpose of supporting wire fences, so satisfied is he of the success of the plan.

One great difficulty about our fences is the early decay of the posts. Here is a fence with living posts, such as would make them last for generations.

LIME FOR HEAVY LAND.

SIR,—I am much in need of information with regard to fertilizing my land. It is a yellow loam with clay bottom and hard clay surface in spots. It is mostly in fruit of all kinds, but more especially grapes. Will lime be beneficial? If so, how many bushels to the acre?
H. GOODWILLIE, *Welland, Ont.*

It is quite possible that on soils such as that described by our correspondent, lime might prove beneficial, but it should not be continued unless the land is at the same time heavily dressed with barnyard manure. Lime has the effect of rendering the other fertilizing elements in the soil available about the roots of the plants, unlocking them, as it were, from its grip. In consequence of this comes the old couplet,

“The use of lime without manure,
Will surely make the farmer poor.”

The action of lime upon the heavy clay is to make it warmer, mellow, and of better tilth, and this good effect is often observable for years. With regard to the quantity that may be applied to the acre, it may be observed that lime is less freely applied than in former years. In the Old Country it was at one time customary to apply six to eight tons to the acre on heavy soils, but now-a-days the opinion prevails that one or two tons to the acre, applied once in six or eight years, is an abundance. There is a probability that loam, such as our correspondent describes, is not rich enough to be benefited by lime alone, and that barnyard manure would be the best fertilizer.

TREATMENT OF THE SEEDS OF THE WHITE ASH.

SIR,—How should I treat White Ash seeds previous to planting, and when should they be planted?
O. F. BIRCHARD, *Kingscourt, Ont.*

In order to have the best success, the seeds of the ash tree should be planted in the fall, as, if left until spring and then planted dry, they will be almost sure to fail. The seeds, too, ought to be collected fresh from the trees by some one who is acquainted with them, because if purchased from seedsmen they may have been kept too long and thus have lost their vitality.

The White Ash is not very productive of seeds, and one who is not well acquainted with their distinguishing characteristics might mistake the seeds of the Green Ash for them. The seed of the White Ash is round, without margin, the wing attached to the apex, while in the Green Ash the wing is continued as a margin nearly to the base of the seed, which is acute. The seed of the former ripens about the first of October, and, if kept from becoming dry and planted in the autumn, they will vegetate with certainty. They should be covered very thinly with earth, and, to prevent washing by heavy rains, should have a mulch of leaves or straw, which should be taken off in the spring. If kept until spring, the seeds should be mixed with damp sand to prevent them from drying.

PROPAGATION OF BERRIES.

SIR,—An agent tells me that the best nurserymen sell stock grown from seed only, and not from tips, root cuttings or suckers. He said that to grow from the seed was the only way to keep the stock from running out. Will you please give me some light on the subject?

MORRIS MALLORY, *Guild, Ont.*

This is entirely a mistaken notion. When berries are propagated from seeds there can be no dependence upon the variety that will result. Indeed, it is by sowing seeds that new varieties are procured, but, as a rule, hundreds of seedlings are worthless, to one that possesses any superiority to existing varieties. For instance, in order to propagate the cap raspberries, such as Gregg and Soughegan, it must be done by tips, and red raspberries, such as Malboro and Turner, it must be done from suckers; and of blackberries, such as the Kittatinny, by root-cuttings or suckers. The best nurserymen practice these methods, and it is a mistake to say that they must be propagated from the seed.

COOPER'S MARKET.

SIR,—Fruit-tree agents are selling here an apple tree called Cooper's Market, and recommending fruit growers to plant it as the coming apple. Will you please tell me its merits, history, etc.

HENRY LAWLESS, *Grafton, Ont.*

Cooper's Market is a good apple, in season from December to May. It has long been known in the State of New Jersey, where it has been considered a valuable market apple. It is medium in size, deeply shaded with red and striped with crimson. The flesh is white and tender, with a crisp, sub-acid flavor. We have had some trees of this variety in bearing for about twenty years past, and the samples are always bright and clean, scarcely any needing to be culled out in packing. The tree, however, is slender in habit of growth and does not appear to attain such a size as the Baldwin or Greening. On this account it would, perhaps, not yield so many apples to the tree as these other varieties.

THE QUANTITY OF ASHES.

SIR,—How many bushels of unleached ashes to the acre is advisable?

H. GOODWILLIE, *Welland.*

Ashes are chiefly valuable in furnishing potash to the soil, an element which has an excellent effect upon the orchard and vineyard. It is more useful, however, upon light soils than upon heavy clay, because the potash has a tendency to make the clay still more tenacious. Fifty bushels per acre is usually considered a very fair dressing.

THE WOLF RIVER APPLE.

SIR,—Please give me some information concerning the Wolf River apple. Is it a good keeping apple and which is the best for market, it or the Wealthy? How does it compare with the latter in hardness? Will the Wolf River keep as well as the King, and what is the quality?

D. L. BAGGESS, *Rondeau.*

The Wolf River originated in Wisconsin and is supposed to be a seedling of the Alexander, which apple it resembles. Barry describes it as large to very large, roundish, oblate; pale, greenish-yellow, shaded with light and dark red on the sunny side; flesh white, rather coarse, juicy, pleasant, mild sub-acid and of a peculiar spicy flavor. Early winter. Tree vigorous and very hardy.

So far as we know this variety has not been tested to any extent in Ontario, but if any readers of this journal have grown the apple we shall be glad to hear from them in reply to our correspondent.

Since writing the above we have received the following lines from Dr. Hoskins, from Newport, Vt., concerning this apple:

In reply to your enquiry about the Wolf River, I have grown it, and find it much like its parent, Alexander, but not nearly so hardy, as one of our test winters killed every tree of mine to the snow line. But the same winter, at Montpelier, nearly as far north, but not so high up, they were not seriously injured. Let me say, if one wants an apple of this Russian family, the "Aports," Grand Duke Constantine is decidedly the best I know. It resembles Alexander very closely, but is much better in quality, and keeps perfectly up to this time. Mr. John Craig has seen my tree of it, and gave me the name, as I doubted its being Alexander before he saw it. As to the keeping of Wolf River, I cannot say certainly, as my trees were just coming into bearing when killed.

Question Budget

13. Which is the cheapest fertilizer, manure at \$1.00 per ton; ashes at 10 cts. a bushel; or slaked lime at 7 cts. a bushel, all delivered?
14. Which pays best, small fruits or the apple orchard?
15. Will it pay to dig out young apple orchard, just in bearing, and of the best varieties, in order to plant grapes or small fruits?
16. What is the proper temperature for the cellar in which bees are to be wintered?
17. When should bees be removed from the cellar?
18. May bees not be left out doors in winter, with some protection?
19. What is full brood among bees?

✱ Our Book Table. ✱

THE FIFTEENTH ANNUAL REPORT OF THE MONTREAL HORTICULTURAL SOCIETY has come to hand. We always find much matter that is interesting to us in this report, because the experience of fruit growers in that northly province is useful to our growers in northern Ontario.

Among other papers is one on "The Farmer's Orchard," by R. W. Shepherd, of Montreal, and in it he gives the following list of apple trees recommended for the farmer to plant: 5 Yellow Transparent for August. 5 Duchess for September. 5 Brockville Beauty for September and October. 5 St. Lawrence for October. 5 Alexander for October and November. 5 Winter St. Lawrence for November and December. 20 Wealthy for December. 20 Fameuse for December and January. 10 Canada Baldwin or Pewaukee for February and March. 15 Scott's Winter for April and May. He says that these varieties can all be grown successfully about Montreal, and the list does not include many fall apples, because at that season farmers are too busy to market their fruit. The Yellow Transparent ripens its fruit there about the first week in August, and keeps a week or two after it is harvested. He considers it good for both cooking and the table. Duchess he counts the most satisfactory of all, and his advice to those who have leisure at that season to handle their fruit to advantage, to plant a much larger proportion than that given in the list. Brockville Beauty is a Canadian variety originating near Brockville. The tree is hardy and bears abundantly; the fruit is of a fair size and beautiful, ripening just after the Duchess in September. St. Lawrence is a tardy bearer, and a slow grower, but when once established, it is a grand tree, growing to a great size and bearing enormous crops of high priced fruit. This is also a Canadian variety, originating in the garden of Mr. Molson, in Montreal. Winter St. Lawrence is a large, beautiful apple, and Mr. Shepherd says it is a very satisfactory one with him. This apple has the quality of remaining on the trees in spite of high winds, and is a profitable apple on account of its attractive appearance and its value for cooking and dessert purposes. Canada Baldwin, according to Mr. Shepherd, is hardy at Como. The tree grows to a large size, and bears heavily every other year. The fruit is about as large as the Fameuse and very handsome, but only of fair quality. It keeps well into winter. Scott's Winter has been fruited by Mr. Shepherd for over ten years. It is a hardy tree of medium sized red apples, rather tart, but becoming mellow and pleasant eating towards spring. He recommends it because there is no better, that is as hardy a tree.

Rev. J. F. Paradis writes an article investigating the question whether any satisfactory winter apples have yet been found for the Province of Quebec. He says that of the Russian varieties, none, excepting the Borsdorf, have proved good winter varieties, and this is not a profitable fruit because it lacks in both size and shape. Of the American apples of long keeping he has tried Bethel. This tree has given him the best satisfaction of any, although it is a lazy grower. It is hardy and the apples are large and of excellent qualities, keeping well throughout the winter. Should there be no good-keeping apples found among the Russian varieties, he thinks we must rely upon the Bethel and Canada Baldwin for winter apples suitable to be grown in the northern sections. There are many other papers of value, and from some of them we will make selection for this journal.

A DICTIONARY OF BOTANICAL TERMS, by A. A. Crozier, Ann Arbor, Mich., published by Henry Holt & Co., New York, 1892. Cloth, 202 pages.

This will be found an exceedingly useful book to botanists and scientific students of horticulture. It is a great inconvenience to find out the botanical meaning of a word among so many others, in Webster, and besides, there are a great number of terms, which are strictly scientific, and cannot be found in Webster at all. The price is not given.

ANNUAL CATALOGUE OF BULBS AND PLANTS, Autumn, 1892. Webster Bros., Hamilton, Ont.

THE LINDSAY HORTICULTURAL SOCIETY (affiliated) does a fine thing for its subscribers—giving each member who pays \$1 into membership, the CANADIAN HORTICULTURIST, with plant and report, and also an additional distribution of bulbs of their own. This they are enabled to do through the provisions of the Agriculture and Arts Act, which bestows a grant of money to any horticultural society complying with its provisions, for the purpose of distributing horticultural literature, or for exhibits.

WINTER ROSES



When you shake your little
bonnet
Till the snowy flakes upon it.
Shower down,
I could love the cruel weather
That has spoiled your pretty
feather
Till you frown.

Though the flower-season closes
And the ways with snow are strewn,
Yet the winter hath its roses
As well as sunny June.

With your muff you look so cosy
And the colour is so rosy
In your cheek,
That I vow there's no rose growing
Like the rose when winds are blowing
Cold and bleak.

Though the flower-season closes
And the ways with snow are strewn,
Yet the winter hath its roses
As well as sunny June.

I.
When you wear your sable tippet,
And I watch you trip it, trip it,
Down the road,

No more do I remember
That the winds of bleak December
Are abroad.

Though the flower-season closes,
And the ways with snow are
strewn,
Yet the winter hath its roses
As well as sunny June





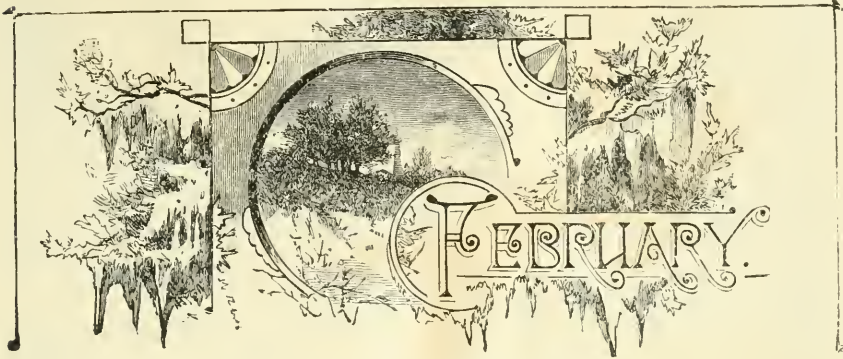
SHELDON.

THE
Canadian Horticulturist

Vol. XVI.

1893.

No. 2.



THE SHELDON PEAR.



HIS pear is an American seedling, and is a variety well deserving of prominent notice in the pages of this journal. It was propagated accidentally, on the farm of Norman Sheldon, in the town of Huron, Wayne County, N. Y., and has borne several synonyms, as, for instance, Huron, and Wayne, from the places above mentioned; but, properly enough, the name Sheldon prevailed, as being the name of the originator.

With regard to its adaptability to the climate of Ontario, our reports show that it is perfectly hardy in the Counties of Lincoln, Brant, Essex, Kent, and even Huron, along the borders of the lake, but in the County of York it is not considered quite hardy. The conclusion, therefore, to be drawn is that this pear is not suitable for planting north of Toronto, except under some particularly favorable circumstances.

The pear ripens in October and November; but it must be gathered in good time, or a large portion of the crop will need to be gathered from the ground; and it must be used just at the hour it becomes mellow, or it will be found too far gone for use. In this respect it bears a worse character than even the Bartlett. We esteem its quality very highly; and a writer in the Country Gentleman says that he thinks that, when well grown and properly ripened, it excels all other pears in deliciousness of quality. It is as melting as ice cream, and its flavor is superb. The pear, however, is variable in quality and sometimes, when badly grown and poorly ripened, might be called poor. As a market pear

the Sheldon cannot be ranked high, first, because of its russety appearance, which, however, yellows up finely when ready for the table, and, second, because the tree is not sufficiently productive.

A tree at Maplehurst, about thirty years old, bears some years a few straggling specimens, and other years possibly a bushel or so; certainly far below the average yield of many other varieties, as, for instance, the Buffum, Tyson, Bartlett and Howell. But, whether the crop of Sheldons be large or small, we always save it for home use: for none of its compeers, the Duchess, the Anjou, nor the Lawrence, though all are delicious, is as desirable. No member of the family would select one of the latter for eating when he can have the Sheldon.

The Committee on Pears, appointed by the Ontario Fruit Growers' Association, give the Sheldon ten marks, the maximum number to indicate its value for dessert, and seven for market: but they have ranked the Anjou equally high, and, in our opinion, this might justly be amended to make the latter variety at least one point below the Sheldon.

The following description of this pear is given in Downing's "Fruits and Fruit Trees of America."—Tree, vigorous, erect, hardy, and a good bearer. Skin, greenish-yellow, mostly covered with thin light russet, a little brownish-crimson in the sun, dotted with russet. Stalk short, stout. Cavity deep. Calyx open. Segments partly recurved. Basin broad, large. Flesh, whitish, very juicy, melting, sweet, vinous, rich aromatic. Very good. October.

Two or three reports concerning this pear have been sent in recently, which we here insert:

W. Boulter, of Picton, Prince Edward Co., writes, "My experience with this variety has been poor. I planted ten years ago, seventy-five of them, and lost every one of them, perhaps due to the winter's cold. I gave them the same cultivation as the Clapp's Favorite and the Flemish Beauty, some three hundred of which I had by the side of them, and lost none. I think it will not endure the climate of this county."

Thos. Beall, of Lindsay, says, "I have not grown this pear, but I had two trees planted, which died before the bearing age. I do not know of its being grown in this locality."

Warren Holton, of Hamilton says, "I have fruited the Sheldon for several years and think very highly of it. It is with me a moderate bearer when young, but improves with age. I consider it the best quality and it always commands the highest price and a ready sale in the local markets."

T. T. Lyon, of South Haven, Mich., writes, "The Sheldon pear is considerably grown for market in Michigan. It is a vigorous, healthy variety; a little variable in quality and somewhat uncertain in bearing. Aside from Bosc and Anjou, this and Howell may be said to range next to the Bartlett in the estimation of the mass of commercial planters of this fruit."

A NEW APPLE BARREL.

(PAT. 26TH NOV., 1892.)



THE want has long been felt in the export apple trade of some smaller case for shipping than the ordinary barrel. English buyers have repeatedly called attention to this, and Australian shippers, acting upon the suggestion, have already begun to send over their choice apples in 40-lb. boxes, which, it is claimed, will bring almost as much in the English market as our 160-lb. barrel will do. The disadvantage of the Australian plan, however, is obvious. It not only adds to the expense of packing, but greatly increases the cost of transportation. The same objection is met with in the use of small kegs.

It is to obviate these difficulties, and, at the same time, to supply the above mentioned want, that Mr. C. Aitkens, of Stoney Creek, Ontario, has brought out and patented the device represented in our cut. It consists of an ordinary barrel divided into two equal parts by a double flooring across the centre. This flooring is so adjusted as to admit of the barrels being readily sawn in two by the retailer in England, thus making two half barrels. In this way, while the expense of the barrel is but triflingly increased, cheapness and facility in handling are preserved.

The chief advantages claimed for this patent may be stated as follows :

1. It supplies the want of a smaller case better than an ordinary barrel for handling by foreign retailers.
2. It is more conveniently and satisfactorily handled than are boxes or small kegs.
3. The cost of shipping is much less than it would be if separate small kegs were used.
4. The price of the barrel being 40 cents, it is much cheaper than it would be to use the ordinary half barrels.
5. The fruit is carried much more satisfactorily than in ordinary barrels, there being no possibility of its slackening or shaking about, owing to the firmness imparted to the barrel by the central stays.
6. The fruit will, therefore, arrive in better condition, and, with the convenience afforded by the sawing of the barrels in two, will fetch better prices.

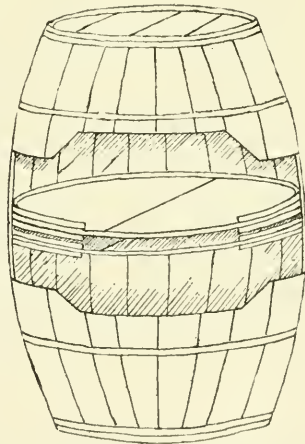


FIG. 501.

SUCCESSFUL CHERRY CULTURE.

SOIL FOR CHERRIES.



It is generally accepted that the cherry tree requires a porous, well under-drained soil. As my farm is nearly all a slaty gravel, and the surface hilly, I have cherry trees growing on nearly all parts of it. I incline to the opinion that the Morellos and Dukes, or sour cherries, require somewhat different soil and treatment from those suitable for the Hearts and Bigarreaus. For an experiment, I set a few of each on low, heavy ground, where water could be found three feet from the surface. The sweet cherry trees are healthy and vigorous, and bear heavily, but the fruit is inclined to rot more than on higher ground. The sour kinds soon died out.

ABOUT CULTURE.—The sour cherry trees should receive continuous clean culture. They then mature heavy crops, even when young. My sweet cherry trees I have set along fences and at the ends of the rows in my vineyard. For the first four or five years, the earth is kept mellow around them, and they are mulched with strawy manure each spring. Until they have attained a diameter of six or eight inches, the trunk of each near the ground is wrapped with tannin paper every fall to protect it from mice. A few days' neglect of this after the first snowfall caused the loss of several trees. After four or five years, the sod is allowed to form around them; but the fall wrapping is continued till the bark becomes thick and rough. When forced by high culture, the sweet cherries are prone to crack the bark and prematurely decay.

SHALL WE MANURE?—So long as the sweet cherry trees appear thrifty, I apply no manure. If the tree seems to fail for want of nourishment, stable manure, wood ashes, or potash salts are applied. The sour cherry trees are treated precisely like peach trees, with light dressings of stable manure and kaimit or muriate of potash every year.

PRUNING TO SHAPE.—The shape of the sweet cherry should be left almost entirely to nature. Necessary pruning should be done while the tree is young, during the first two or three years after setting. Unless made necessary by injury, no large limbs should be cut, as doing so is apt to produce a rotten spot. Most varieties of the Morello class require annual thinning as much as peach trees.

WHAT VARIETIES?—I know of no locality where any variety of sweet cherry can be relied on as a sure cropper. Perhaps Downer's Late Red comes the nearest to it, as it seldom rots on the tree, and is of good quality. White Ox-Heart or Yellow Spanish, Napoleon Bigarreau, Black Tartarian, and Elkhorn or Tradescant's Black Heart are good market varieties. The Windsor is highly commended, and I have a good many trees of that variety set, but they have

not fruited yet. Among the sour cherries none have been more profitable than Montmorency Ordinaire, and English Morello. The Early Richmond bore heavily when young, but now trees that are 12 or 15 years old, healthy and thrifty, blossom full and bear but little fruit. For five or six years after they came in bearing, the Elkhorns were my most profitable cherry, but lately they are dying out without any apparent cause. The May Duke seems a short-lived tree. The fruit is better for family use than for market ; because the crop ripens so unevenly, thus necessitating several pickings.

PACKAGES.—Until recently I used five and ten-pound baskets, now I use a crate containing shallow boxes which are filled from the bottom, thus expediting packing so that the stems are covered when the package is opened for inspection.

GENERAL REMARKS.—Sweet cherries here are not so sure a crop as the sour, but the fruit usually sells for a higher price. The main causes of loss of crop are cold storms or frost while in bloom, and rot. Moist, hot weather will sometimes destroy an entire crop three days before it is fit for market. I have known cherries to be perfectly sound when picked in the morning, appear streaked when shipped at evening, and nearly all rotten the next morning in market. The English Morello, and perhaps some other sour cherry trees, are subject to black knot. It appears to be identical with that on the plum tree. The free use of the pruning-knife has been my only treatment. So far it has been successful, as I have lost no trees, and the disease is nearly eradicated.—R. N. Y.

Slatted Boxes.—The boxes here illustrated are the cheapest ones we make, says A. I Root, in *Handling Farm Produce*, and the ones that sell best. For the ends we use six slats instead of boards crosswise, thus making them open on the ends as well as the sides. These are used for tomatoes, apples, cucumbers, etc. In fact, there is no fruit or vegetable of about this size or larger that could not be handled in these crates. They are as cheap to ship garden stuff to market in as the ordinary barrels and crates, besides being much lighter and neater. The above cut shows the manner in which the boxes are packed for shipment.

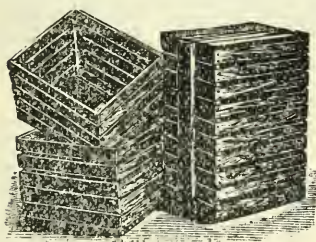


FIG. 502.—SLATTED BOXES.

Peaches for shipment should be permitted to become fully grown before being taken from the tree, but not mellow. They should be packed either in third bushel boxes or baskets, such as are used in Michigan, holding about half a peck, with tarleton stitched over them, the top protected by a cover made of slats, with strips to rest upon the ends of the baskets. This package can be piled one upon another as high as the top of the car, and is a very handy family sized basket.



BLACKBERRIES.

THEIR CULTURE; THE SIX BEST SORTS, AND WHY THEY ARE THE BEST.



SUFFICIENT cultivation to keep the weeds and grasses from choking them the first year or two, and liberal mulching afterwards, will secure excellent results. Many claim that blackberry bushes encumber the ground with briars not easily removed. This is not so. With us they are as easily dug out as red raspberries. We live in a section of country that is unrivalled for its crops of wild blackberries. Most of our neighbors depend on the wild ones for their supply. The whole family will take a day in the busy harvest time to go blackberrying. They do not know that one hundred plants, with less labor put upon them than is required to gather the wild ones, will, in two years, produce enough fruit for an ordinary family throughout a long season, affording fresh fruit every day when wanted. Many people claim that the wild berries are of better quality than the cultivated ones. The wild berry is less tart than most of the cultivated ones, but it lacks character. The Taylor and Agawam are sweeter than wild berries, and have character enough to make one know what he is eating.

CULTURE.—The best time to set out blackberries is in October or early November, but I have set them out with success in spring, as late as June 15. When set out in spring, however, the season should be favorable, with plenty of rain. Should the spring be dry, even if the plants have been set out early, the fall set plants are apt to make twice as much growth as those set out the following spring. But if it be spring when you make up your mind to set a patch of blackberries, don't wait till fall, and *vice versa*.

Blackberries will grow on any *well-drained* soil, but they succeed best on a sandy loam. They won't thrive on wet ground, no matter how rich it is. Rich soil produces an enormous growth of canes too tender to endure the winter. Soil can hardly be too poor for blackberries, if it be deep and porous, allowing the roots to go down deep and ramify in all directions for food and moisture.

Blackberry plants are of two kinds, suckers and root cuttings. Suckers are plants that come up from the roots when they have spread in the ground. Root cuttings are secured by digging up roots, and cutting them into pieces about three or four inches long, and planting in drills like peas or potatoes. Each root sprouts and develops to a plant, which may be taken up the following season. Root cuttings are considered superior to suckers; but if the suckers be taken up with the cross root attached it is practically just as good. The life of any blackberry plant is in the horizontal root from which grows the cane, and if this cross root be torn off by careless digging the plants are about worthless.

The rows for blackberries should be eight feet apart, and the plants should be set three feet asunder in the row. For the few plants set in one's garden, holes may be dug; but for the field plant in open deep furrows. When we have lots of plants we set them one foot apart in the row, and secure a good, continuous fruiting row much sooner than where we set them three feet apart. Set the plants as deep as they formerly grew, or so that the buds will be two or three inches below the surface. If set in fall, bank up earth around the plant to prevent it from being heaved out of the ground by frost. In the spring remove the banking and practice level culture. It is essential that the soil be kept loose and free from weeds. The continued use of the plow and cultivator causes the roots to go down deep, and the plants soon establish themselves, so as to be little disturbed by freezing and thawing.

After the second year do not use the plow among them, as deep digging breaks the roots, and each broken root sends up a sucker. Use the cultivator shallow and mulch during the fruiting season with straw or any coarse material. When the row of canes finally encroaches on the path, mow them off to leave a place for getting through. Every spring trim back the canes to three feet in length. The new growth will grow above and shade the fruit, which is most desirable for the best results.

There are two classes of blackberries as regards growth, the upright growers and the half trailing. The former have stiff and unyielding canes, growing straight up; they are generally hardy, but even they were injured last winter. To lay them down, the roots, opposite to the direction taken by the canes, must be cut with a spade. The latter kind of blackberries bend over and half trail on the ground. To lay them over and cover them with earth to protect them from excessive cold is very easy work. The Kittatinny, Lawton, Erie, Minnewaska, and Agawam belong to this class. The Snyder, Stone's Hardy, and Wachusett are all upright growers. The Taylor is a sort of compromise between the two classes.

All my blackberries, excepting Taylor and Wachusett, were a failure this year. While not frozen enough to kill the canes, the fruit buds were killed. It would have paid to give them protection, as wild berries were a failure too, and blackberries sold here for ten cents a quart all through the season.

The six best varieties are Snyder, Taylor, Agawam, Lawton, Erie, and Minnewaska.

SNYDER ripens early, and is enormously productive. The fruit is round and rather sour, but it ships well.

TAYLOR is the latest of all: the flavor is fine. Berries are long, and produced in great abundance. It is my favorite blackberry for home use.

AGAWAM is called the sweet blackberry. I consider it equal to Taylor for its season, except that it has the fault of turning bitter if left long without picking. It ripens at mid-season.

These three varieties must be protected in our locality to bear a satisfactory crop. The Minnewaska has winter-killed and failed in fruiting heavily thereby, for three years past. These berries will well repay the care necessary for winter protection. The Minnewaska produces berries round in shape and, nearly an inch in diameter. I am not able to say yet which is the best of the three. So far there seems little difference in results. I like the Lawton, but then, as I said before, you know what you are eating.—Gardening.

DOORYARD PRUNING.

A distinguished landscape-gardener once said to me, as we stood in the Spring Grove cemetery: "A man of leisure with no eye for the details of landscape beauty, can in a single spring day, with pruning-saw and ax, do more to mar the beauty of a home than a landscape-gardener can do to create it in half a life time. If idle men who desire to enjoy the April sunshine would get a pile of sand and shovel it back and forth as the children do, they would do infinitely more for rural adornment and taste, than they do in pruning their shrubbery. Men are all born butchers, and when they get too old, or too lazy, or too rich to butcher men or animals, they butcher the innocent trees and shrubs around their homes. They ruthlessly throttle every effort of nature, and make their dooryards a grass-plat stuck full of broom-handles and hop-poles." Symmetry is not the essence of beauty. If it was, then a new umbrella would be one of the most beautiful things in the world. Two of a kind does not constitute beauty. If we take out of the problem of dooryard decoration the two items of symmetry and duplication, we knock out the main props that sustain your neighbor in his burning ambition to excel in door-yard pruning.—J. B. PIERCE, Summit County Hort. Society.

Tomatoes.—The most salable package for tomatoes is the four basket case used so extensively in your State for the first-class stock, while the seconds may be packed in third bushel boxes, if you will persist in shipping that kind of stock, but my experience teaches me that you had much better throw away everything but the best, because the poor stock always demoralizes the markets and causes a depreciation of prices on good goods much more than the amount realized for trash.

A Substitute for Glass.—We are not particularly in favor of using cheap substitutes for glass in general greenhouse and hotbed management. Muslin and the like will answer for protection during rights and cold snaps. Wire netting coated with varnish (composed of linseed oil) is now being tried as a substitute for greenhouse sashes. The best boiled-oil, carefully applied, forms a film over the meshes. When perfectly dry, a second application is made.

THE FRUIT GROWERS' WORKSHOP.



EVERY person who cultivates land, needs a tool room. So many times a trip to the blacksmith's or the carpenter's shop, may be saved, if one has a few tools and knows anything about their use. The modern notion of giving boys manual training at school is worthy of hearty support: such training would be of incalculable value to a farmer or a gardener. Speaking of tools most needed the American Agriculturist says:—For woodwork will be needed a jack-plane, fore-plane and smoothing-plane; two saws, a coarse cross-cut, seven teeth to the inch, will also answer for a rip-saw; a fine saw, about nine teeth to the inch, will do the fine work. A good steel square and a bevel-square are better than the common iron ones. A one-fourth, three-eighths, one-half, five-eighths, three-fourths and one inch bit, two gimlets and a screw-driver will be all one will need; a one-half and a one inch socket, firmer and chisels will be needed; a compass, scratch awl, an adze-eye hammer, monkey-wrench, crow-bar, sand paper, a good hand-axe or hatchet for the chopping-block, and a good drawing-knife, an oil stone and oil can, a saw file and a plow file, a small wood file, an assortment of screws, nails and rivets, and one is prepared to do most of the every-day jobs and repairing that are apt to arise. Those who cannot afford all these at first, should by all means have a cheap bench and vise, a chopping-block, railroad iron, hatchet saw, jack-plane, drawing knife, bits, chisels, and grindstone with treadle, this last out of consideration for the small boy.

A writer in the Ohio Farmer shows a good method of keeping in order all small articles. He says: I became tired of the old way of having bolts, screws, nails, rivets, wire, buckles, etc., in boxes standing here and there, oftentimes all sizes in the same box, just because there was no other place for them. The bother and loss of time were great, as I had to open sometimes nearly a dozen boxes to find the thing I wanted. Thus necessity became the mother of invention, and the result was a "case" in which there is a place for everything, as shown in the illustration. The drawers are made of small, light boxes (which can be had at the grocery stores) sawed to the right size, and then nailing a side, bottom or end to them as required. The lower ones are shallow, for nails, etc., two or three inches deep; those intended for more bulky articles, as bolts, etc., deeper. For knobs, take common sewing thread spools and saw them in two. The half of one spool with a wood screw through the hole of it and into the drawer makes the knob. For convenience, drawers for screws, rivets, small nails, tacks, etc., are partitioned into two, three, or four parts, and can also be taken out and

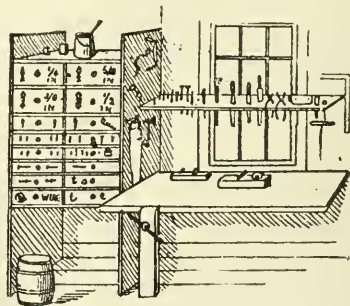


Fig 503.—THE FRUIT GROWERS' WORKSHOP.

carried to where wanted. A sample of the article or articles (size and kind) in each drawer is fastened on the outside of it by a double pointed carpet tack, and when anything is wanted, from a quarter inch tack to a half inch bolt. it is a pleasure and satisfaction to be able to put your hand on it in a moment.

SIX PEARS FOR MARKET.

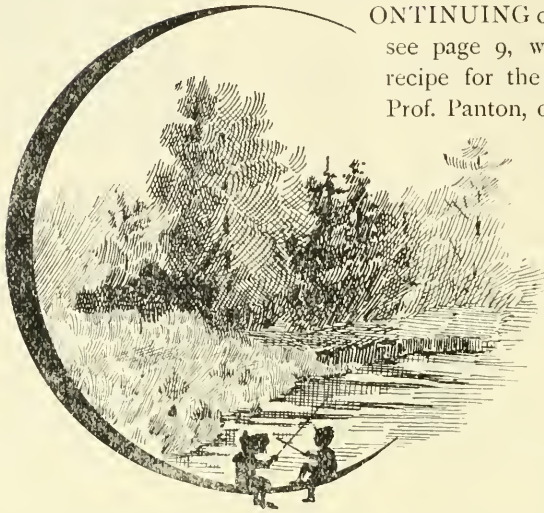
In reply to the query, "Name the six most profitable pears for market, stating how they should be grown, as standard or dwarf?" Mr. Zimmerman, of Buffalo, sent this answer to the Western New York Horticultural Society :

"Bartlett, Howell, Beurre Bosc, B. Clairgeau, Duchess d'Angouleme, Beurre d'Anjou—Bartlett and Bosc as standards, and Howell, Duchess, Clairgeau and d'Anjou as dwarf. With these I have as good success as with the standards, since they have all their roots protected with a good grass sod. It is at the root where the destructive agencies of the ever-changing climate play havoc with the dwarf pears. The top of the dwarf pear is as hardy as the standard, save what harm a too heavy bearing for a number of years may bring: but that can be avoided by a judicious thinning and proper cutting back of the standard branches.

A good red-top sod gives a better protection than any top dressing of manure; the sod is always on hand, whereas the manure is sometimes not applied when needed. My earliest planting of dwarfs was in 1851, and they are yet as sound and thrifty as ever, bearing from two to eight bushels each yearly: in grass for the last twenty-five years, with no outlay for labor except a yearly top dressing of manure, which can be put on at any time between November and May. The soiling of cattle can well be carried on with this course. The red-top or June grass is fit to cut at least by the first of June, and if the manure and liquid be returned the product of the trees pays better than cultivation.

Fertilizer from Bones.—Bones may be made useful for a fertilizer, says a writer in the *New York Times*, in the following manner: Put them into a pit two or three feet deep with alternate layers of lime, fresh from the kiln, and unleached wood ashes. Wet the heap with water to slack the lime, and then cover with sufficient depth of good soil to keep in the heat and moisture. In two or three months the bones will be quite soft and may be broken down with a shovel, and mixed with the other materials, and is a valuable manure. It is necessary to keep the heat moist, as the water evaporates or soaks into the ground. It is a very dangerous matter to meddle with oil of vitrol or sulphuric acid, as one drop splashed into the eye will destroy it, or if on the skin will make a deep burn that it is difficult to heal. A farmer should never undertake to make a fertilizer with bones by the use of these dangerous acids.

TREATMENT OF APPLE SCAB.



CONTINUING our plans for spraying for 1893, see page 9, we may notice the following recipe for the Bordeaux mixture, given by Prof. Pantou, of Guelph, viz.: 4 lbs. copper sulphate, 4 lbs. of lime, and 50 gallons of water. This is to be applied just before the blossoms open. When the fruit is well formed, spray again with the same, and three or four ounces of Paris green, repeating again at intervals if possible. The Bordeaux mixture is also commended for brown rot of cherry, plum and peach, for pear-

leaf blight, mildew of the grape, cane rust of the raspberry, etc. Too much importance cannot be attached to early applications. These all are for use when the foliage has appeared; before that, sulphate of copper, one pound to twenty-five gallons of water, may be used to cleanse the bark, buds, and twigs of any spores of fungi, which are lodged about in waiting for their destructive operations.

In this connection it will be interesting to read the following notes from the Ohio Experiment Station:

The heavy and continued rainfall, during the spring and early summer of 1892, is thought, by many, to be the direct cause of the failure of the apple crop. No doubt this was true in many cases, as when heavy rains occur at the time of blooming the pollen may be washed away, and pollenization prevented. The bees, not being able to fly at such times, cannot visit the blossoms, which fact alone is sufficient to account for the crop failure, in a great measure.

The opinion has been held by a few that unfavorable weather is not, in all cases, the direct cause of failure, and some experiments carried on by the Ohio Experiment Station strengthen this opinion. An orchard of Newtown Pippins, of nearly two hundred trees, was divided off into plots, none of the plots containing less than one row, and some as many as four. Several compounds were used, but the fact that some adhere to the foliage better than others render comparison out of the question, nor is this matter of any importance in this connection.

The dilute Bordeaux mixture, which was found to be best last year, occupied the same place this season. The ingredients used in this mixture are sulphate of copper, four pounds ; lime, four pounds ; water, fifty gallons. Comparing the two plots where this compound was used with the two unsprayed plots, the astonishing fact was observed that no marketable fruit could be found on the unsprayed plots, nor was there much fruit of any kind ; while on the sprayed plots, which had been subjected to the same unfavorable climatic conditions, there was about half a crop.

There was sufficient bloom in the orchard for a full crop, and if we accept the old theory of crop failure in time of wet weather, we are forced to the conclusion that spraying aids pollenization, which is absurd. We are, therefore, forced to seek some other hypothesis. The most reasonable explanation that can be offered at present is that spraying prevented the apple scab from attacking the young apples and blossoms. It is well known that scab attacks apples in all stages of growth, and that if it appears very early it may cause the young fruit to drop prematurely. When it attacks the blossoms it, of course, destroys them. The first spraying was done before the trees had bloomed, and the supposition is that many of the fungus spores were thus destroyed and the apples were thus given a chance to develop. The theory is tenable, and consistent with well-known facts, but it must be admitted that a more careful study of the question is needed before it can be settled beyond controversy. This experiment also strengthens the theory that early spraying is essential to the best success in preventing the apple scab.

The spores, from which the scab fungus develops, live over winter on the trees, and begin growth in the spring at the same time the leaves start to grow. How rapidly the fungus develops depends upon the weather. It follows then that the apples would be attacked earlier some seasons than others, and it may not always happen that early spraying would show such striking results as above mentioned. It is true, however, that the fungus is prevented much easier than it is killed after once established, and to this end early applications of fungicides are far more effective than late, and it may sometimes happen, as in this case, that a crop is saved which would otherwise be lost.

No dates can be named for spraying, but a good plan is to make the first application just before the leaves open, and the second soon after the blossoms fall, at which time four ounces of Paris green should be added to each fifty gallons of the mixture, in order to kill the apple worm. A third spraying with the combined mixture, is to be given about ten days later, and still another after the same length of time, in case of continued wet weather.—Ohio Experiment Station.

For Gooseberry Mildew.—A solution of potassium sulphide is recommended ; one ounce to two gallons of water. Apply as soon as leaves commence to open, and repeat every three weeks.

EXPERIENCE WITH SPRAYING.



AM not aware of the nature of Prof. Taft's spraying operations at the College. At this sub-station, the spraying was done by myself, with only general directions from Prof. Taft. Owing to the late arrival of material, the spraying was barely commenced when the almost calamitous, rainy season, stopped the work, which we were unable to resume till the development of fungus had proceeded too far for remedy. Subsequent spraying had, apparently, the effect to arrest grape mildew, or at least to check its development so far, that of most varieties, a moderate crop matured in fair condition.

Quinces, which had in previous years been badly affected with leaf spot, were apparently saved by the early spraying. Good results were apparent also upon pears and plums; but the foliage of the apple of many, if not most varieties, was so seriously injured that very few have made much growth during the season, while the visitation has resulted in the total loss of the year's crop of fruit, except in northern Michigan; while the visitation occurred while the trees were yet nearly, or quite, dormant; with the result that they have been favored with a superior "all around" crop of fruit: such exemption extending to about the south line of Oceana County, on the west side of the State, and must be attributed to the cause already stated, rather than to the effects of spraying.

I have had the Alexander apple in fruit since about 1850, and have found it a moderate bearer of large, fair and very beautiful fruit. It is quite too acid for dessert, but I know no superior for culinary uses. The tree is vigorous and healthy. Wolf River is an alleged seedling from this, and is almost identical with it.

The season's report from this sub-section is now in the hands of Prof. Taft, to be published by the State Board of Agriculture; you will, no doubt, receive a copy from their secretary, Henry G. Reynolds, Agricultural College, Mich., who distributes them gratuitously.

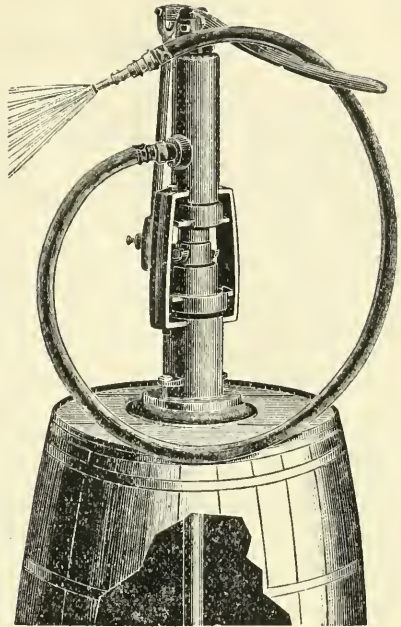
T. T. LYON.

Director South Haven Sub-Experiment Station, Michigan.

General Lawn Management.—You want variety in flowers and flower arrangement—something different next season from what you had last. Make your plans; decide on kinds and arrangement, and be in time with your orders for stock and seeds. Soon after heavy falls of snow tramp it down around trees and shrubs, and shake it out of the branches of evergreens. Rustic work may now be made. Besides the cedar of our swamps, the canes of wild-grape vines will be found eminently serviceable for this purpose. Laurel wood and roots also make good material; and many other kinds of timber will work up well. With a little ingenuity, rustic tables, seats, arbors, vases, hanging baskets, etc., may be made that are just as ornamental as they are inexpensive.

THE LITTLE DANDY SPRAYER

Is the name of a new orchard spraying pump which has been invented in Canada, and as we always desire to encourage our native industries, we give a prominent notice to this invention. Having given it a fair trial we unhesitatingly speak of it as a pump that works easily, throws a continuous stream of spray, does not require priming, is uncommonly strong, and is so simple in construction that there is little to get out of order. No doubt the pump will be fully advertised before long. Mr. W. H. Vanduzer, Grimsby, can give further information.



WINTERING APPLES.

The prices now realized for late-keeping apples should again set growers of apples to thinking of storing their own fruit each year, and to making a thorough investigation of the storage question. Success in storage is largely a thorough investigation and mastery of the principles involved in one's own locality. Apples will keep longer and better than is commonly supposed. There is a large element of risk in keeping them, so it is well not to take too many chances, and to store experimentally till sufficient experience is gained to run the increased risk. The market price of apples in May, June and July is very tempting, and there is a great amount of unskilled work done in harvesting and storing. The tendency is to sell them right from the trees and have no more bother with them. This seems to be the easiest, and it is thought to be the most profitable. But since the late keeping varieties sell at such a fancy price, it certainly would pay the grower to try to hold over. It is a fact that cellars are generally kept at too uneven a temperature and too warm.

ROSES.—Hardy kinds may yet be planted in open ground. Fibrous loam, well-rotted turf, etc., is best for them. After planting, apply a good mulch of manure. The more tender sorts in the border may be laid down for winter protection. Another good plan is to surround the rose-bed with wire-netting and to fill up inside with leaves, placing some boughs on top.

KNIFFEN SYSTEM OF PRUNING.

Owing to pressure of work among fruit growers in the autumn months pruning the vine is not usually accomplished until the early spring ; but often during the mild spells of winter, it is possible to make a little progress in this work in advance, and thus ease us a little of our hurry later on. In previous issues of this journal we have given a description of the Kniffen system of pruning. This method we do not recommend as the best. We ourselves, practice for the most part, the renewal system, building our trellises of three wires and spreading our two arms on the bottom wire, from which uprights are allowed to grow, usually about six to each vine.

The Kniffen system is practised by many of the Niagara district fruit growers, and a method which requires less labor than perhaps any other. A writer in Popular Gardening, some time ago, recommended it as well adapted for such strong growers as the Niagara and the Concord. His plan was to make his trellis with two wires, the first about two feet above the ground, and the next about three and a-half feet. Two arms are trained upon each of these wires, and at each season's pruning the young wood is cut back to these arms, leaving one or two buds at the base of the branches. (See Fig. 504.)

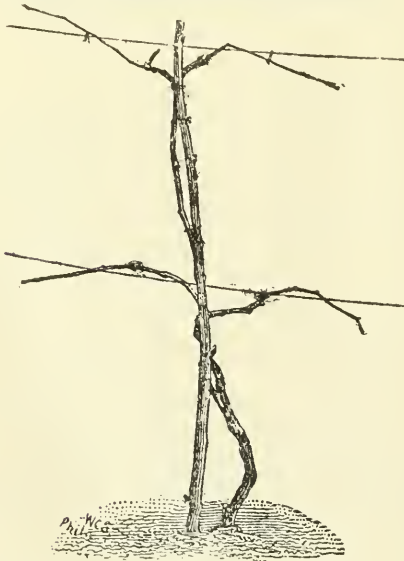


FIG. 504.

D. S. Marvin, of New York State, calls the Kniffen system the lazy man's method, because it brings fairly good results, with little attention. One of his objections to the system is, that the strongest growth is usually at the end of the vine, that is the point of the upper arms, and gradually the lower arms become weak. A good plan for avoiding this was proposed by Mr. Marvin. He says that it can be overcome by starting two canes from the ground instead of one, (as in Fig. 504). By this means the sap flows into the lower arm just as vigorously as it does into the upper, and so there is a decided improvement.

He has another objection to it, and that is, the resin in the sap of our native varieties will sooner or later clog and fill the circulatory ducts of all old wood above ground. A difficulty which can only be avoided by the renewal system.

IMPROVEMENT IN THE COUNTRY CEMETERY.

THIS was the title of a paper read by Mr. A. M. Sargent, of Akron, Ohio, before the Association of American Cemetery Superintendents. After speaking of the various plans which are adopted in establishing graveyards, and objecting strongly to private family burial places, and also many of those connected with churches which have fallen into a badly neglected state, he advocates that the churchyard or village cemetery should be remodelled in its management. There should be a sufficient charge for each lot or grave to cover the permanent care of every lot sold, and an investment be made in such a way as to insure proper care for all time. He thinks that those who are most interested in the graveyard, lot holders, should be the controllers of its management.

The site should be laid far enough away from the possible growth of a town or a village, so not to be encroached upon in the course of time, and the size may vary from five to twenty acres, according to requirements. An elevated bank of

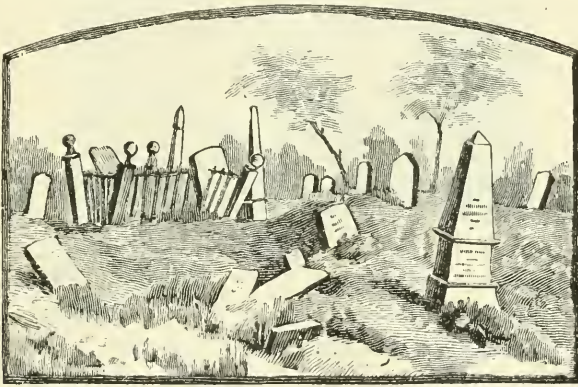


FIG. 505.—THE CEMETERY AS IT TOO OFTEN IS.

a river or lake is a desirable site, but, next to this, a gently undulated piece of ground where quiet views may easily be made.

Roadways, in his opinion, should be twelve to eighteen feet wide, following the base of undulating surface as much as possible. This will give curved lines and add to the beauty. Lot sections should follow lines of the roadways, but begin far enough back to secure a border in order that trees may be planted without interfering with either the road or the lots. Irregular spaces may be left throughout all sections for trees in addition.

Lots may be of various sizes, but, as a rule, front lots should not be less than sixteen feet square. Every second row of lots ought to be separated by a pathway at least five feet in width which should be reached by a path from the

front about every sixth or eighth lot. All these pathways should be kept in grass.

No hedges or enclosures, in his opinion, should be permitted upon the lots, and but one monument should be allowed upon an entire lot. No headstones or marks should be projecting more than sixteen inches, indeed six inches is better. No footstones should be allowed.

The accompanying engravings are used in illustration of the writer's plan, Fig. 505, representing the old-fashioned graveyard in its neglected state, and Fig. 506 representing Mr. Sargent's ideal grounds. It will be observed that mounds are entirely done away with, thus allowing greater ease in keeping the grass shaven with the lawn mower.

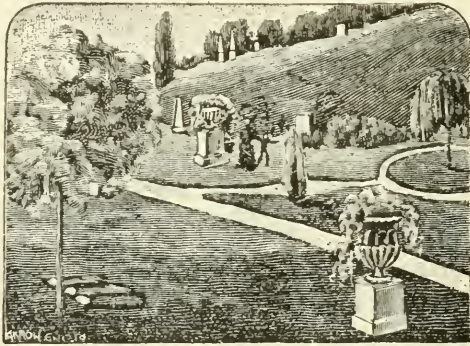


FIG. 506.—THE CEMETERY AS IT SHOULD BE.

SAGE FOR MARKET.—Sage is raised by the market gardeners near New York as a second crop in the season, and the entire crop is gathered at once, and not a little at a time, as is usually practiced in private gardens where only a few bunches are cultivated. It is true that the plants are hardy, and will live for several years, but for market purposes they are best treated as annuals. The seed should be sown early in spring, and not later than the first of May, and if the soil is rich and the plants given good care, they will be ready for transplanting in July to ground from which a crop of early peas, cabbage or beets has been gathered. The sage plants are set in rows eighteen to twenty inches apart and about twelve inches in the row. The crop is gathered late in fall, tied up in bunches, and sold when fresh, or after being dried in the shade. The price is, of course, variable, depending upon supply and demand. If sent from a distance, sage should be packed in open crates. Gardeners say that from three to four hundred dollars per acre is about the average for a crop of sage.—*American Agriculturist*.

MICHIGAN HORTICULTURAL SOCIETY.



THE Michigan State Horticultural Society held their annual meeting at Ann Arbor on the 26th, 27th, and 28th of December, and as the Secretary of our Society, who was appointed a delegate to their meeting, could not attend, I was easily induced to be his representative, and beg leave to submit the following report: The meetings were fairly well attended, and the papers and discussions were very lively and full of interest and instruction, though much of their discussion was in relation to their coming fruit exhibit at Chicago, and of no particular interest to us, farther than to show that while we have been at work securing, bottling and stoning our fruit for the exhibit, they have been wrangling over "ways and means," and, as yet, have done very little in that direction. I incidentally learned from Mr. S. D. Willard, who was there as a delegate from the Western New York Horticultural Society, that the same state of things existed there. I did not arrive in time to hear the President's address, or a paper on "Economy in Fruit Growing," by Mr. Kellog, of Iona, both of which were said to be very practical.

But I had the pleasure of listening to an address from Prof. Angell, of the Michigan State University, which was full of suggestions and practical points, the most prominent one being the necessity of teaching horticulture in country schools—a subject which we have often discussed. The main difficulty there, as here, seemed to be the want of proper qualification in teachers for this work. He urged that it should be done at least one hour in a week, if not oftener, and suggested that familiar talks, or lectures, would be of much more value than text books upon this subject. Right here, may I offer this suggestion to our public instructors, viz., that it might be a good idea to employ a competent person, say in each county, to visit schools weekly, and give a half hour or an hour of instruction upon this and other branches of agriculture? A *live man* could visit four or five schools in a day, and accomplish quite a large circuit in a week.

Prof. Taft, of the State Agricultural College, and Prof. Smith, from the Horticultural Department at Washington, and others, read and discussed papers upon the fungoid diseases of fruits, and their prevention and cure. The universal testimony seemed to be that "Prevention is better than cure"; that trees kept in a healthy growing condition, were less liable to the disease, and that the early removing of all affected fruits and leaves, and everything that would retain the spores of the disease, and an early and continuous spraying with the Bordeaux mixture—or other mixtures of a similar nature—would prevent, in a great measure, the apple scab, grape mildew and rot, and all similar diseases.

Discussions on the peach yellows showed that where the law had been strictly enforced, compelling the removal and burning of affected trees immediately on its appearance, and not leaving them to scatter the germs of the disease, orchards had been saved and this industry was prosperous; but, where the enforcement of the law had been neglected, it had spread rapidly, and peach growing was a failure. A paper on "Adulterated Fruit Products," brought out some "cute Yankee tricks" in manufacturing different kinds of berry jam from gelatine, hay and clover seed, with the addition of a little cider made from the refuse cores and peelings of canning and evaporating establishments.

A very interesting paper on "The Wild and Cultivated Fruits of the Amazon," was read by Prof. Steere, who had recently visited South America, showing the great variety of tropical fruits that are indigenous to that country, and the great source of supply for our markets that might be developed if northern enterprise and capital would take hold of it. Other papers on "Food Value of Fruits," "Michigan Flora," "Truck Farming," etc., were read and discussed, which, together with a visit to the State University buildings, library, museum, etc., and the usual kindness and hospitality of the members, made my visit one of much pleasure as well as profit.

St. Catharines.

A. M. SMITH.

APPLES AS MEDICINE.

Chemically, the apple is composed of vegetable fibre, albumen, sugar, gum, chlorophyl, mallic acid, gallic acid, lime and much water. Furthermore, says the Southern Clinic, the German analysts say that the apple contains a larger percentage of phosphorous than any other fruit or vegetable. The phosphorous is admirably adapted for renewing the essential nervous matter, lecithin, of the brain and spinal cord. It is perhaps for the same reason, rudely understood, that the old Scandinavian traditions represent the apple as the food of the gods, who, when they felt themselves growing feeble and infirm, resort to this fruit for renewing their powers of mind and body. The acids of the apple are also of signal use for men of sedentary habits, whose livers are sluggish in action, these acids serving to eliminate from the body noxious matter, which, if retained, would make the brain heavy, dull, or bring about jaundice or skin eruptions and other allied troubles.

Some such an experience must have led to our custom of taking apple sauce with roast pork, rich goose, and like dishes. The mallic acid of ripe apples, either raw or cooked, will neutralize any excess of chalky matter engendered by eating too much meat. It is also the fact that such fresh fruits as the apple, the pear, and the plum, when taken ripe and without sugar, diminish acidity in the stomach, rather than provoke it. Their vegetable sauces and juices are converted into alkaline carbonates, which tend to counteract acidity.

WINTER PEARS.



WINTER pears are not much grown for market, because, as a rule the summer pears have been more profitable, and many of the winter pears are poor in quality. Besides the winter pears need to be ripened and marketed in a certain manner or else they will be unsatisfactory. American Garden has been inquiring among its correspondents concerning the merits of this class of fruit, and the results seem only in favor of two principal varieties, the Lawrence and the Anjou—though other varieties are worth trying.

Mr. T. T. Lyon, of South

Haven, Michigan, replied as follows:—

Until a comparatively recent period, few, if any, winter varieties of the pears were of such a character as to command much attention beyond the few amateurs who had made this fruit their speciality, and had mastered what was, at the time, considered an abstruse or difficult process—that of properly ripening the fruit. Even at the present time, with a list of varieties considerably increased, and including many of decided merit, the earlier impressions seem to give way very slowly; and the popular demand for winter pears is yet so limited that commercial growers rarely plant them. It may fairly be doubted whether even a moiety of pear-growers have an adequate conception of the delectable quality wrapped up in a well-grown and perfectly ripened Nelis, a Dana's Hovey, or even a Lawrence. With such as these, and dozens of others, nearly or quite as good, put upon our city and village markets ripe and full colored, there can be little room for doubt than an appreciative demand would arise, quite as rapidly as planters and growers would be prepared to supply it. True, there are, even yet, comparatively few long-keeping varieties adapted to market purposes; but with modern refrigeration, or cold-storage, even such varieties as Anjou, Angouleme, and numerous others can now be carried over till the markets demand them.

To me the conviction is very decided that we should no longer leave the public to assume that the Bartlett is the only pear, and September the only pear season; but, rather, supply the means to convince them fully of the error by gustatory demonstration.

Messrs. Ellwanger and Barry, of Rochester, wrote:—The following are among the prominent varieties of winter pears; Wilder (Colonel Wilder), Winter Nelis, Souvenir d'Esperen, Josephine de Malines, Barry, Clairgeau, Easter Beurre, Duhamel du Monceau, Jones, Lawrence, Anjou, Mount Vernon. The Clairgeau is really a fall pear: the others are winter varieties.

Our plan of keeping pears is very simple. In an ordinary building, lined with hay so as to keep out the severe cold we can keep most varieties through the winter successfully. The varieties of winter pears which we grow most are Anjou, Winter Nelis and Josephine de Malines. Anjou, the earliest, is by far the most satisfactory, being very large, handsome and of a fine quality. The California varieties raised by Mr. Fox—Wilder and Barry—are the longest keepers, preserving their good flavor and perfect condition until April. Duhamel du Monceau and Souvenir d'Esperen are varieties that are not grown or known much, but both are valuable on account of their size and quality. Both are high-flavored and deserve to be cultivated more extensively than they are. We have been trying for many years to increase the cultivation of the Anjou, but for some reason—we do not know exactly why—growers have not undertaken to produce it on a large scale. We think that one of the principal objections raised is its large size, as it is liable to be injured by the storms that occur early in autumn. This is to some extent true, but if the orchard is properly located and provided with necessary shelter, this objection cannot be urged. We have not had any experience with cold-storage, and therefore cannot say anything about it. Our experience so far has been very satisfactory with fruit kept according to our method. When the fruit comes out of the house it does not suffer in any way from the change of temperature, and will last a long time even when brought into warm places.

Keeping Produce Outdoors.—Not one man in a thousand knows how to put away potatoes, beets, carrots, or apples outdoors so they will keep until spring in fine order: in fact nearly everybody believes that it cannot be done. It is our place to set these folks right. Dig a shallow trench in an elevated spot four feet wide and six inches deep, and long enough to hold all you want to put in it. Place two or three inches of oat-straw in the bottom of the trench. Then put in your roots or apples, piling them up three feet or so, and cover with six inches of oat-straw. Then place upon the straw fifteen inches of earth to keep the frost out. We say fifteen inches because we mean it. This is all.—Farm Journal.

NOTES ON EARLY PEARS.



P the more common varieties, Summer Doyenné stands at the head of the list for earliness. Old trees that are heavily loaded with crops, give smaller pears with deficient flavor, as compared with the thinner crops on young thrifty trees, but they ripen a week or two earlier. A tree of this variety, more than twenty years old, stood in the corner of a pasture field; the only attention it received by way of culture was an annual top-dressing. It bore as usual a heavy crop this year, when many other pears failed. One half began to ripen with full red cheeks about the time of wheat harvest, and one half or more of the crop was gathered, selecting these, and leaving the hard and green ones. This gave the remainder more room to mature, and in two weeks these were all gathered. They had grown so much larger in consequence of the thinning, that the crop would fill as many baskets as the whole would at first, and the pears were at least double the size of the earliest, with greatly superior flavor; thus adding another fact to the well proved truth that those who do not thin the fruit on their crowded trees, suffer a great loss as to the quality, and gain nothing in quantity. This is especially the case with Summer Doyenné, the flavor of which, on crowded trees, is apt to be quite deficient.

After this in a few days comes the Giffard, one of the finest of all summer pears, but less raised and cultivated on account of its slender and crooked growth, a defect which we entirely obviate by grafting standard height on straight growers. This is followed in a week or two by the Tyson, the loaded trees of which promise a fine crop before the end of August. This fills the gap till the Bartlett's season, early in September. These four—the Summer Doyenné, Giffard, Tyson and Bartlett nearly always give good crops when others fail, and the Bartlett appears to possess the peculiarity of ripening into juicy maturity if picked before full grown. There are several other summer pears which should be mentioned, as Bloodgood, Osband, Madeleine, Dearborn, Rostiezer and others. As summer pears are ripened by the warm weather more rapidly than later pears, it is more essential to pick them in good season, to prevent the loss of their fine flavor by over-ripeness.—Cultivator.

Watering.—No detail of house-plant management is more important than that of watering. If you cannot appreciate this, visit the commercial plant-grower's houses, and see the trouble taken there to provide just the right amount of water to each plant. In the first place, the plantsman sees to it that every plant in his charge has drainage provided in the pot, so that any excess of water can quickly escape. Then he watches his collection hourly, and at the first sign of dryness among his plants, down comes a shower from his hose or pot. He applies water with a bold dash—that is when a plant needs water at all, he gives it enough to saturate the soil thoroughly.

DEATH OF A PROMINENT FRUIT GROWER.



JOHN BURR, who died at Leavenworth, Kansas, on the 13th of December, in his 93rd year, was widely known amongst fruit growers and horticulturists for his contributions for past fifty years to the leading journals devoted to these subjects. was born and resided at Bridgeport, Connecticut for over thirty-six years ; he removed to Columbus, Ohio, where he lived for twenty years. While there he introduced "Burr's New Pine," and "Burr's Old Seedling," which are still the leading strawberries of Ohio. Removing to Kansas in 1858, he entered on the cultivation and propagation of strawberries, grapes and other fruit. Though a merchant in his earlier days, the fascination for fruit grew upon him till he devoted himself entirely to it with the untiring energy of his nature. To this engaging and healthful pursuit may be attributed the remarkable vigor of body and mind he preserved up to the day of his death. As to his success in grapes through hybridizing, the "Rural World," of St. Louis, Mo., two years ago published a minute description of nineteen varieties of Mr. Burr's grapes, remarking in the article, "John Burr has long since past his fourscore years, and, in nature of things, will ere long pass away from us. But he will, in these grapes, leave a grateful remembrance more valuable than a monument." Some fifteen years ago Mr. Burr became interested in the experimental efforts undertaken at Clarenceville, Que., for the introduction of early out-door grapes for this Province. He sent for trial his "Early Victor," which is now cultivated through Ontario and Quebec, later his "Standard" proved rather better, and a very prolific and early variety, both for table and wine. His "Jewel," "Paragon" and "Ideal" have fruited at Clarenceville and give promise of value and adaptability to the climate. At the time of his death Mr. Burr was engaged in a new grape which he asserted would surpass all his former efforts, as his productions are tested under varied conditions of soil and climate. There is scarcely a doubt but Canadians may ever have cause to reverence the name of their benefactor.

WM. MEAD-PATTERSON,

Clarenceville, Que., Dec. 17th.

Nourishment.—At the beginning of the season, be sure that each plant has a suitable soil. If the stock comes from an intelligent florist, he will see to this ; but every amateur plant-grower should have on hand a supply of potting-mold, for use when plants are lifted from the garden, and in case re-potting is needed. This mold may be had for a small price from regular plant-growers. In buying it, be sure to ask for the best article obtainable.

In addition to good soil, some stimulant will be needed for the plants. Liquid manure and any of the concentrated plant foods, are useful ; but several different stimulants must not be given at the same time.

PYRAMID PEAR TREES.



THE Pyramid or cone form of training pear trees, where they stand alone or in a small garden, is a very ornamental one and at the same time calculated to secure a good crop. A strong pyramid, well pruned, symmetrical and thriving, is certainly a handsome object. Like the dwarf or fan form the pyramid requires more or less annual pruning.

One must of course begin with a young tree that has branches to the ground. Do not expect too vigorous a growth; from five to seven main branches a year are all that should be allowed. When laying out the branches for the next year's growth, it is as well to prune close to the bud which is to continue the growth, leaving a small spur attached to tie the growing shoot to in order that it may grow in the proper direction. Or it might do to cut the branch three or four inches above the bud, removing all buds on it, and tie the growing shoot to this spur, which may afterward be taken off. It is a mistake to prune strong-



FIG. 507—PYRAMID.



FIG. 508.—DWARF PEAR TREE IN FRUIT. Farm and Home.

growing varieties too much, and it is equally wrong to allow the lateral branches to grow too long. Therefore it will be best in pruning to use a judicious moderation and keep the tree properly balanced. A well-proportioned pyramid should have a diameter about two-thirds of its height. If a tree of the proper age fails to bear, it may, if well proportioned, be left unpruned for two or three years. A circular incision of the bark about one-half inch wide at the base and kept open may be tried, or even root-pruning resorted to, to bring it into bearing. The illustrations give a good general idea of a pyramid pear tree after winter pruning, also one in fruit.—

ONE of the strangest things in this world is that the use of tobacco should have become so general. It has never been rationally explained.

THE TEN BLOCK SYSTEM FOR COUNTRY HOUSE NUMBERS.



It was quite a novel idea of Mr. A. L. Bancroft of Contra Costa Co., California, of dividing up country roads in such a manner that a complete directory could be published, giving not only the names of the residents, but much valuable information, regarding the points of interest in the country besides. Each mile of road is divided into ten imaginary blocks, having each a frontage of 528 feet. Two numbers are given each block, the odd on the left and the even on the right. Distances can be calculated almost instantly, from the commencement of the road, by dividing the entrance number by two, and pointing off one decimal. Each road has a name, and each house a number.

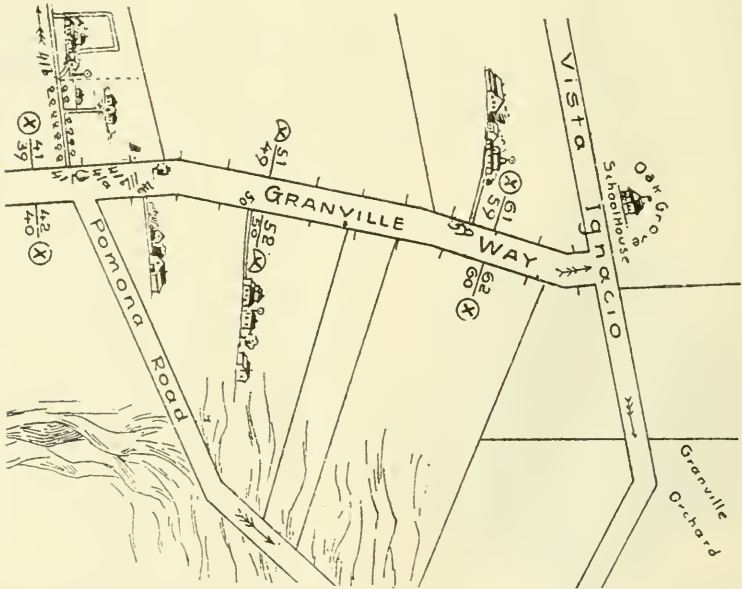


FIG. 509.—THE TEN BLOCK SYSTEM.

Not only does the plan contemplate the numbering but also the naming of the farm, and the name of the owner, in some conspicuous manner by the front gate. Surely even our friend, T. H. Race, who advocates so strongly that every man's name should appear on his own gate post, would be entirely satisfied with such a complete arrangement.

❖ New and Little Known Fruits ❖

THE CYCLOPS PEAR.

SIR,—Herewith I send you a specimen of a pear which originated here. It appears to be a good fruit, and very productive. I picked a wheelbarrowful of it this fall. The seed was sown twelve years ago, and came from the Sacramento Valley, California. The tree is a strong, upright grower. We have called it the Cyclops.

CHARLES SCOTT, *Elora, Ont.*

This pear is a large, pyri-form, much the shape, size, and almost the color of the Orange quince, but somewhat rugged at both the base and apex. The skin is yellow, thickly dotted with small brown dots; stem, about an inch and a quarter long, set in a small, russeted cavity; calyx closed, set in a deep, irregular ribbed basin; flesh, creamy white, rather coarse, but juicy, sweet, with a peculiar flavor just beneath the skin; season, apparently about January. In Mr. Craig's opinion, this pear does not rank high in quality.

TWO MORE ENGLISH APPLES.

Mr. J. D. Roberts, of Cobourg, sends us two samples each of the King of the Pippins and the Cornish Gilliflower. The latter is not very attractive outside, but the flesh is buttery and good, which alone must account for its popularity. The former is a beautiful golden apple with a red cheek, medium in size, and of rather firm flesh. It is not necessary to describe them, as they are fully treated in the English books. Mr. Roberts will, in time, be able to tell us whether they prove suitable to the Canadian orchards.

THE WILLIAMS STRAWBERRY.

At the last meeting of our Association in Brantford, the merits of the Williams strawberry was discussed as follows:

Mr. John Little—I cannot find any fault with the Williams with regard to the plant, but the white tip is just like that of its parent, the Sharpless, and that is a detriment to it in more ways than one. Some say that it suits the market well, but in our market they do not care for either the Sharpless or the Williams. Both varieties are excellent bearers.

The Secretary—Is not the Williams a better shipper than the Sharpless?

Mr. Little—Yes.

Mr. D. Greig, Cainsville—My experience is very favorable. The Williams is far more profitable than any other strawberry in this locality; it is superior to the Wilson and the Crescent. We tested the Crescent along with the Williams, and at the first two pickings we had more fruit from the Crescent, but then after

that it dwindled down, while the Williams continued for a long season. Last year we continued to gather the Williams for over four weeks. We had no trouble with the white tips. By leaving the berries a day or two longer on the vines, they ripen up to the very tips. We always receive a cent or a cent and a half more in the market for the Williams than for any other variety. If I were to name three kinds for the home market, I would mention the Williams, Bubach, and Warfield.

Mr. W. H. Lee, Niagara—My experience has been such that if I had to grow the Wilson and Crescent and allow some one else to grow the Williams, I would quit strawberry growing right away. In the Toronto market I can get two and three cents more a basket for them than for the others. You will make a mistake if you do not give the Williams strawberry prominence. I have no personal interest whatever, but I have tested it both here and in the Niagara district. It may not stand drouth with the Bubach, but it is a much better paying berry; indeed, I get two baskets from it for one from any other variety.

THE CROPS OF LAST SEASON.



NOT having written for some time I send a few notes respecting last season's crops. Strawberries were an extra good crop with me this year, but prices ruled lower than last year. Black currants also a good fair crop. Grapes were almost a failure, owing to the wet cold weather in the spring, which retarded the early growth. Apples a very heavy crop on some trees. In this neighborhood generally, apples were an immense crop. I see in the November HORTICULTURIST an Orillia grower has grown tomatoes weighing 1 lb. 3½ oz., and another a specimen weighing 1 lb. 2 oz. I can beat the record in Orillia. I grew a tomato this summer, of the same variety, *Ponderosa*, weighing a little over 1½ lbs., and I took the first prize at the Tiny and Tay Agricultural Show at Midland with six specimens, weighing altogether 8 lbs. 9½ ozs., averaging for the six within a fraction of 1 lb. 7 oz. I do not like the quality of the *Ponderosa*, they are very soft, and rot easily. Their chief recommendation is their size. They also grow smooth, not much wasted in wrinkles. Now a few words about rhubarb. On page 219, Vol. 13, is mentioned a variety known as *Stoat's Monarch*, of very large size grown at Brampton. I sent to the writer of the paragraph, Mr. Morton, and procured three roots, which have done well. It is a variety worth trying, very much larger than the average kinds, and cooks better, though green in color. I prefer it, for stewing, to the old kinds. I had several stalks two inches in diameter, and one, two and a quarter inches. It has been one thing against rhubarb that as the season advances the stalks get tough and inferior in quality. I have adopted a way of overcoming this trouble. When the first rush of the season is over I mow the stalks close to the ground with a sickle and in a few weeks I have a supply of fresh young stalks equal in quality to the earliest in the spring, as it grows again immediately. This may be done two or three times in the season.

Penetanguishene.

G. J. RANDALL.

* The Apiary *

HINTS FOR BEE RAISERS.



BEE raisers should find some time during the fall and winter to make an inventory of fixtures on hand, colonies on hand, and amount of honey and wax taken. There is no other way of telling whether it is profitable than by comparing these inventories from year to year; nor can a decision be made until you have several of the inventories to compare. These inventories serve another purpose, being of incalculable use when making out a list of supplies to be purchased for the coming season.

make it a rule to have fifty one-pound sections of each colony put into winter quarters, and one pound of thin, surplus foundation for each one hundred sections. Before getting new hives I determine how much of an increase of stock I intend to make, then get the number of hives I expect to use, and allow one and one-half pounds of brood foundation to each hive. The fall or early winter is a good time of the year to purchase bee supplies, because then quite a liberal discount is made on prices. Besides, it is a good idea to have everything on hand when wanted. I find that many stormy days in winter can be used to great advantage in putting hives and sections together ready for spring. Some of our winter days should also be given to a study of our failures and successes of past years, and we may avoid the former and multiply the latter. Some one may ask, "How can a bad season be avoided?" thinking that the cause of their failure. But can we be sure it is the season? May not bad management have something to do with it? I admit that a poor season will reduce the crop of honey, but it increases the price.

In 1889 bee-keepers in this section of the country had what they called a full crop of honey. That is, about fifty pounds per colony of combed honey. It sold slowly at fifteen cents a pound. For the last two seasons the average per colony has been less than ten pounds, and sold at prices ranging from twenty-five to thirty cents per pound. My apiary is not more than a mile from two other apiaries, one east, and the other west from it. Each has the same bee

pasture, so far as I can judge, but equal crops of honey were not produced because the different apiaries were managed by three different persons. The one east of me made a moderate increase in stock and produced about ten pounds of honey per colony ; the one west doubled their number, and consumed all the honey they made and a barrel of sugar besides. My apiary made no increase in stock because I wanted the honey, and I got about forty-five pounds per colony. —*Ex.*

BEES AND FRUIT.



OUR readers will remember that in April of last year an Act was passed in the interest of bee-keepers restraining fruit growers from spraying their trees with arsenical poisons during the time of the blossoming, for fear of injury to the bees which might be gathering honey in the orchard. The following are the clauses of the Act :

1. No person in spraying fruit or sprinkling fruit trees during the period within which such trees are in full bloom, shall use or cause to be used, any mixture containing Paris green or any other poisonous substance injurious to bees.

2. Any person contravening the provisions of this Act, shall on summary conviction thereof before a Justice of the Peace, be subject to a penalty of not less than \$1, or more than \$5, with or without costs of prosecution, and in case of a fine, or a fine and costs being awarded, and of the same not being upon conviction forthwith paid, the Justice may commit the offender to the common jail, there to be imprisoned for any term not exceeding thirty days, unless the fine and costs are sooner paid.

3. This Act shall not come into force until the first day of January, 1892

Mr. J. H. Panton, M.A., Professor of Biology, O. A. C., Guelph, has written a bulletin on this subject, in which he first shows how fruits are fertilized by the pollen grains of the blossoms, naming four principal means, first the wind, second artificial means, third by birds, and fourth by insects. The latter he considers by far the most common method, and of insects no class is more useful than bees.

The importance of perfect fertilization is evidenced by the fact that, where this does not take place, the fruit is incompletely developed, both in size and form, so that the quantity and quality are affected. Observations which have been made show that orchards in which bee hives are situated are more fruitful than those without hives. It has also been observed that the time when the weather was cloudy, wet and cold, during the blossoming of our orchard trees, and so unfavorable to the bees working among the flowers, the result has been poor fruit.

These investigations lead us to the conclusions that bees are important factors in the production of fruit, and really are co-workers with fruit growers in their labors.

With regard to the charge frequently made against bees that they are injurious to fruit, careful investigations have been made by the Department of Agriculture of the United States. Bees have been left without food in a building where all kinds of fruit, varying from green to dead ripe, were placed, and, although they fed upon the fruits where the skin was already broken and the juice was exuding, in no case did they use their jaws in injuring perfect fruit.

Bee experts claim that considerable mortality has been noticed among the brood of bees since the introduction of spraying with Paris green. Prof. Cook has proved by experiment that Paris green in the proportion of one pound to two hundred gallons of water will prove fatal to bees within twenty-four hours.

Possibly this Act was necessary, but, so far as our experience is concerned, we have never applied the poison to our trees during the blossoming period, because at that time it is not only useless, but there is a danger of injuring the delicate organs of the blossom by Paris green. But, although we believe that very few growers would ever be so foolish as to apply Paris green at this objectional period, still we have no objection to the passing of a law, if necessary at all, as much in our interests as those of bee-keepers.

THE DEMPSEY PEAR.

A short time ago we received some samples of the Dempsey pear from Messrs. Stone & Wellington, of the Fonthill Nurseries, who have purchased the right of propagation. The pear impressed us as one of considerable excellence. This pear was originated by one of the directors of our Association, the late P. C. Dempsey, of Trenton, whose work in producing hybrid fruits was so suddenly cut off, just at a time when he had many new hybrids under his careful supervision. The pear was produced from the seed of a Bartlett fertilized by a Duchess.

The tree is an upright, good grower; foliage large, glossy, dark green; fruit large as the Duchess, pyriform, irregular in outline; smooth, green, changing to yellow as it ripens, with a slight brown tinge where exposed to the sun; stem about an inch long, sets lightly upon one side in a shallow depression; calyx open, moderately shallow; basin somewhat corrugated; flesh white, fine grained, tender, with granulations about the centre, like the Duchess; sweet juicy, rich flavor. A pear that will stand transportation well: season, October to November.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

NOTES AND COMMENTS.

THE ACT REGARDING PLUM KNOT AND YELLOWS. At the meeting at Brantford, the present Act with regard to the diseases of fruit trees was discussed, and the conclusion was arrived at, that some of the provisions render the Act a dead letter; for instance, the article requiring fifty ratepayers to sign a petition, before the council is obliged to appoint an inspector of diseased trees. This is a task which few will undertake. Five names to such a petition is surely sufficient. Then the inspector, after his appointment, cannot act except he has a written complaint from some person, calling his attention to the existence of yellows or black knot. Now this is another hindrance to successful working of the Act. Surely an inspector has eyes of his own, and he should be empowered to act, without being asked, whenever he sees or hears of yellows existing in his district. But what if the local inspector will not act, when called upon, for fear of displeasing his neighbors? How can we then enforce the destruction of the diseased trees. The remedy perhaps is to have a provincial inspector, whose duties it shall be to enforce the provisions of the Act in any locality where, owing to the dilatoriness of the local inspector, he is called upon to enforce it.

The committee charged with this matter, will call upon the Minister of Agriculture at an early date, and draw his attention to the much-needed amendments to the Act, as outlined by the Association.

OUR enegetic contemporary, the American Garden, opens the January number with a sketch of John Burrough's, the author of "Pepacton" a collection of essays on rural scenes, of great literary excellence. A vignette of him and his favorite dog, heads the article, in which the author, Prof. Bailey, describes Mr. Burroughs as a fruit grower often engaged in the practical work of harvest-

ing and packing his own fruit. His ten acres of vineyard yielded him thirty-eight tons of grapes last season; and that of such delicate sorts as Delaware, Herbert, Gaertner, besides Wordens, a few Concords, Niagara, etc. Every vine is sprayed with Bordeaux mixture annually, whether there is disease or not, because it helps the foliage in such a wonderful manner, and "good vines produce good grapes." He frames his vines on the Kniffen system, leaving four arms with five buds on each of the lower ones, and ten on each of the upper ones.

❖ Question Drawer. ❖

GOOSEBERRIES AND CURRANTS.

529. SIR.—What kinds of gooseberries and currants would you recommend for farmers who grows them only for the family?

JOHN DALGARNO, *Marmion*.

The leading gooseberries for general use at the present day are the Downing and Pearl, and the most desirable currants of the various colors are, Black Naples, Fay's Red and White Grape.

PROPAGATING PALMS.

530. SIR.—Do you know if I can propagate palms from cuttings, and if so, how?

CLAS. MITCHELL, *Port Elgin*.

Palms are, for the most part, propagated from seeds sown thickly in clean, well-drained pans, covered with about their own depth of soil. They require careful greenhouse management for the best success. They may also be propagated from suckers on a small scale, but for the details of the method of accomplishing this work, we must refer the question to some practical florist.

VARIETIES OF RASPBERRIES.

531. SIR.—Is the Malboro' a hardier raspberry than the Cuthbert? Why do my Cuthberts grow strong during the summer, and look well in the spring after trimming, but often fail to bud out, and, when they do, produce but little fruit? I have had only one crop in six years. I had eight rows thirty yards long, in hills two feet apart and four feet between the rows, pinched back early in the season and then allowed to grow, trimmed up to four or six canes in the hills and shortened in?

A. J. C.

We are unable to say which is the hardier, the Malboro' or the Cuthbert, as both succeed well at Grimsby. We do not understand the failure spoken of by our correspondent, unless it be due to the severity of the winter killing the fruit buds, or possibly to rust of the leaves or canes.

RASPBERRY CULTURE.

532. SIR,—Please give me a little information with regard to raspberry culture for a garden. Is it better to plant them in hills two feet apart and four feet between the rows, or in rows two feet wide and four feet apart in the rows? Should the four feet space be dug over and manured each year after the plants are established, or deeply hoed and manure put on early in the spring or late in the autumn?

A. J. COLLINS, *Listowel, Ont.*

There would be no object in planting raspberries in hills two feet one way and four feet the other. The chief advantage in hill culture of raspberries is ease of cultivation, and, in order to accomplish this, the hills should be planted four feet apart each way. Mr. E. Morden, of Niagara Falls, has adopted this method of planting to very great advantage in cultivation, but, if one has a limited quantity of garden ground, more fruit to the acre will be gained by planting in rows, but these rows should be at least five feet apart for horse cultivation, and six feet is even better. The plants should not be allowed to spread too widely, as this will leave too much work for the hoe and spade. Indeed, we do not approve of any system of growing raspberries which leaves much hand-work. Of course, it is necessary to use the hoe, but, when once the ground is well occupied with the raspberry bushes, little work will be left for either hoe or spade. It will accomplish every purpose to apply the manure annually after the plants are once established, and it makes very little difference whether it is applied in the spring or fall.

THE ABUNDANCE PLUM.

533. SIR,—Messrs. W. F. Bassett & Son, of Hammontou, N. Y., have a specialty in Japan Plums, in the Abundance in particular. Do you know anything about them, and can I buy them in Canada?

J. A. T., *Norwich.*

You may be sure, that as soon as any new thing, proved to be a really superior article, our Ontario nurserymen will keep it in stock. Some of the Japan plums promise to be valuable, as, for instance, the Botan (Abundance), but it is not yet fully tested. Mr. T. T. Lyon, director of the South Haven Experiment Station, writes that he is growing it, but his trees are too small to bear fruit, and he knows of no one in Michigan who has fruited it. Mr. S. D. Willard, of Geneva, almost the only one in New York State who has fruited it, writes:—"In reply to yours of the 7th, I have fruited the Abundance plum for four or five years, and find it hardy and productive, of fair quality, and well received in our markets; but I do not think it equal to the Burbank in productiveness, or to some of the other Japan sorts, as regards quality. But its very beautiful appearance causes it to take well in the city markets." Mr. Vandeman, of Washington, says the Botan is of medium size, heart-shaped and of good quality.

PEARS ON TOLMAN SWEET.

534. SIR,—I have been recommended to graft pears on Tolman Sweet apple tree stock. Do you know anything of the result of this practice?

J. A. T., *Norwich, Ont.*

We have never seen any great success in grafting pears of apples or apples upon pears. Usually each variety of tree succeeds best upon its own kind. Tolman Sweet, however, is a particularly desirable apple tree stock upon which to graft our better varieties. The King apple, for instance, is very superior, both in quality and productiveness, when grafted upon the Tolman Sweet. We would be pleased to hear from any of our readers who know of pears proving a success when so grafted.

BASKETS FOR SMALL FRUITS.

535. SIR,—Are pint boxes popular for raspberries, and what is used? Do raspberries in pints sell well in the Toronto market?

A. W. HARTLEY, *Milton, Ont.*

The writer has experimented on several occasions with the pint basket, not only in the Toronto, but also in other markets. In some cases there appears to be an advantage in using the pint, because in the first place, a quart of raspberries is almost too many together, as they settle down so closely and do not carry so well as in the pint packages. As soon as the trade becomes accustomed to them in Ontario, as it has already done in some of the markets of the United States, there is no doubt that the pints will be found the most suitable sized package for holding raspberries. The markets are fastidious, however, and are inclined to look with suspicion or hesitancy upon any new package, until they become well accustomed to handling it and find that it is in demand among the consumers.

EXHIBITING GRAPES.

536. SIR,—What is your idea regarding exhibiting grapes at fairs? In cases where a collection of varieties are shown, should they not be, as nearly as possible, made up about equally of red, white and black; at least, would they not rank better so?

JOHN GARDNER, *Hamilton.*

No doubt the collection would be a more desirable one, if the various colors were well represented, and any sensible judges would give certain marks additional for a well-assorted collection, over one given too much to one color. But there are few good white grapes, than of black, and in a very large collection, equal numbers of each having about the same value in points, would not be available.

HIBISCUS.

537. SIR.—Would you kindly inform me as to the proper treatment in the fall and winter of the Hibiscus. Should they be trimmed down when the leaves begin to decay?
 RICH. H. LIGHT, *Kingston.*

This is a shrub belonging to the Mallows family, a family containing about one hundred and fifty species, ranging in size from herbs and shrubs up to trees. The common cheese of the yards and the holyhocks of our gardens are familiar specimens. Hardy kinds of hibiscus may be grown out of doors and need very little pruning, except perhaps a little cutting back in the spring. If grown indoors they should be planted in large pots. Suitable soil is made of peat and fibry loam, with the addition of a little charcoal or sand. They should be allowed to rest during the winter, and in the spring the growth should be started with considerable heat and moisture. Perhaps some of our friends among the florists will write us more fully in reply to this question.

GRAFTING.

538. SIR.—When is the best time to cut scions? How should they be kept till wanted? How is the grafting wax made for use on paper, for whip grafting?
 IRA N. BURT, *Keswick Ridge.*

Scions for grafting are usually cut in early spring, some time in advance of the time of their use, and while the buds are still perfectly dormant. They are much less likely to grow if the buds are even allowed to swell before cutting. Sometimes they are cut a long time in advance, even in the late fall or early winter, and in this case they are packed in boxes with fresh-made sawdust, in alternate layers, by which means they are kept plump until needed. Care must be used to keep them cool so the buds will not push.

Grafting wax is prepared in several ways. For whip grafting, indoors, a wax is made by melting together two pounds rosin, one and one-quarter pounds of beeswax, and three-fourths of a pound of tallow. Instead of tallow, linseed has been found better, using a pint of the latter instead of the former. Thin calico cloth is rolled and dipped in this solution, unrolled while warm, and then cut in convenient strips; or the solution is spread with a brush on a certain brown paper known as grafting paper.

A GOOD SPRAY PUMP.

539. SIR.—I want to get a good spray pump, suitable for orchard trees. Would you please give me the name and probable cost of the kinds used in your province.
 WELLINGTON MUTCH, *Eldon, P. E. I.*

See page 51 of this number for a description of a good Canadian made sprayer.

✿ Open Letters. ✿

FRUIT EXPERIENCE AT SANDWICH.

SIR,—My fruit has all done well. I use a great quantity of ashes on my orchard every year and sow rye among the vines in the fall and plough it under in the spring. Last year I got nine and a half tons of grapes from one and three-quarter acres; my usual average is about four and a half tons per acre.

GEO. GRAY, *Sandwich.*

GOOD WISHES.

SIR,—I hope that the HORTICULTURIST will continue to be useful to our fruit growers. I think that the Fruit Growers' Association should try to assist in the sale of fruit. Canadian apples will never take the place they ought in the British markets until they are handled differently. One important point is to get them on the market in the proper season. There were some left in this section last fall until they were nearly spoiled before they were shipped. Such methods will spoil the market for other shippers.

JOHN DALGARNO, *Marmion.*

THE ONE JUDGE SYSTEM.

SIR,—I see by the December number of the HORTICULTURIST, page 400, that Mr. Halloway, of Clinton, expresses himself as decidedly against the one judge system at fairs, and he quotes a case where he has been a sufferer. He says he had on exhibition as beautiful a sample of potato onions as was ever seen, and the judge declared they were not potato onions. As I was the judge in this case, I am very glad Mr. Halloway has given a chance for a discussion on the subject of the identity of the potato onion, for there can be tricks practiced in exhibiting this variety of onion, as I will show. It is known that in a field of potato onions, planted with pure seed, many specimens of single onions may be produced, which will sometimes grow to the size of a fair Yellow Danvers. Now, I will not say those single onions are not potato onions, but I will say they cannot compete in the generic of the potato onion until they produce the multiplier, which will be the next year. I claim the strongest point is identity in a multiplier. In Mr. Halloway's case this was wanting, and I called two market gardeners, who happened to be on the grounds, to give me their opinion as to the exhibit being all single onions, on which fact I wished to have evidence. Now, in this case two exhibits were found in competition, one a fine sample of single onion, as the sample in contention, and the other sample a perfect multiplier, being in bunches or broken apart. Now, which should have the prize, the first not having the identity of the potato onion? Would all have to be cut through horizontally to see whether they all had several centres?—for no judge could know otherwise with perfect samples of single onions. So you can see what trouble it would make, both to the judge and the exhibitor, the latter of whom certainly would be disgusted to see his beautiful sample of onions all destroyed just because they did not show their generic identity, which, in my mind, is the strongest point in deciding correctly in this variety of onion. It is easily seen if exhibits of single onions were allowed by judges to compete as potato onions, any kind could be exhibited in part or altogether by tricky persons. I am sure Mr. Halloway will agree with me when he gives this question his sincere study, and will bring on his perfectly developed potato onions another year; for, if three judges or one, I am sure the decision will be the same. I would like to hear the opinion of others on this question, as a thorough discussion of it now might save trouble in the future at fairs.

WM. WARNOCK, *Golerich.*

Question Budget

20. Is *Beurre d' Anjou* as hardy as *Blemish Beauty* ?
21. Would the *Stark* apple be profitable in Ontario ?
22. Would it be advisable and safe to top dress strawberry plants with nitrate of soda, and what quantity should be used per acre ? J. S., *Nanaimo., B. C.*
23. What is the speediest, handiest and best implement to cultivate strawberries with (for manual labor) and by whom manufactured ? J. S.
24. Whether is hot air or hot water the safest to use in a greenhouse where personal attention can be given it ? J. S.
25. Which is the best manure to use, superphosphates, or boue meal, on small fruits, such as raspberries, blackberries, currants, etc. J. S.

Answers to Questions 13, 14 and 15 in "Question Budget," by E. Morden, Niagara Falls South.

538. (13) Which is the cheapest fertilizer, manure at \$1.00 per ton ; ashes at 10 cts. a bushel ; or slacked lime at 7 cts. a bushel, all delivered ?

Barnyard manure at \$1 per ton is cheaper than ashes at 10 cts., or lime at 7 cts. per bush. ordinarily. On some soils lime would have some value ; on other soils no value. With a soil already rich ashes might be indicated. Where a slow, firm growth of peach or other fruit trees is desired, ashes are preferable to stimulating barnyard manure. As a general rule barnyard manure is the cheapest and best manure.

539. (14) Which pays best, small fruits or the apple orchard ?

Small fruits, if within reach of a good local market, would give quicker and larger returns than an apple orchard. Small fruits, for market, should only be grown by those who can and will give them continuous attention during the whole season. The ordinary farmer with a soil suited to the apple, might plant and care for an apple orchard with advantage to himself. To many such a small fruit plantation would prove to be a large nuisance.

540. (15) Will it pay to dig out young apple orchard, just bearing, and of the best varieties, in order to plant grapes or small fruits ?

If your soil is exactly suited to small fruits ; if your land is very high-priced ; if you are near to manure, and a good local market : if you are willing to cultivate the soil and care for the fruits, and fight weeds intelligently for eight months each year, you might perhaps dig out those trees. If land is cheap leave the trees and plant small fruits elsewhere. If apples succeed well with you, give them a chance. Before digging out a bearing orchard to plant grapes, it is a safe thing to calculate the cost of vines, planting, cultivation, posts and wires, pruning, etc. By encountering these expenses for four years without return, your vines reach a bearing age, and if they escape the ravages of multifarious insects and a few fungoid diseases, such as rots and mildews, you will sometimes get grapes that will bring about one cent per lb. Grapes a few years since, brought from four cents to eight cents per lb., and growers in some favored localities made some money, and did much boasting. An uncertain crop at quarter of the former prices, is not the surest possible road to affluence. The man who grows all the best market varieties of small fruits will usually make money out of some of them each year.

Answers to Questions Nos. 16, 17, 18 and 19 in "Question Budget," by R. McKnight, Owen Sound.

541. (16) What is the proper temperature for the cellar in which bees are to be wintered ?

A temperature ranging from 40° to 50°.

542. (17) When should bees be removed from the cellar ?

Any time between the 1st and 15th of April. The state of the weather and the condition of the bees have much to do in determining the time.

543. (18) May bees not be left out-doors in winter, with some protection ?

Yes. More bees are wintered outside than indoors.

544. (19) What is full brood among bees ?

An infectious disease which attacks the larva of which they die and putrify in their cells. Foul broody hives emit a peculiar, offensive smell. Its immediate cause is the presence of *Bacillus albi*.

❖ Our Book Table. ❖

THE OLD CONCESSION ROAD, is the name of a small book of fifty-four pages, written by Thos. Laidlaw, and published at Guelph. It is a series of reminiscences of early days, written in somewhat interesting vein—though at times in rather a poetical strain, considering the prosy nature of some of the subjects.

CATALOGUES.

THE LINCOLN PEAR, a pamphlet concerning this novelty, sent out by F. S. Phoenix, Bloomington, Ill.

THE ROCKY MOUNTAIN CHERRY, a dwarf tree discovered in 1878, by Charles E. Pennock, nurseryman, Fort Collins, Col. He states that it is very hardy, enduring 40°, and exceedingly productive, a bush three years old, yielding in one case, sixteen quarts. Fruit, jet black, and in flavor akin to the sweet cherries. All this and more in the circular.

JAMES J. H. GREGORY & SONS' Catalogue of home grown seeds, 1893. Marblehead, Mass. A finely illustrated catalogue of seventy-two pages.

SEEDS. J. A. Bruce, Hamilton.—Steele, Briggs & Marcon, Toronto.—J. A. Simmers, Toronto.

TREES. Smith & Vanduzer, Winona.—A. G. Hull, St. Catharines.

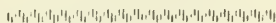
THE APPLE MARKETS.

Reports and accounts of sales of apples are to hand from Messrs. Woodall, J. C. Houghton, James Adam Son & Co., L. Conolly & Co., of Liverpool; John Seed & Sons, Hull, and others, all agreeing in reporting no advance up to the middle of January.

On the 18th, however, the market began to improve, and the following telegram came to hand from Messrs. Simons, Shuttleworth & Co.:

“Baldwins and Greenings 13/ to 16/ ; G. Russets 15/ to 18/ ; R. Russets 12/ to 15/ ; Spies 14/ to 17/ ; Kings 17/ to 20/ ; Spitz Seeks, C. Reds 12/ to 15/ ; Cranberry Pippes 16/ to 19/ ; Ribison Pippes 8/ to 11/. Some fancy fruit brought even higher than our highest quotations. Good stock in demand, inferior neglected, only the finest fruit wanted. The markets will not take any greatly increased quantities, and maintain prices.”

The reports from our American markets also seem brighter, so that it appears that those who have stored their apples will make some money by it. Messrs. Charles Richardson, Commission Co., of Buffalo, writes:—The apple market has developed more strength and we are looking for advanced prices towards February. From to-day's sales we quote Greenings, fancy \$3.50 to \$4 ; Spys, fancy \$3.25 to \$3 75 ; Baldwins, fancy \$3.00 to \$3.25 ; Russets, \$3. If there are any parties holding apples in your vicinity, will be pleased to have their names when you write us.



TELL'S CHAPEL, ON LAKE LUCERNE.



IN the year 1307, Gessler, Vogt of the Emperor Albert of Hapsburg (Austria), in Switzerland, set a hat on a pole, as a symbol of imperial power, and ordered everyone who passed by to do obeisance to it. A mountaineer of the name of William Tell, boldly traversed the space before it without saluting the abhorred symbol. By Gessler's command, he at once seized and brought before him. As Tell was known to be an expert archer, he was ordered, by way of punishment, to shoot an apple off the head of his own son. Finding remonstrance vain, he submitted. The apple was placed on the child's head. Tell bent his bow, and arrow sped, and apple and arrow fell to the ground. But the Vogt noticed that Tell, before shooting, had stuck another arrow into his belt, and he enquired the reason.

"It was for you," replied the sturdy archer. "Had I shot my child, know that it would not have missed your heart."

Tell was at once put in irons and taken in a boat across Lake of Lucerne. A sudden storm arose which threatened the little craft with destruction, until Tell was placed at the helm. Upon finally reaching the shore, Tell jumped out of the boat, which, by a great effort of strength he pushed back into the lake, leaving it to the mercy of the infuriated waves. Gessler and his party, however, were saved. Tell later on waylaid and shot the Vogt in a narrow mountain pass. For this act he was proclaimed by his countrymen as the liberator of Switzerland from Austrian oppression. The place where the little chapel is shown on the accompanying cut, is supposed to be the place where Tell reached the shore, when he made his escape from Gessler's boat.



TELL'S CHAPEL, ON LAKE LUCERNE.

J. W. ...
1852



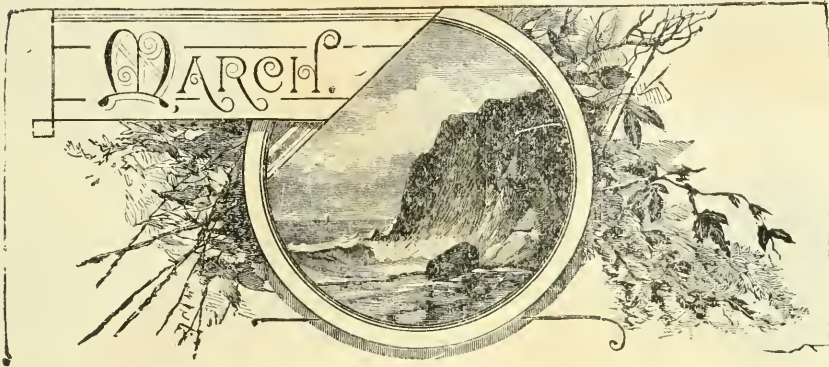
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McMAHAN APPLE.

THE State of Wisconsin has given us several apples of value, as Wolfe River, Pewaukee, McMahan and others, but none of them equal the latter in hardiness. At the meeting of the State Society, held in Madison, Wis., in 1890, Mr. Hatch, a fruit grower, stated that during the previous year he had raised three hundred bushels of fruit of this variety, and, in his opinion, it was very hardy and profitable.

Dr. Hoskins, of Vermont, writes us :—I have had this apple in free bearing for three or four years. It seems to be an annual bearer and very productive. It is also quite iron-clad, and the quality very good for culinary use. It comes on after Oldenburgh is gone and fills its place very well for family use, but in a commercial orchard quite a number of the large red fall Russians of the Apot family are dangerous rivals, as they, though not quite so productive, or sure, are much fairer in appearance, and not inferior in quality. In most markets a red apple will out-sell a yellow one of the same size, season and quality.

Mr. Craig, of Ottawa, reports that the McMahan was exhibited at the last meeting of the American Pomological Society, Washington, where it attracted much attention and favorable comment, owing to its large size and golden, waxy color with a bright blush on the sunny side. He says the tree is strictly hardy at Ottawa and exceptionally vigorous. The fruit may not be

suitable for distant shipping, but the planting of this variety should certainly be encouraged in the north.

The following is a description of the apple : Tree, vigorous, healthy, an early bearer. Form of fruit, large, round-obvate ; Calyx partially open, set in a deep cavity, sometimes a little corrugated. Stem short and rather stout, set in deep, narrow and more or less russeted basin. Skin white or pale lemon yellow, more or less marbled or splashed with red in the sun. Flesh white, fine-grained, acid, tender and almost melting. Season, early winter. Quality very good for cooking.

GIRDLING GRAPE VINES.



R. JOHN BURROUGHS, of the Hudson Valley, writes in *American Gardening* on this subject as follows : My opinion of the practice of girdling grape-vines is, that on the whole, it is poor business. Grape-growers, I fear, are killing the goose that lays the golden egg. If all take to girdling, where is the advantage? It is like the crowd all getting up on chairs at the show ; what better off are they? Girdling hastens the coloring up of most varieties of grapes, but hastens the ripening very little, while it distinctly injures the quality of certain kinds. Girdled Delawares are uneatable. People who buy them probably lose their appetite for Delawares for some time. They are as sour as vinegar. Red grapes seem to be injured by girdling more than black ones. Girdled Niagaras are large and pleasing to look upon, but their quality is not equal to the ripe ungirdled fruit. Moore Diamond is ruined by girdling. Wordens are not increased in size by girdling, but they color four or five days earlier. They are, however, much more liable to crack, as are all other girdled kinds. Fruit on a girdled Moore Early is larger and earlier, and the quality is not much injured, but it may crack badly. A vine heavily loaded will not ripen its fruit any earlier by being girdled. Girdle other kinds if you will, but when you come to the Delaware, hands off !

Mr. Jabez Fisher, Mass., also says : I cannot avoid the conclusion that wherever a grape-vine will fairly ripen fruit by natural processes, girdling is an operation that cannot be commended, certainly not for its commercial results. Its disadvantages are greater than its advantages. The fruit possesses no attractions for the connoisseur, and one year or more must be given the vine to recover from its effects. It is possible that in some situations or circumstances where the seasons are not long enough to ripen the fruit naturally, a crop might be saved by girdling if the grower were willing to devote the succeeding season to generous feeding, without production of fruit, in order to fit the vine for a crop in alternate years. I doubt somewhat if even this is feasible, as my vines girdled in 1890 have not yet fully recovered.—*American Gardening*.

WESTERN NEW YORK FRUIT GROWERS.—I.



THE writer was in attendance at the recent meeting of this, in many respects, the most important Society of its kind on the continent. The fruit-growers of the western part of New York State have always taken the lead in their favorite industry, and the discussions at their meetings are always inspiring and profitable to us in Southern Ontario, where the conditions are so similar to theirs.

The meeting was ably presided over by Mr. W. C. Barry, son of the late Patrick Barry, who so long and so ably filled this position. Unfortunately, we were too late to hear the President's opening address; suffice it to say he is a worthy successor to his father, an educated man, being a graduate of Rochester University, and is an excellent French and German scholar, by means of an extended course in Germany.

PEACH CULTURE.

An important address was given before the Society by the Hon. J. H. Hale, of South Glastonbury, on "Peach Culture." Mr. Hale has made himself famous throughout the whole of the United States by his enterprise in this industry. Early in his experience he learned that where peach trees were fertilized with stable manure they nearly always became subject to the yellows, and that where commercial fertilizers were used there was much better success. In the application of these he had found that the less nitrogen and more potash that is applied to the soil the more healthful are the trees. During the last seven years an orchard of thirty-five acres has yielded him over sixty thousand dollars worth of fruit. This was a source of no small gratification, in view of the great amount of harsh criticism that was showered upon him concerning his apparently reckless adventure, in planting so freely of fruit of uncertain yield.

In Connecticut, as with us, the greatest difficulty is the winter-killing of the buds.



FIG. 510.—W. C. BARRY

Mr. Hale believes that he has, to some extent, avoided this danger by his methods of pruning. He prunes annually, shortening in the first year about two-thirds of the young growth, aiming to produce trees with low spreading tops, and with open heads, but, after they have reached the bearing age, he trims for fruit without so much regard to the symmetry of the tree. He does this work in the spring of the year, just as the fruit buds begin to swell, because at this time he can discern the live buds, and the great point is to so prune as to avoid cutting them off.

He believes in thinning peaches. He sets boys and men at work taking off the surplus, leaving no peaches nearer together than six inches; he frequently removes one-half the fruit. In this way he believes that he gets just as many baskets of peaches, and much larger samples; for instance, instead of two hundred small peaches in baskets, he gets them of such a size that from sixty to one hundred fill a basket. The trees in this way are less exhausted, it being a well-acknowledged fact that the production of seeds exhausts the tree of its strength more than the production of fruit.

In cultivating his peach orchard his method is to plough shallow in early spring, and keep the orchard cultivated until the first of August, after which he ceases this work in order to allow the wood to mature well before the cold weather.

In harvesting his peaches, he does not believe in gathering them green, before they have attained their full color and excellence of flavor. As fast as they are picked from the trees they are taken to the packing-house, and Mr. Hale attaches great importance to the proper method of doing this work. Indeed, he attributes his success largely to his honest methods of packing his fruit. He makes three classes of his fruit, and labels them with tags of three colors, red for extras, white for first-class, and blue for seconds. In the extras, peaches are rejected measuring less than $2\frac{3}{4}$ inches; in first quality, those measuring less than 2 inches; while the third quality are marketable peaches, below the latter size. The work is done by young ladies of taste, whom he pays liberally. The instructions are, that no better fruit is to be put on the top of the basket than may be found in the bottom, and this is guaranteed to all buyers.



FIG. 511.—J. H. HALE.
A typical Connecticut Yankee.

When the crop is ready for sale he visits the leading fruit merchants of the various cities of his State, especially those who cater to a fancy trade, he explains the system upon which his peaches are graded, that they are to be sold at a price

quite above that of ordinary peaches not graded. As a result, Mr. Hale states that he has received for his peaches from fifty to seventy-five cents more per basket than the ordinary prices.

Speaking of varieties, Mr. Hale stated, that while early varieties, such as Alexander, are perhaps more hardy than others, there was little demand for them in our markets, and little money could be made out of them. He believes the best early peach of hardy character is the Mountain Rose.

Of yellow peaches the most hardy is Hill's Chili, and with him it has only failed to fruit twice in twelve years; but in order to do well it needs to be carefully thinned. In his opinion it is the best canning peach in America. The Wonderful is a seedling peach which at first promised well, but since it has been propagated by budding, it has proved to be only a poor Smock, and a failure in most places.

In answer to a question regarding the amount of fertilizers to apply per acre, Mr. Hale said that he uses an average of 1800 pounds per annum, in the proportion of a pound of potash to two pounds of bone meal. He believes in applying the elements separately according as the land seems to require.

SMALL FRUITS.

During the discussion upon this subject, a member stated that he considered stable manure best for currants and gooseberries, that it should be applied in the fall and cultivated in the next spring, but one should be careful not to apply too much. Others stated that, in their experience, wood ashes gave better results with these fruits. The statement of a Michigan fruit grower was quoted to the effect that he has received \$800 for his crop of Downing gooseberries off one acre, picked and marketed when ripe. The Downing has this advantage, that when ripe it was still green in appearance, and suits the market, at a date when others do not. A gentleman present stated that he has experimented in growing gooseberries on two kinds of soil, one stiff upland, the other a low gravel. On the latter they had failed completely, but on the stiff land they had yielded freely.

Prof. L. H. Bailey said the leaves of currant bushes should remain until about the month of October, but usually they drop much sooner, owing to mildew. This early loss of the foliage very much lessens the next year's crop. He would give the preference to the Cherry currant, because the Fay is more capricious in bearing, and more inclined to split. The leaf blight coming about midsummer, must be kept in check, or currant growing will soon become unprofitable. He agreed with the previous speaker that the Downing gooseberry is profitable, because it can either be picked green or else be left until ripe, and still be sold as a green berry.

Mr. Johnson, of Peruville, gave an address on the "How to make growing small fruits profitable." In his opinion, a great secret was to apply manure in

quantities that might be called quite excessive. He believed in planting blackberries and raspberries so that they could be cultivated two ways with a horse, thus saving a great amount of labor. He made several good suggestions to strawberry growers. His plan for mulching was to sow corn between the rows, somewhat late in the summer, which, in the fall, is bent down and left as a mulch to protect the plants.

BLACKBERRY CULTURE.—A good paper was given upon "The culture of the blackberry." The writer stated that he had found an almost gravelly loam well adapted to the cultivation of this fruit. In planting, his plan is to plough a furrow and set the plants in it from two to three feet apart. The tips are pinched back every summer when they reached a height of two feet. The prices of blackberries had averaged him about 12 cents, and at this price he found them the most profitable of small fruits. The varieties he would recommend are the Ohmer and Snyder. Mr. Hooker stated that the Ancient Briton is an old variety, hardy and productive, about the size of the Snyder, but the latter is, in his opinion, the more profitable. The larger kinds, such as Kittatinny and Minnewaski are not hardy with him. The Agawam is an early and popular berry, especially where a special market has been made for it of appreciative consumers who know its excellencies. Mr. Hale said that he had grown the Early Cluster, but had found it a poor berry. The Snyder is a success with him, but its fault is an inclination to overbear. He had tried thinning his Snyder berries with shears in blooming time, and again when the fruit was about two-thirds grown. The result was larger fruit, and nearly as much in quantity. Though the fruit is somewhat poor in quality, it has a beautiful appearance and sells well, but the Minnewaski is destined to be the best blackberry for the north. Wachuset is among the best blackberries in quality, but it is a poor bearer.

In an address afterwards given by Mr. J. H. Hale, on the subject of "Small Fruits," he stated that he believed that the ventilation of small fruit baskets, as commonly practised, is a mistake. They should be kept in a cool room until the time for shipment, and then packed in tight, close boxes. In this way they carry better, and look better when they reach the market. In order to accomplish this, it is necessary to have a cool room in which to keep the fruit temporarily until the packing time. The great secret he believed to consist in liberal cultivation and liberal feeding. It is a great mistake to grow too many plants; narrowing down the rows would aid in the production of finer and larger berries. He did not believe in the old plan of making hedges of our blackberry and raspberry plants. He prefers them to be so planted that they would be cultivated in two ways with the horse. He is careful to grade even the small fruits; and though, of course, this could not be done in the same way as with the peaches, a good deal could be done by the pickers if provided with two baskets, one for the first class and one for the second class fruit. He had found

it a good idea to print cards with the name of the grower, his farm, and a description of the fruit, and to place one of these in the bottom of each basket of small fruit. This would produce inquiry among the consumers for the fruit grown by such a shipper. He was decidedly in favor of using chemical manures for small fruits, because the barnyard manure encouraged too rank a growth of foliage. The chemical fertilizers give a firmer, a more highly-colored, and better flavored berries.

MAKING A HOT-BED.

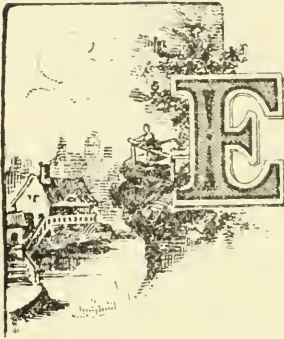


THE situation for a hot-bed should be well sheltered from the north and north-west, and the beds should face the south or south-east, in short it should be a warm sheltered spot. Hot-beds are of two kinds, namely, above ground and under ground. A pit in the ground is a saving of manure and also of surface covering, but in the case of low or heavy lands where the water would be likely to drain into the pit and cool the manure, the hot bed should be made entirely above ground. Where the land is sandy, gravelly, or otherwise well drained, and there is no probability of the water lodging in the hole, the pit is the most economical method and the easiest worked.

As fermenting material there is nothing better than good fresh horse manure, well wetted in the stables. Throw it into a pile in a sunny place or under a shed to heat, and when it has got well warmed up turn it over, shaking it loose and mixing it well and see that it is all moist. Then pile it up till it again gets hot throughout. Now make up the beds. Throw the hot manure into the pit, shaking it up and spreading it evenly as you go along, and tread it down firmly, especially under the rafters along the sides of the pit and in the corners. Fill to within 10 or 12 inches of the surface. Now put on the sashes and keep them tight till the heat again gets strong; cover up with mats, straw or shutters at night, but let the sun shine on the sashes in the day time, it will get up the heat quicker. When the heat is well up throw in the soil spreading it equally all over the bed and four to five inches deep, and neither sow nor plant in it till the heat of the soil three inches under the surface has declined to 100°. Then all is safe.

Points to observe in making a hot-bed: Select a warm, sunny, sheltered place; make provisions for quick and effectual drainage from the beds both under ground and from the surface: never put in the manure till it is quite hot; when the pit is filled with manure and it is packed down, never put on the loam till after the manure has again become quite hot; don't sow or plant till the heat is on the fall; and so long as "steam" gathers in the frame ventilate a little day and night to let the "steam" escape, else the ammonia will burn the plants. But you can cover these ventilating apertures with straw or matting in such a way as to let the ammonia escape, and at the same time keep out the cold.

GOOD RESULTS FROM SPRAYING.



EXPERIMENTS in spraying have been carefully made under the supervision of the United States Department of Agriculture. The work has been executed by the Geneva Experiment Station; in New York State; by Professor Taft, in Wisconsin, and by the Department in the vicinity of Washington. The object was to learn the comparative efficiency of the various fungicides, and the frequency of application necessary to insure the best results. The conclusions appear to be in favor of the Bordeaux mixture as the most effective remedy, and of early applications.

The formula for making the Bordeaux mixture, full strength and half strength, is here given :

BORDEAUX MIXTURE, FULL STRENGTH.

Copper sulphate.....	pounds...	6
Lime (unslaked).....	" ..	4
Water.....	gallons..	22

BORDEAUX MIXTURE, HALF STRENGTH.

Copper sulphate.....	pounds..	3
Lime (unslaked).....	" ..	2
Water.....	gallons..	22

The full-strength Bordeaux mixture will probably be no longer used, as the half-strength preparation has been found to be equally effective.

As an example of the benefit of the use of this mixture, Fig. 512 shows two bunches of grapes (*a*) treated with Bordeaux mixture one-half strength for black rot, and one (*b*) not treated. The latter is almost ruined with the rot, while the former is nearly perfect. These are not picked samples, but chosen out of many similar ones.



The benefit in the case of apple scab is also very evident. Fig. 513 shows the average results of three sets of eight apple trees treated for scab with copper carbonate and Bordeaux mixture as shown. The fruit, when harvested, was separated into first, second and third qualities, and the proportions are indicated in the engraving, white showing first quality, lines second quality, and black the third quality.



FIG. 512.

Figs. 514 and 515 show the benefits gained in treatment of plum leaf blight

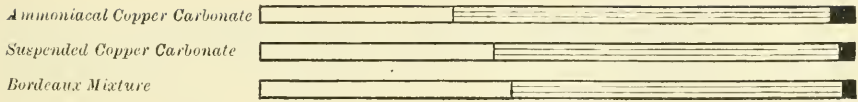


FIG. 513.

in nursery rows at Geneva, N. Y., by the use of weak strength Bordeaux mixture ; from photographs taken September 19th, 1892, one showing a representative sec-



FIG. 514.—UNTREATED.

tion of an untreated row, and the other, the same of a row that has been sprayed early. The first application was on May 21st, the second on June 3rd, and the third on June 24th. Other treatments followed later.

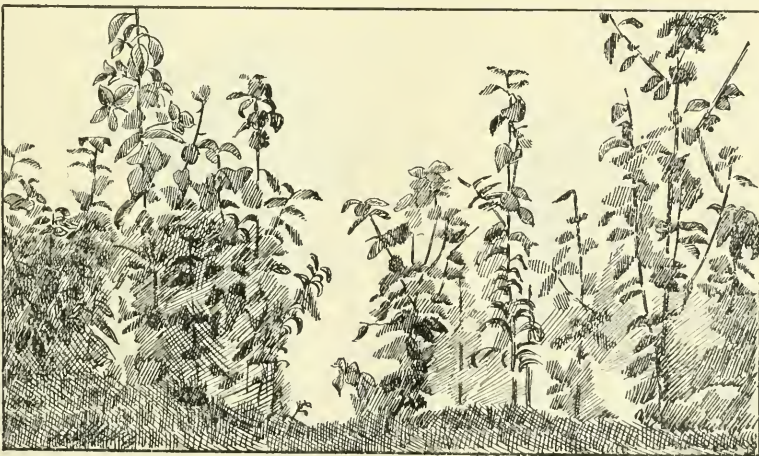


FIG. 515.—TREATED.

The success in treating quince fruit spot, a most injurious fungus, is shown in Fig 516. when the number of applications of Bordeaux mixture is shown. The white or blank portion of the bars represents the percentage of fruit free from spot ; the portion marked with lines slanting to the left, that lightly spotted,

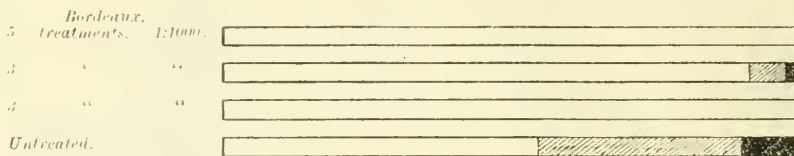


FIG. 516.

or second quality ; and the black portion, that badly spotted. Each 1/32 of an inch represents one per cent of fruit. Surely such careful experiments and such uniform results as these should at once settle the whole question of spraying our orchards and vineyards with copper mixtures, and lead every one who is engaged in fruit growing as a business to use them freely.

For a small quantity of Bordeaux mixture, the following formula is given :

Copper sulphate.....	ounces ..	4
Lime (unslacked).....	" ..	4
Water.....	gallons ..	7½

As to the time of application, it would appear that the Bordeaux mixture is useless before the foliage appears, but should be applied as soon as possible thereafter. It is also shown from this report that one treatment with a simple solution of sulphate of copper (1 lb. to 25 gals. of water) in early spring, say March or April, reduces the amount of scab quite noticeably.

In one instance copper carbonate in suspension was more effective than the ammoniacal solution, but this can hardly be accepted as true in all cases as yet. If it were true that the two powders, Paris green and copper carbonate, would serve every purpose applied in conjunction, a great amount of labor and expense would be saved. Professor Taft, the experimenter, found that the Bordeaux mixture was more effective than either form of copper carbonate, but whether enough difference results to make up for the increased expense may be an open question.

Wolf River Apple.—Inquiry is made of this large and showy apple for its value for general planting and for its hardiness. It is believed to have originated from seed of the Alexander, well known as a very large Russian fruit which is hardly up to second quality. Dr. Hoskins of Northern Vermont, who has given much attention to hardy apples, says it is not nearly as hardy as the Alexander, as a severe winter killed every Wolf River tree to the snow line. In other localities in Vermont it has not been injured. It may become a good market fruit, handsome in appearance, and valued in localities where a refined flavor is not wanted.

THE PEAR TREE PSYLLA.



WE briefly referred to the pear tree psylla, in our report of the Rochester meeting, as being one of the most dreaded enemies of the pear grower. It was imported from Europe upon some young pear trees in 1832, by Dr. Plumb, of Salisbury, Conn., and it has gradually spread over the United States until it has reached the Mississippi Valley, and it is quite abundant in some parts of New York State. Mr. Powell, an extensive fruit grower of Ghent, New York State, reports that in 1892 these insects reduced his

pear crop from an estimated yield of twelve hundred barrels to an actual yield of less than one hundred barrels of marketable fruit. The indications of its presence are the stunted growth of the trees, withering of young shoots, sickly appearance of the trees, the leaves turning yellow and the fruit stunted in growth, which after midsummer fall from the tree. A fluid, called honey dew, accompanies their presence upon the trees.

Mr. Slingerland, who published a bulletin from the Cornell Experiment Station upon this insect, states that an orchard which he visited in November, 1891, presented a deplorable appearance as though scorched by fire.

Fig. 517 represents an immature form of the insect, or nymph, and fig. 518 the adult form, much enlarged; the actual length being indicated by the line at the side. When first hatched, it is a translucent yellow, scarcely visible to the naked

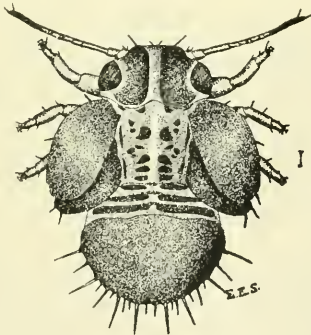


FIG. 517.—FULL-GROWN NYMPH,
DORSAL VIEW.



FIG. 518.—ADULT INSECT.

eye; eighty of them placed end to end would scarcely measure an inch. They gradually increase to nearly four times this size. In about a month the nymph changes to the adult insect, the full-grown nymph very much resembling a

Cicada, except that it is so small that nine of them placed end to end would only measure an inch. The general color is crimson, with broad black bands across the abdomen. The insect hibernates in the adult stage and deposits its eggs in early spring in the creases of the bark and old leaf scars. About the 18th of May the most of these insects are hatched out, and the minute nymphs soon find a suitable hiding place where they set to work sucking the sap with their short beaks.

We fruit growers in Ontario must be wide awake this coming spring, for should this insect suddenly swarm in our orchards, it will utterly destroy our prospects of a crop. Fortunately, it has been discovered that the nymphs are exceedingly sensitive to the effects of kerosene emulsion. The formula experimented with was one-half pound of hard, or one pint of soft, soap, one gallon of water and two gallons of kerosene. This was diluted with twenty-five gallons of water, and it was found that every nymph was killed soon after its contact with this emulsion. A safe plan will be to spray our trees in the early spring, just after the leaves have expanded, with this preparation; probably the two weeks succeeding the 15th of May will be the most suitable time. If done faithfully no further danger from the insect need be feared for the season. Our report for 1892 contains a carefully prepared article by Dr. D. W. Beadle, descriptive of this insect.

TREATMENT OF WINTER PEARS.

Mr. W. C. Strong, of Massachusetts, makes the following remarks on this head in the *American Garden* :

“Our treatment of the fruit is simple. The picking is done on a clear, dry day, into bushel boxes, as late in the fall as the weather will admit. The fruit is then stored in a cold, rather moist, cellar. If the temperature can be kept near the freezing point, even the Lawrence may be kept along through January and the Josephine into May. As the fruit is wanted, either for the table or for market, it should be placed in drawers in a warm room for about tea days before it is used. This will hasten the ripening process, and secure the right flavor in the fruit.

Winter pears will never be abundant, nor will they be wanted in large quantities, as in summer or autumn. They are a luxury, wanted mainly as a dessert fruit. If the culture and the care are given which will insure highest quality, there is every reason to believe that the demand will fully equal the supply, and at remunerative prices. The very fact that special care is required to prevent the fruit from shriveling and bring it to perfection will so limit the quantity in the market that larger profits will often be realized than with earlier varieties.

MANURING APPLE ORCHARDS.



ORTICULTURISTS and farmers are finding out that it pays them to use an occasional application of bone and potash manure in the orchard. When the apple trees get into full bearing, manure may be applied pretty freely without much danger of making wood growth rather than fruit. The paler green of the leaves in bearing apple trees, as compared with those not bearing, shows the tax on vitality which fruit productions cause. It shows probably in the case of most old trees the inability of the roots to supply food for the present crop, and anything besides that prevents the formation of fruit buds for a crop another year. In other words, if the soil were made rich enough a partial or full crop of fruit might, accidents accepted, be looked for every year. Some apples trees do bear every year but they are chiefly of the summer varieties, that mature early enough to allow time for the production of fruit buds afterwards.

In some localities there are off years for apple bearing, and the trees are generally fruitless. The fall and early spring is the best time to manure these non-bearing apple orchards. A dressing of manure, spread on the surface in the fall or early spring, will work its way through the soil by rains and melting snows the coming winter and spring. Nothing will or can be lost, for apple tree roots go down so deeply that leaching beyond their reach is hardly possible. It is not merely or chiefly under the trees that manure should be spread. Apple roots extend very widely. Years ago in digging an underdrain through a rich spot were found roots that grew fully four rods away. Whether the roots extended as widely in every direction we do not know. Probably if not interfered with by other trees they did.

Stable manure is a complete fertilizer for crops that grow mainly to leaf and stalk, but it is not a full manure for grain, and still less so for fruit trees. In naturally fertile clay soils the carbonic acid gas, caused by decaying manure in the soil, will make soluble some portions of inert potash which all clays contain. But even here potash salts or hardwood ashes will be useful, while on sandy or gravelly soils the addition of potash is always indispensable. Without the potash the trees will grow most luxuriantly but without fruiting. The potash is most necessary for the fruit at the time the seeds are being produced and the fruit is ripening. Without potash, the change from the sour and acrid juices of the green fruit to the ripe, melting sweetness of the same fruit when ripening would be impossible. Overloaded grape vines often suffer from lack of available potash, when the grapes hang for days and weeks, without change, upon the vines.

It should be remembered that years ago, when the soil was rich and insect enemies were unknown, apples were the most easily cultivated of all fruits, and the surest to produce a crop. They ought to be and may be made so again. With

the right proportion of various plant foods properly administered, apple growing ought to be the most certain and successful business known, instead of being, as it has become, the most uncertain. We know now how to destroy or guard against insect enemies and it only requires the proper manures to make the apple crop one of the most profitable crops of this country.

W. A. FREEMAN.

Hamilton, Ont.

PROFITABLE STRAWBERRY GROWING.



fertilizing the strawberry remember it feeds from near the surface, and, as a consequence, is easily winter-killed. Therefore, to make success sure it is best to well under-drain a piece of land to carry off the surplus moisture in the fall and spring. The soil should be moist but not wet. Under-drains are fully as valuable in dry as in wet weather, as they prevent, in a measure, the evaporation of moisture from the soil. A soil that will produce a good crop of corn will produce a good crop of strawberries. I would recommend a good clover sod, heavily fertilized with good stable manure. Turn this under and plant to corn, which will taken off fertilizer than any other hoed crop. After the corn is taken off, plow the ground, have the plants ready in the spring and set them in rows four feet apart. Grow them in what is known as the "matted-row system," not allowing the rows to spread more than 16 or 18 in. Keep the cultivator going and the ground free from weeds.

The second season you will obtain the best crop. Early in the spring, after the plants are large enough for you to decide, go in and take out the smallest, weakest crowns. When the crop has been harvested, put in the plow and turn under the whole mass. Take off but one crop from a bed. Have a new bed coming on each year for next season's crop. If the rows are four feet apart, a row of beans may be grown between them the first season, but the ground should be well cultivated, the cultivator running within six inches of the crowns till the runners start to grow. When the runners have reached a distance of eight or nine inches on each side pinch or cut them off. As fine specimens and as large crops may thus be grown as by the hill system.

Potash is the best fertilizer for the strawberry and is most chiefly obtained from hard wood unleached ashes. Have them guaranteed to analyze at least five per cent. of potash and there should be at least one and a half per cent. of phosphoric acid in them. The vine and foliage require nitrogen and the fruit potash and phosphoric acid. The former will be more cheaply obtained from good barnyard manure, the latter from ashes and ground bone. Good Canada hardwood ashes may be brought for \$10 to \$12 per ton, and 50 bushels or more be profitably applied to an acre of berries.—GEORGE T. POWELL, in *Farm and Home*.

PROMINENT CANADIAN HORTICULTURISTS.—XX.

MR. NELSON J. CLINTON, WINDSOR, ONT.



NELSON J. CLINTON was born in Windsor, March 4, 1861. His father, the late Capt. W. R. Clinton, had the true sailor longing for green fields and golden fruits, and many years ago bought a small farm near Windsor, which he facetiously named "The Ranch." Here he delighted to spend his leisure, planting, pruning and improving, till the little worn-out French farm became a garden, and here

Nelson took his first lessons in horticulture under his father's care, and that of a Southern gardener; who not content with Northern fruits, essayed, with marked success, to grow sweet potatoes and peanuts.

After a course in the Windsor High School, he spent one year and three months at the Guelph Model Farm, an institution for which he has the warmest

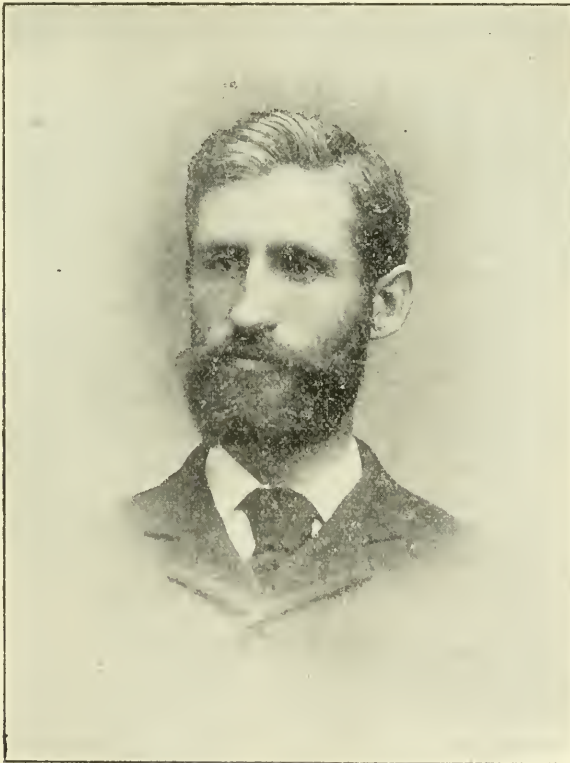


FIG. 519.—NELSON J. CLINTON.

regard and to which he is a frequent and welcome visitor. The "Manitoba fever" struck him soon after, but the climate was hardly congenial to his favorite pursuits. In 1884 he took charge of "The Ranch," growing fruits and vegetables for market, but making a speciality of apples and pears. As an adjunct to his orchard he has a large milk dairy and a herd of well-bred hogs.

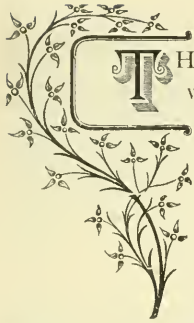
As a prize-taker in fruit Mr. Clinton is uniformly successful. In 1890, in competition with the best fruit of Michigan at the Detroit Exposition, he succeeded in carrying off three of the five first prizes and two of the second prizes for pears.

His papers on fruit growing, notably those read before the Ontario Fruit Growers' Association. The Dominion Fruit Growers' Convention, Ottawa, and the Ontario Experimental Union, are well-known. Mr. Clinton is a most successful organizer. Largely through him the North Essex Farmers' Institute was established in 1889; and to him, also, is due, largely the credit of the splendid success of the local management of the 1889 meeting of the Ontario Fruit Growers' Association, of which he is a director. In 1889 he was elected to represent the fifth ward in the Town Council of Windsor, and as chairman of the Market Committee he has succeeded in making the market accommodations among the best in Western Ontario.

Oiled Calico in Place of Glass.—Many use calico both oiled and unoled in place of glass. Anyone can easily prepare a calico sash as four strips of board nailed together with a cross piece as a brace, answers very well for the frame-work to which the cloth is tacked. For very early work this will not answer, but for later plants, after danger of severe frosts is past or in the south where there is but little winter, it answers every purpose. There are several market gardeners north of Chicago who make extensive use of oiled calico for growing vegetables such as cabbage, cauliflower and salads, using it in preference to glass during April, May and June, also to cover up cucumbers, tomatoes, egg plants, etc., which grow and crop within these same frames. The idea is that without glass as the sun gets power and yet is not warm enough for the plants to be without some protection, the calico covering answers the purpose very well. The important question with market gardeners now is how to grow vegetables cheap enough to compete with those from the south, and very extensive grounds can be completely covered with calico with comparatively little expense.

Beech Timber is especially adapted for subaqueous structures, or for positions in which it is not exposed to the action of the atmosphere. As fuel, the beech is very valuable, and is surpassed in heat-giving qualities only by the hornbeam and maple. The charcoal of the beech is highly esteemed on account of the equable heat which it emits. The bark is useful to tanners, and from the ashes of the wood excellent potash is obtained.

THE SAW-WHET OR ACADIAN OWL.



THIS district is notable for the many different kinds of owls which frequent it. Eleven distinct species are known to ornithologists here. Some of them are nearly as large as eagles, and occasionally play havoc with our domestic fowls when roosting on trees in the fall of the year. Other kinds are of very small size, and live chiefly on small vermin. The saw-whet is the smallest of all the owls, perhaps the smallest of all birds of prey which visit us here. In many respects he may be regarded as a curiosity. The first one I ever saw was

when one morning, about thirty years ago, a neighbor called my attention to what he said was a cat-bird killing a pigeon on his barn floor. There I found a little owl grasping with his talons the neck of a blue dove, about three times the owl's size, and nearly dead. It was only by physical force the slayer was compelled to let go his hold. So I slew him in order to procure his skin for preservation, for I strongly suspected him of being the murderer of some of my fine fancy pigeons.

Saw-whets are never very numerous hereabout, but last fall a few of them were observed in the orchards in this vicinity. They seem to have little fear of man, or, indeed, of any other animal. For a place of abode in the fall, they seem to prefer an apple tree; they perch close up to the trunk of the tree and will not fly until closely approached, and then will fly only a short distance.

It is well known they do not eat fruit, nor do they hunt for food in the day-time, hence we conclude they are in the orchards for the purpose of preying upon field mice during night-time. In winter they are often seen in barns or other farm buildings; there, of course, for the double purpose of shelter and food supplies.

On the cross-beam of a large barn, I lately saw one of these little owls surrounded by a multitude of English sparrows making a great noise, apparently trying to get the mysterious looking creature to make a movement, but there he quietly sat, seemingly quite unconcerned, knowing full well how easy it would be for him to procure supper and breakfast from among them after darkness obscured their visions. Probably that was the first time any of those sparrows had ever seen such a prodigy, for, although known widely throughout North America, they are not abundant in any locality. I have not yet met a naturalist who could tell me much about their habits, but it seems they are not migratory, in the ordinary sense of the word. I think, however, there can be no doubt



FIG. 519. —NYCTALE ACADICA.

that wherever they abide they destroy a great number of sparrows and mice. Being birds of prey, they do not come under the category of small birds, therefore, are unprotected by law.

They are a convenient target for boys practising with shot-guns, and for others who kill merely because killing affords them a pleasure. They breed but slowly; their nests—generally in a hole of a tree—contain only from two to four eggs. Therefore, they will never likely become numerous enough to combat the evil of the sparrow nuisance. Nevertheless, they are worthy of our careful consideration.

D. NICOL.

Cataraqui, Frontenac Co.

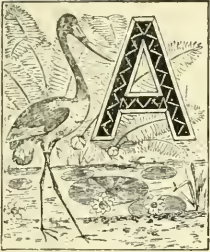
Hints on Mulching.—Inexperienced gardeners often fail to obtain the best results from mulching, and sometimes do more harm than good by a lack of knowledge of what to use and how to use it. The character of the plant is very nearly a reliable guide, as those which have their leaves at the time of covering, as spinach, lettuce, strawberry plants and others do not need to be covered very thickly or with anything which is likely to become matted under a covering of snow so as to exclude the air. As they breathe through those same leaves, which are the lungs of the plant, they are smothered if buried too deeply or with too close a covering. The more abundant their foliage the less the need of covering. In a locality where the ground is not likely to freeze and thaw very often there is less need of protection than upon a warm southern exposure. It is not the freezing that kills, but the fact that thawing in spring may start a new growth which will be so tender that it will be killed by another freeze. They also need to be protected from the direct rays of the hot sun when the thawing process begins.—Orange Judd Farmer.

New to Most Fruit Growers.—At the annual meeting of the American Horticultural Association Professor Budd, of Iowa, made a statement that was new to many in the matter of protection and covering as it applies to birds and insects. In this country there is no netting manufactured for the covering of cherry and like trees. In Europe they manufacture a netting for this special purpose, and manufacture it very cheaply.

The Iowa station the past year imported 1,500 square yards of this English netting, which cost in that country only one cent per square yard. That was the factory price, and the cost of transportation was one-half cent more per square yard. That netting is very durable and will be used at the station grounds over grape-vines and many other kinds of fruits. The netting is made with different sized meshes.—The Farmer's Call.

Plums should be gathered before fully colored, all wormy specimens and wind-falls discarded, and can be shipped successfully in peck boxes, twenty-four quart berry cases or the above named basket.

SOME ABUSES OF FRUIT GROWERS.



ALLOW me to draw the attention of fruit growers in general to the fact that there is a duty of 35 per cent. upon all spraying apparatus, such as knapsack sprayers, nozzles, and all other appliances of the sort. Apart from politics I do not think this should be so, as according to the horticulturist at Ottawa, and indeed to our own knowledge, no machine of any use is manufactured in Canada. I tried through our M. P. to have it altered last year, but without result. I should suggest that the President of the Fruit Growers' Association of Ontario should take steps to have the matter brought to the notice of the Government. I have orders for a number of Vermorel knapsack for spring delivery from England, and the price laid down in Ontario is \$12, and the duty is another \$4, a perfectly unnecessary addition to what is almost a necessity in the present day, in my opinion. I consider that under present circumstances fruit growers will be wiser to see what can be done to improve the quality of what they already grow, rather than trouble themselves about new plantations and more hardy varieties. Have you any statistics as to the employment of the Official Inspector of apples this season? His inspection will have to be made compulsory, it would appear, if Canadian apples keep their reputation, or I should say regain their lost reputation. Canada had the world's markets pretty well to herself this year, and a pretty mess has been made of the opportunity. Either the packers have been most criminally careless, or the English agents are a poor lot of sellers! I believe it is chiefly owing to the bad apples put up and to bad information as to the expected crops of apples and oranges. These were all said to be bad and they turned out larger than was expected (except U. S. apple crop) and in consequence the shipper gave too much money for apples. Our information as to crops of all kinds of fruit is most lamentably deficient, and I favor a member of the board of directors, or some trustworthy fruit grower, being paid to visit the chief fruit-growing districts to report. You would then get a true estimate from one man, whereas with these estimates from various persons in different districts you get a lot of views often diametrically opposed to each other. The writers are some of a gloomy disposition, some of sanguine, often a *very sanguine* disposition, others only just guess, whilst again others apparently are suffering from billousness! The consequence being, I submit, that during the last few years, in spite of the most praiseworthy efforts of the editor to get at the truth, the estimates have by no means been borne out by the crops. You have tried another most excellent innovation, namely, weekly market reports, but most unfortunately you were extinguished by the post office. Cannot something be done in that line this year? If the Society will print the reports, and have them *up to date*, I have little doubt that enough members would be willing to pay their own postage.

Another most pressing grievance I would crave space to comment on, and that is the disgraceful way the fruit growers are treated by the City of Toronto. There is no market, or rather there is a series of little markets, where our products are given away to any one who may happen to visit the place. At Geddes Wharf, at the dock where the *Garden City* arrives, and various other docks, and in a pokey shed in the Station. At any of these you are liable to find your agents either endeavoring to sell your fruit, or some one else's, whilst at the other places the fruit is trying to sell itself under a blazing sun! I trust some steps will be taken by the fruit growers to support the commission men in their attempt to get this thing arranged differently. It is a serious drawback to our industry and an indefensible expense to put upon our agents. I was unfortunately not able to go to Brantford, and do not know, therefore, if this subject was taken up or not. I had fully intended to lay both the want of a Toronto Fruit Market and the desirability of the removal of the duty on machines for spraying, before the meeting. As to the apple export, no doubt the matter will partially right itself, as the buyers have been badly nipped: but it will most undoubtedly be at the cost of the apple producers next year, as the price in the orchard is bound to be lower, especially if the United States has a crop, for what would have happened if they had had a crop this year? In the meantime, as you will see from the enclosed cutting from *The Times* (London, Eng.), others are up and doing, and our chances of a good market in March and April, in England, are now dependant upon how many apples Tasmania and New Zealand send. And why should their apples sell at an average of 10 per bushel box, whilst ours seldom average much over 15 for a three bushel barrel? Surely we have got something to learn in sending apples to Europe.

The trade between Australasia and the mother country in respect to fruit is also undergoing great developments, and, at the same time, helping, in the colonies at least, to solve the problem as to how to keep the rural populations in the rural districts. It dates back to 1885, the year of the Colonial Exhibition, of which it may be regarded as a practical outcome. Consignments of apples had previously been received here from Australia as ordinary cargo: yet, though they sometimes arrived in fair condition and brought a fair price, at other times they were found almost rotten, and did not realize enough to defray the charges. At the Colonial Exhibition, however, there were shown some apples which, brought over in cool chambers, were in absolutely perfect condition. This fact suggested the possibility of a great trade in Australian apples, which would reach here at the end of April or the beginning of May, and continue to arrive until the commencement of the strawberry season, thus embracing a period of the year when there would be no other apples on the English market. Arrangements were made accordingly, and some small consignments were received in 1886. More came in 1887, and in 1889 a fair trade was developed. In 1891, 130,000 boxes (each holding about a bushel, and weighing gross from 50 lbs. to 60 lbs.) came to hand, and the total for last season was about 200,000. For next season the whole of the available space in the cool chambers of the steamers (some of which load from 25,000 to 30,000 boxes at a time) has been already contracted for. Tasmania is the chief producer. The growers there have restricted themselves to about seven or eight varieties, which are precisely the descriptions best fitted for a long journey and for the requirements of the English market. The climate of Tasmania is perfect for the growth of apples, which attain there a beauty and a flavor hardly to be surpassed. As illustrating the great care taken to insure perfection of quality, it may be mentioned that the orchards are visited from time to time by a Government inspector, who, if he should find that any tree has been attacked by moth, has the fruit taken off and destroyed. From

New Zealand, apples have been coming for several years, the varieties being very fine in quality and size, but there were no large consignments until 1891, when about 8,000 boxes reached the market. Victoria has taken up the trade with a good deal of energy, and hopes to secure a substantial share in it in the course of a few years. Under the scheme already referred to, the Government of that colony offered bonuses for every acre of land brought under cultivation for fruit trees or vines, and for every hundredweight of fruit exported. They also send out experts to advise as to the selection of sites for orchards and vineyards, and as to the various processes of trenching, planting, pruning, packing, and shipping; defraying, too, as in the case of butter, all cost of railway transit, and even undertaking, if desired, to find an agent in London for the sale of the fruit on its arrival here. The result of all this, as regards the effect on the colony itself, cannot be better described than by giving the following extract from the official memorandum of last August:

The grant of £75,000 as bonuses to growers of grapes, fruits, and general vegetable products has been the means of greatly stimulating the vine and fruit industries; 1,047 applications for bonuses for planting a total of 9,468 acres of vines have been approved, and 925 applications for bonuses for planting 4,936 acres of fruit trees have likewise been granted, also 8 applications for 346 acres of general vegetable products. The objects of the grant are being accomplished, the area of vineyards and orchards having been increased from 40,419 acres in 1889 to 54,550 acres in 1891. Farmers, who formerly devoted all their energies to growing cereals and grazing stock, have added vine or fruit-growing to their means of making a livelihood, and, with the aid given by bonuses, and the knowledge imparted by the experts, vines and fruit trees are now growing in districts in which no attention had previously been given to such culture.

I am, sir, yours faithfully,

Suffolk Lodge, Oakville, Ont.

GEORGE BUNBURY.



FIG. 520.

THE GREENVILLE STRAWBERRY

Is a new claimant for the first place among profitable varieties for the market gardener. It is an accidental seedling and has been tested at several Experiment Stations with favorable results. Dr. Collier, of the Geneva Experiment Station, writes: "Our Bulletin speaks of the Greenville thus;—The Beder Wood, the most productive variety this season, is followed very closely by the Greenville, and as the Greenville has the advantage of being larger, would probably sell for more per quart than the Beder Wood."

Garden and Forest says of it: "The Beder Wood heads the list for productiveness, with Greenville, a seedling from Ohio, a close second; the fruits of which are so much larger and finer in appearance than the Beder Wood, that it is probable that the receipts from the sale of the yield of the two varieties would be in favor of the Greenville."

THE NIGHT-BLOOMING CEREUS.



In a late number we drew attention to the difference between the Phyllo cactus and the *Cereus* as bloomers, explaining that in many cases the one was taken for the other. We now give an illustration of the *Cereus grandiflorus*, or Night-blooming Cereus, a plant which has become famous on account of the immense size of its flowers and their great beauty. The engraving shows a young plant which, at three years of age, is said to have produced twenty-three flowers in one season.

There are a large number of *Cereus*, several of which are night-bloomers. They are natives, for the most part, of Mexico and other tropical regions.

Mr. Blanc, in his catalogue on cacti, says there is a great pleasure derived from watching the buds of the Night-blooming Cereus when they appear. At first certain parts of the stem will swell and gradually open, then a little woolly tuft appears, which may be a bud or a new shoot, and several days elapse before this is settled. Sometimes it takes about a month to open, and care must be taken when it gets to be about six inches long and becomes lighter in color towards the end, for many a flower blooms before the owner is aware of it, or while he is sound asleep. Generally they begin to open about eight o'clock in the evening, and it is very interesting to watch them. Really, you can see it move and expand, as it were, and when fully open the perfume is delicious. The color of the flower is a creamy-white inside, while the outside of it varies from white to reddish-brown, according to varieties. The flowers

only remain open from four to six hours, then gradually close. The flowers may be preserved for a long time in glass jars filled with alcohol and water.

To propagate it, get a cutting, tie it to a small plant stake about three inches above the lower end of the stake, taking good care to have the growing side up, insert this in a 3-inch pot filled with clean sand, placing a little moss or peat over the hole in the pot to keep the sand from running out. Let the cutting just

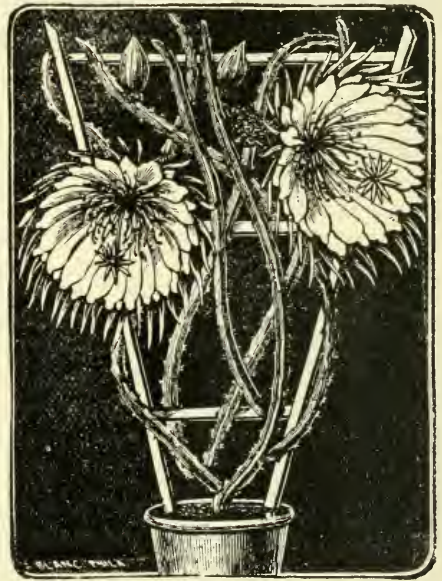


FIG. 521.—NIGHT BLOOMING CEREUS.

touch the sand and not be buried in it. Roots will form in about two weeks, and afterwards new shoots will appear. You may then shake the sand out and replace it with good, rich soil, one-fourth sand and one-fourth manure. In about eight days, set your plant in the full sun, water it well and let it grow until cold weather. Gradually withhold water, and during winter let it remain in a very sunny place indoors, where it will not freeze. If this place is very dry, water your plant about once a week.

Towards the end of March, when growth begins, water may be given more freely and the plant may be shifted to a larger pot where it can remain for several years.

TOMATO GROWING.



COMPARATIVELY few farmers have the advantage of a greenhouse or even a hot-bed to raise early plants for the garden. Tomatoes, the most prized of all vegetables, make too slow growth for summer use unless they are started earlier than they can be put in the open ground. Many think this a difficult task, but they are of such easy culture that almost any farmer's wife can raise a few plants in the house. A sufficient number to supply a family can be started in a small pan, or even an old tomato can is large enough to grow a dozen plants. There they will germinate and make rapid growth if care is taken to remove them to a warm place during cold nights. In the first warm spell after the second leaves appear they should be transplanted to larger dishes, setting them two or three inches apart, where they can grow until time to plant in the open ground. This course is preferable to putting the seed in a larger box, for a small dish is more easily cared for, and tomatoes need transplanting to make them grow strong and stalky. Set in rows and cultivate often with a knife.

Care must be taken that they are not kept too wet, especially through cold spells, or they may damp off. Another necessary precaution is to give the young plants plenty of air and "outdoor exercise" or they will grow too slender. Every pleasant day should find them out of doors in a sheltered location, and undergoing a toughening process to enable them to withstand the hard winds which they must inevitably meet later. Ten days before putting out run a knife between the rows close to the plants, cutting the roots somewhat. This will check the growth of tops and start a new root growth. Roots should not be long and tapering, but a compact fibrous mass. Such plants cannot fail to live and will even bear setting out on a sunny day without cover. Do not be discouraged even if you have been unsuccessful with early tomatoes heretofore. Try again. Plenty of sunshine, plenty of air, plenty of water in dry weather and not too much in damp, will insure plants that will repay the busy housewife for the care she has given them and supply the table with an abundance of delicious tomatoes in July instead of September.—The Nebraska Farmer.

ST. THOMAS NOTES AND COMMENTS.



ARTICLES sometimes appear in the HORTICULTURIST and there is nothing to indicate where the writer lives, and we cannot tell if what is said of any plant, tree or shrub is applicable to our locality or not. For instance, the article on the Best Six Kinds of Blackberries in February No. We are not told where the writer lives. Now, the best six kinds in South Carolina would not be the best in Minnesota, nor in Canada even, so I think a writer should always say something by which we could locate him. Speaking of kinds, I think six are too many best kinds of any kind of berries. I would cut down to three, at most: early, medium and late. In this section Snider is the leading blackberry so far. I am trying Ancient Briton and Agawam, and will be able to report on them later. In raspberries, Gregg takes the lead in blacks, though there are few grown: in reds, Cuthbert and Turner, and Golden Queen in yellow. In strawberries, there are more Crescent come on the market than any other variety, though a good many other kinds are grown.

In the communication from A. J. C., there is nothing to locate him to give me an idea if it is the winters that injure his raspberry canes. I have had canes act in the same way, and I laid it to the borer or to the action of the cold winter on canes weakened by the borer. If A. J. C. lives north, I would advise him to try Turner. It is the hardiest red raspberry I know of. It is soft, but for a near market or home use it is excellent, and when canned it holds its flavor better than any I have tried.

W. M., P. E. I., wants information as to a spray pump and the cost. I can't tell him just what kind to get, but I can tell him what kind not to get, and that is something in the direction he is trending. Don't get a cheap pump that is used in a pail, such pumps are a delusion and a snare, even for a few small trees; their nozzles are not calculated to do good work and they are inconvenient to use. I have had two, one costing me \$3, the other \$5. So I am out \$8, and have my spraying pump yet to buy. Also, beware of a pump that is good for everything. Like most patent medicines that make such claims, they are good for nothing; and further, any pump that has no return pipe to stir the liquid is incomplete. Get one with brass working parts, so it can be used for all kinds of solutions. I hardly think the best pumps are yet made in Canada; if they are, I have not heard of them. I intend this spring to get one made in New York State, and will know more about pumps this fall. A good pump will cost between \$12 and \$15.

A. W. GRAHAM.

St. Thomas, Ont.

PROTECTION OF ROSES IN WINTER.



THE article in the January No. CANADIAN HORTICULTURIST, on "The Protection of Roses," copied from the American Agriculturist, gives but little encouragement to those who are thinking of growing hybrid roses in Central Ontario, because of the plan described for winter protection being too complicated, too troublesome and too expensive. It may be, and no doubt is, necessary to use much greater care in protecting hybrid roses in Southern New York, Pennsylvania or Ohio, where the winters are open and unsteady, and, therefore, more severe on partially tender shrubs, than with us, where simple and less expensive plans answer every purpose; because of our winter weather being more even in its severity, and every thing near the ground is covered with snow the whole winter long.

For the encouragement of those who are growing, or purpose growing, hybrid roses in Central Ontario, I would recommend the plan for winter protection which we adopted twenty-five years ago, and which we continue to practice to the present, viz.: Lay a block of wood close to the bush, then bend the bush over the block to the ground and keep it there by laying one or more such pieces of wood on the branches; place a little pea straw on this, and then throw two or three branches of evergreen on top to prevent the straw being displaced by the wind before the snow falls.

We have now between twenty and thirty varieties of fine healthy rose bushes that have always been treated in this way, and have never lost a healthy bush.

Lindsay.

THOS BEALL.

PRUNING ROSE BUSHES.

SIR,—I have been experimenting for four years past in the management of my rose bushes, and the plan which I have found the most successful is as follows:—As soon as the spring bloom is over, I cut the blooming wood entirely out, which gives the roots a rest. They then soon throw out vigorous young shoots which bloom at intervals during the summer and fall, and by this practice I find them very much more easily packed down for winter protection. Instead of using any kind of litter, I find soil the best cover, as it does not harbor vermin as many kinds of mulch do. Ten years ago I bought half a dozen hybrid perpetual roses. One of these always made a poor growth as if stunted, until it received the above treatment, when it threw up half a dozen vigorous shoots. These I let grow about ten feet long when I cut them back one foot. They then threw out side shoots, which, the following year, had from seventeen to twenty blooms on each shoot, counting up to eight hundred and forty.

Parkhill.

MARY WADE.

❖ The Kitchen Garden. ❖

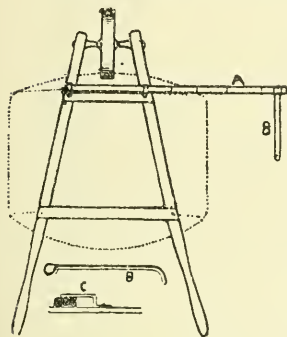
VEGETABLE NOVELTIES.



IN the past few years hundreds of new varieties of vegetables have been introduced by the leading seedsmen of Canada and the United States, many of which are inferior to the best of the old standard sorts, and he who invests his money, indiscriminately, in those untried, high-priced novelties, is almost certain to be disappointed in the result. Why is it we see in so many of the catalogues, pictures of vegetables so exaggerated in size and description, if it is not for the purpose of deceiving the inexperienced and thereby making them their dupes? Yet it would be unwise to accuse all seedsmen as guilty of untruthful representation, as there is a large, and, let it be hoped, increasing number, who are as honest and truthful in their descriptions of varieties as it is possible to be; and those are the ones who should receive the patronage of the seed-buying public. For the past six years I have been engaged in the market garden business, and in that time have tried, in a small way, many of the novelties in vegetable seeds, and among the many I have found a few that are decided improvements over the old sorts. I will mention a few of the most prominent: Among cabbages is the "All Seasons," introduced a few years ago by a prominent eastern seedsman has done remarkably well with me; another variety introduced last season, and called the "World Beater," gave me some wonderfully fine, large, solid heads. Another novelty introduced by the same seedsman as the last, and which has created quite a *furor*, is Burpee's Bush Lima bean, which, on account of the cold wet season, did not do well with me last year, but is undoubtedly a valuable addition to the list of Lima beans. I, last season, tried a small package of the Heroine peas, and from one season's trial, I have never been more pleased with anything I have ever tried; it is medium early, and was loaded with very large and well-filled pods of delicious quality. In tomatoes I have experimented with more than thirty varieties, and if I were to confine myself to what I consider the three best for market, I would choose Atlantic Prize, Matchless, and Optimus. There have been many new kinds of squash brought out lately, and among the best tried, and I think I have tried them all, is the Dunlop's Prolific Marrow, a decided improvement on the Boston Marrow, the Warren and Bay State. The new Chanteney carrot is a fine variety, as is the Oxheart. For a pickling variety, the Paris pickling cucumber fills the bill, but with me is not very prolific. The Arlington, among beets, with me, has beat the Eclipse, and the Sandwich Island salsify seems an improvement. If there is any one looking for a new potato, earlier than the Rose, handsomer and more prolific, let them try the New Queen; the Summit and the Lee's Favorite have given good satisfaction. There are other varieties of merit, among the comparatively new sorts that I might mention, but this article is, I fear, already too long, so will defer until some future time.

Setting Onion Plants.—Few things in market-gardening have pleased me as much as this onion plant business. We have pushed the plants pretty freely with guano; and if the tops get so tall as to begin to lop over, we shear them off. The onions are so tenacious of life that I have seen every one grow in a long row through a large field, when the planting was done by school boys so small that I feared they would not be able to do it successfully. The ground was fine and mellow, and as it was just after a rain, all that the boys did was to push the onions down into the ground with their forefingers, and then press a little earth on top of them. No matter how crookedly they stuck them into the ground, they all stood up straight in a few days. The ground was marked out for onion plants with a wheat-drill, running a good dressing of fertilizer into the ground at the same time that it was marked. We plant the onions in every other drill-mark.—Root's Gleanings.

Barrow-Marker.—A good marker to mark out small pieces of ground without a horse is made by securing a simple attachment to a wheelbarrow. Take a 2x2 inch stick, A, 4 feet long, or longer if desired, whittled down perfectly round to within one foot of the end to be attached to the barrow. Take a piece of strong hoop-iron and shape it as shown at B, making a ring to slip on the stick. Take two pieces of the hoop-iron, C, for holding the marker-stick in position in front of the first brace. Slip the iron on the marking-stick to the width desired for the row, and to keep it there bore a hole with a gimlet close to it on either side, in which insert an eight or ten-penny nail. The wheel will make a better mark than one would suppose, while the iron marks for the next row.—Farm and Home.



BARROW-MARKER.—FIG. 522.

Evergreen Seeds.—Seeds of Norway spruce may be gathered just as soon as the cones mature. The seeds may be sown in a cold frame in the fall and protected during the winter. They will germinate in the spring. They may also be sown in flats and kept under cover, being careful to avoid extremes of dryness or moisture.

THE MULBERRY, according to Bulletin 46, from Cornell, is quite undervalued. Though there is no demand for the fruit in the markets, it is well worth growing for home use, being valuable for dessert.

✻ The Apiary ✻

HINTS TO AMATEUR BEE-KEEPERS.—II.



CERTAIN appliances are requisite in the management of bees, if modern methods are to be followed. For the amateur, with his two or three stocks, these are neither numerous or costly. A veil, a pair of gloves and a smoker will suffice, if comb honey only be taken. For taking liquid honey an extractor is indispensable, but this may very well be dispensed with for a while. It will pay, however, to procure one, if as many as half a dozen colonies be kept. The veil, smoker and gloves need not cost

more than \$2. Smokers may be had from any supply dealer, at from 50c. to \$2 each, and cannot well be dispensed with. Some bee-keepers affect to laugh at the idea of using either gloves or veil, but it will be well for the beginner to use both, till confidence is established, and the dread and the effects of stings in a measure pass away. The fear of being stung, and the pain and swelling that follow, deter many people from keeping bees; but these are only temporary, and soon cease to be regarded with apprehension. Indeed most old bee-keepers prefer a bee sting to a mosquito bite, the latter causing them more inconvenience than the former. Some of your readers may consider this an extravagant statement, but it is nevertheless true. It is true in my own case, and true in the case of most bee-keepers who have manipulated bees for any length of time. The pain of the sting is as acute in the one case as it is in the other, but in both cases this passes away in a few minutes. With the veteran no appreciable after-consequences result—with the beginner, however, swelling usually follows, and frequently continues two or three days. In time the secondary effects gradually diminish, till the system becomes indifferent to the poison. Inoculation has then produced its full effect. Bee poison is as much a remedy against its own effects as the *virus* of the cow-pox is against the more malignant disease of small-pox. The use of veil and gloves, if properly made and worn, will effectually protect both the amateur and the veteran from being stung, and on the principle that prevention is better than cure, it will be well to wear them. Black is the best color for a veil, and silk tulle the best

material; but if this cannot be procured, mosquito netting will do. A piece two feet wide and eighteen inches long will make one.

How to make it. Sew it up the side in the form of a bottomless bag, put a wide hem at the top, into this hem run a piece of strong elastic cord, tie the ends of the cord, and the veil is made. How to wear it. Draw it down over the brim of an ordinary hat, till the elastic cord comes to the bottom of the hat band—that is, at the junction of the brim with the crown. Put the hat on the head, pull the bag-like veil over the face and neck, tuck its lower part under the vest or braces, and the face and neck will be secure against the attack of the most pugnacious bee. The brim of the hat keeps the veil out from the face and neck, so that entire protection is secured to those parts of the person. When gloves are worn, the material of which they are made should not be heavy, otherwise the free use of the hands will be impeded. Woolen gloves should not be worn, as bees are impatient of rough surfaces. Rubber gauntlets are sold by supply dealers, but they are not to be recommended, for many reasons. Whilst they are impervious to bee stings, they are too dear, and altogether uncomfortable. Besides, they soon rot from becoming saturated with perspiration, which is prevented from escaping by the character of the material of which they are made. A pair of old kid gloves are the best, all things considered. If a piece of cotton, wide enough to go over the coat or shirt sleeve, and long enough to reach half way to the elbow, with an elastic cord at top, be sewn to the top, or wrist, of the glove, and about an inch of the finger tips cut off, you will have the cheapest and best gloves for the purpose. The cotton addition, held in place by the elastic band, effectually protects the wrists, and prevents bees from crawling up the coat sleeves. The tips of the fingers protruding through the gloves gives as much freedom of action as if the hands were bare. The kid affords all the protection needed to the hands and fingers. Thus equipped, the most timid need not fear being stung, however much bees may be disposed to resent intrusion.

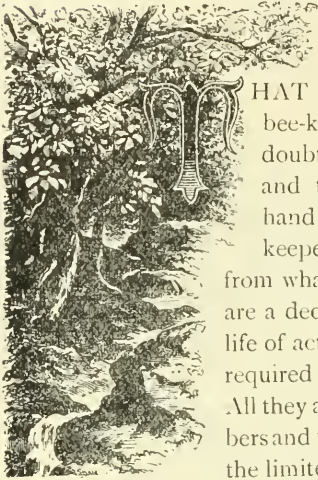
To secure absolute immunity, it only remains to draw the top of the socks over the bottom of the pants legs, and you stand forth master of the situation.

Owen Sound.

R. MCKNIGHT.

The Red Birch (*Betula nigra*), although perhaps hardly so quick a grower as our native species, is well worth attention, if only for the picturesque effect produced by the red bark during the winter months. In the Red or River birch the red bark hangs in thin, broad flakes from the stem and larger branches, and imparts a distinct and peculiar appearance to the trees—an aspect as different as can well be from that presented by the chalky-white, smooth trunks and branches of the Silver birch. The Red birch, in its native habitats along the low river banks in the United States, forms a medium, or rather large-sized tree; the wood is light-colored, and does not seem to be so valuable as that of some of the North American birches.

HORTICULTURE AND BEE-KEEPING.



THAT special reasons can be given why horticulture and bee-keeping may be combined to advantage, there is no doubt. That there is every reason why the fruit grower and the bee-keeper should be side by side and work hand in hand there is no disputing. True the bee-keeper rarely, scarcely ever in fact, secures a surplus from what we commonly call fruit bloom, yet their blossoms are a decided advantage to him. Bees, as they begin their life of action in the spring, gather honey and pollen which is required in the development of their brood and young bees. All they are able to gather, owing to their own reduced numbers and the limited amount of nectar in the flowers, or even the limited number of blossoms, is required for consumption in the hive. If the sources of honey and pollen is limited the bees will curtail brood rearing, and when clover, the first source of surplus opens, the colony is not strong enough to avail itself of this source, and we are unable to secure the best results from that colony. Fruit bloom then plays an important part in the building up of the colony, and indirectly an important part in the amount of surplus honey we may be able to secure. I propose now to turn to answer the question, In what way may bees influence our fruit crops? In what way may they be able to influence that crop and tend to make the crop more certain? This is no new subject, although we are continually receiving fresh light upon the question. In my remarks I will be largely indebted to Mr. Cheshire. Any one will find his work on Scientific Bee-keeping intensely interesting.

The honey bee has much about it to hold us in wonder and admiration, and were we by it benefited to no greater extent than it opened to us a wonderful study in regard to its habits, the construction of its various organs and the like. we would be much enriched, and in studying the created we would learn to admire and marvel at the Creator. But the honey bee has placed within the reach of all a food which is, with very rare exceptions, acceptable to all. It has an aroma peculiarly its own, medicinal properties which cannot be imitated, great nourishing properties, suitable alike to childhood, middle age and the aged, true, but especially healthful and beneficial for children. To get rid of worms, honey used in moderate quantities is an excellent medicine. For constipation it is excellent. We have then in honey a rare combination, a food pleasant to the taste, always ready for use, healthful, if used moderately, yet even daily, and, taken at its market price, even low in price, an economic food.

But all these are only secondary, and something the bee produces in a secondary way, shall we say as a by-product. Her first object, the primary object of her existence is to aid in the reproduction of plant life. The importance of the honey bee in this connection is beyond dispute. Testimony from those who were never financially interested, our greatest thinkers, those who have searched most deeply into those intricate questions, the testimony of these is overwhelming. Darwin alone has furnished sufficient evidence to satisfy almost any one. Insect life is required largely to distribute the pollen from flower to flower. It may be said that bees are not natural to our country, and why do we require the honey bee, a stranger, to carry on this work? Will not the insects of our country do this? The answer to such a question would be, that as at the time when our fruits require fertilization and their bloom is most abundant, we have comparatively few native fruit blossoms, *e.g.*, a few wild plums, cherries and strawberries, and for these our native insects might suffice. But when we come to our present condition, large orchards of apple, plum, cherry, peach, pear, and again smaller fruits, we have a condition not natural to our country, and an artificial condition in plant life requires a correspondingly artificial condition in the insect life. This condition we secure by means of the honey bee.

Of the construction of the parts of flowers I propose to speak in the next issue of the HORTICULTURIST. The evidence here is so conclusive that one would really require to look no further for evidence.

R. F. HOLTERMAN.

Brantford, Ont.





The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE DOUGLAS FIR, number *five* on our list of ornamentals for distribution, is a valuable tree. It grows on the Western slope of the Rockies, and is supposed to be identical with the Kauri pine of New Zealand. It attains great girth, is non-resinous and non-fibrous; in fact it is of bulbous growth. It is free from the defects of eastern pine and spruce, but lacks their strength. Mr. Hendry, an experienced saw mill manager in Ontario, says that in the sixties a British Columbia firm presented to Her Majesty the Queen a flag pole of this wood, 147 feet long, 14 inches caliber at the butt end, and 10 inches at the top, but unfortunately it broke when being placed in position at Kew Gardens. It is bound to replace sandal wood for tea boxes, and being capable of taking a fine polish, should become popular for cottage furniture. It is particularly adapted for stave wood for barrel manufacture, and for this industry, the Douglas firs of British Columbia will prove a mine of wealth.

ELECTRIC LIGHT, Prof. Bailey thinks, can be used to advantage in forcing some plants. Violets and daisies bloom earlier when exposed to it. Lettuce, especially, is greatly benefited by electric light. An average of five hours a day exposure of it per night, hastened maturity from a week to ten days, at a distance of ten and twelve feet. Even at a distance of forty feet the effect was marked.

TOMATO ROT.—Experiments made by Prof. Bailey, of Cornell, show that the rot of this fruit is influenced considerably by the method of growing and training. Single-stem training, usually lessens the rot, and so does any system of training which keeps the plant open and dry.

❖ Question Drawer. ❖

Best Apple.

510. SIR,—Would you name the best apple, good keeper and shipper, for me to plant in this section? Also name one or two, placing the best first. What do you think of the Ontario apple, Anjou pear, Tyson pear, and the Saunders plum?

C. B. MOORE, *Chatham.*

It is impossible to answer in a satisfactory manner a question such as the one proposed, because a variety of any fruit which is most thought of in one locality is not the one most highly valued in another, so much depends upon the markets, climatic conditions, soil, etc. The Ontario is certainly an excellent apple, and some place it at the very head of apples for export. The Blenheim Orange, where it grows to perfection, cannot be surpassed. The latter is a fall apple, but will carry well to Great Britain. The other varieties inquired about are all excellent.

Manure for Small Fruits.

511. SIR,—Which is the best manure for small fruits, such as raspberries, blackberries, currants, etc., bone meal or superphosphates?

JOHN STEWART, *Nanaimo, B.C.*

Reply by W. W. Hillborn, Leamington, Ont.

For small fruits I use all the barn-yard manure I can get. Am also using bone meal and wood ashes with good results; am also testing Truman's Small Fruit Fertilizer. Shall be able to report on that later on. This spring I shall try nitrate of soda, in addition to the other manures named above. Berries require phosphoric acid, potash and nitrogen. If the soil is deficient in any or all of these, they must be supplied to get large crops of fruit. From what I have seen, I think bone meal and wood ashes with nitrate of soda will give best results. I have not used much superphosphates, but did not get the results looked for from their use.

Hot Air and Hot Water Heating.

512. SIR,—Which is safest to use in a greenhouse where personal attention can be given it, hot air or hot water?

JOHN STEWART, *Nanaimo, B.C.*

Reply by D. W. Beadle, Toronto.

The sources of danger in hot air heating are found in the flue through which the smoke and gases are conveyed from the fire to the chimney. The possibilities of danger increase with the increased length of the flue. In a long

flue required to warm a large greenhouse, there is always more or less danger of the escape of gases, smoke and flame from cracking of the flue, caused by the expansion and contraction of the material of which it is made. The longer the flue has been in use the more liable does it become to such cracking. If the flue is short, because the house is small, then usually the heating surface is greater in proportion to the cubic contents of the greenhouse than in the case of a large house, and it does not become necessary to fire so hard in severe weather. Hard firing always endangers cracking of the flue.

In heating with hot water, the smoke and gases of combustion are not carried through, or even into, the greenhouse at all, but into a chimney outside ; hence all the dangers mentioned above are avoided. In putting the hot water pipes into the greenhouse, care must be taken to put in sufficient piping and to have the boiler of sufficient capacity, with proportionate fire-box, to heat water enough to warm the house in the very coldest weather without constant stoking. Care must also be exercised in laying the pipes to have a good fall to the return pipes, so that the flow of water shall be sufficiently rapid to keep up a good circulation, upon which the warmth of the house depends. The chief dangers in hot water heating lie in a false economy in the size of the pipe and quantity used, and in the capacity of the boiler.

Having used both flue heating and hot water heating, I unhesitatingly give the preference to hot water. But it may be that your inquirer does not propose to use a flue, but to supply hot air in a manner similar to the method of heating our dwellings. Of this method as applied to greenhouses I have no experience, nor knowledge from observation ; but I have yet to see this method of heating sufficiently perfected to exclude dust and gases, both of which are injurious to plants, especially the gases.

Prof. Taft, of Michigan Agricultural College, writes in *American Gardening* as follows : For all heating purposes, and under all ordinary conditions, hot water will be found more economical and satisfactory than steam, whatever the size of the house. This statement applies only when small wrought-iron pipe is used, and would need to be considerably modified for systems using the old-fashioned four-inch heating-pipe. The only valid objection against hot water heating is that the first cost of the plant is about 15 per cent. more than it would be if steam were used, but this is soon counterbalanced by an annual saving of 25 per cent. in the cost of fuel.

Nitrate of Soda for Strawberries.

513. SIR,—Would it be advisable and safe to top-dress strawberry plants with nitrate of soda, and what quantity should be used per acre ?

J. STEWART, *Nanaimo, B. C.*

I have used nitrate of soda as a top dressing for strawberries and consider it advantageous. About 200 pounds per acre, applied as soon as growth commences in the spring, will usually pay.—M. CRAWFORD, *Ohio.*

Nitrate of soda has not proved a special fertilizer for strawberries ; but in

connection with manure, it will aid in making a poor soil richer, applied at the rate of two or three hundred pounds to the acre. The same may be said of superphosphate. As soils vary, both these fertilizers are useful on some soils and of little value on others, and experiment must therefore be the test of their fitness. When nitrate of soda is successful, it is particularly adapted to plants of succulent growth, as for instance to cabbages, onions, carrots, parsnips, radishes and roots generally, and, in moderate quantities to grains, and to tomatoes and strawberries.—Country Gentleman.

Nitrate of soda can be used quite safely, put on at the rate of 150 to 200 pounds per acre, before the foliage starts to grow. The proper way would be to take it and spread on the barn floor, smash it down very fine and mix about twice its weight with plaster, or soil, and mix thoroughly. By treating it in this way you will be able to distribute it much more evenly over the surface.—W. A. FREEMAN, *Hamilton*.

Tool for Cultivating Strawberries.

544. SIR,—What is the speediest, handiest and best implement for hand cultivation of strawberries, and where manufactured?

I. S., *Nanaimo, B. C.*

For two years I have used the "Gem" cultivator, and think it the best, all things considered. It is sold by seedsmen generally. Mine came from The Storrs & Harrison Co., of Painesville, O. It cost \$4 and is likely to last a lifetime. Like all hand cultivators, it should be used with two men—one to pull and one to hold. The work that can be accomplished with this little implement is a surprise to most people.—M. CRAWFORD.

545. SIR,—Would some of your readers please write an article on the cultivation of palms? Nearly every house aspires to have one, but it is seldom one ever sees in a horticultural paper what soils they should have, and whether they will bear exposure to the sunshine.

L. H. K., *Collingwood*.

546. SIR,—Please name a list of hardy climbing vines suitable for the north side of a house in Cape Breton?

D. S. McD., *Mabou, Cape Breton*.

547. SIR,—What strawberries do you call the most prolific and the best for canning purposes?

THOS. FULLER, *Trenton, Ont.*

548. SIR,—How does the *Beurre d' Anjou* compare in hardiness with the *Flemish Beauty*?

R. B., *Montreal, Que.*

549. SIR,—Are there any sprayers made in Canada, and, if so, I wish they would advertise in the *HORTICULTURIST*?

Æ. A. J. COLLINS, *Listowel, Ont.*

550. SIR,—What is the name of the yellow barked willow that grows in the vicinity of *Hamilton*?

C. W.

❖ Open Letters. ❖

The Alexander Apple.

SIR,—I notice your recommendation of the Alexander apple in the January No. I do not think that it deserves all the credit there given it, except with regard to its size and beautiful appearance, which makes it desirable as a show apple. Its cooking and keeping qualities are so poor that I will venture to say that it will be hard to find a person who will buy a barrel of them a second time for his own use.

J. H. TOOL, *Orillia, Ont.*

The Sheldon Pear.

SIR,—You say the Sheldon pear is not suitable for planting north of Toronto, except under some particularly favorable circumstances. I have three Sheldon trees in my orchard, planted sixteen years ago, and they have stood the winter's frost as well as any of the others. They are the only trees I have which escaped the blight some ten years ago. They never showed the slightest trace of it, while other varieties growing around them perished. I endorse all you say as to the quality of the fruit, but they are shy bearers. Last year my Flemish Beauties were badly cracked and scabby. The Sheldons were as clean skinned as possible. Is there any remedy for the cracking of pears? About every alternate year I practically lose my crop of Flemish Beauties from this cause.

R. MCKNIGHT, *Owen Sound.*

[Try Bordeaux mixture.—ED.]

Prince of Wales—Stark—Beurre d' Anjou.

SIR,—In the November number you refer to Prince of Wales plum as "a novelty not yet tested except at Geneva." I have grown it for some years, and can attest to its excellency. It has been grown for several years on the grounds of Messrs. Geo. Leslie & Son, at Toronto, also, and that firm inform me that planters who tested this variety, invariably include it in any list of kinds wanted afterwards.

In question budget for February, page 74, question 21, "Would the Stark apple be profitable in Ontario," is asked. I reply, yes, if the market demand will be satisfied with a very poor flavored apple, poor as a cooker, and next to worthless for dessert. The tree is a good strong grower, an abundant bearer, and the apple good size, fairly colored, and sells in Britain fairly well. But the demand is growing for finer flavor in the apple, and my feeling would be in favor of choosing the better kinds in flavor, keeping in view hardiness of tree and bearing quality. In question 20, "Is Beurre d' Anjou as hardy as Flemish Beauty?" No, I think not, but in the general pear growing sections of the Province it is one of the most desirable kinds, and will succeed pretty generally in such sections.

ALEX. MCD. ALLAN, *Goderich.*

Hardiness of the Cuthbert.

SIR,—Ament the query of you correspondent, A. J. C., in the last number of the HORTICULTURIST, permit me to say that the Cuthbert raspberry is not hardy, and should be described in the catalogues as only half-hardy. We read about it standing a climate twenty degrees below zero without injury, but my experience of eight years with it in this locality has proved that it will not endure a temperature of ten degrees below zero without injury. On the other hand the Marlboro will easily withstand a temperature of twenty degrees below zero, and bear a full crop. The buds of the Cuthbert are tender, and A. J. C. describes a frost injured bud when he says that his failed to come out after trimming in the spring. Though not as high in quality as the Cuthbert and some others, the Marlboro is the safest and best red raspberry that I know of for the middle and more northerly sections of this Province. It is earlier than the Cuthbert, a heavy cropper, and will withstand our severest winters.

T. H. RACE, *Mitchell.*

Canada Reinette and Blenheim.

SIR,—I was pleased to see an article of the Canada Reinette, with illustration, in your January No. : it was correctly represented. I have a large tree of it, and I intend to get more. It is scarce in this section, in fact, unknown. I consider it one of our best apples. It is a good and constant bearer, large size, very good keeper, and the tree is a strong and thrifty grower. Both the Blenheim Orange and Kings have done well with me this year. The fruit is generally of good quality, and little damaged by the codling moth. I think the weather last spring was unfavorable for the moth, it being so very wet.

WALTER HICK, *Goderich.*

Nomenclature of Russian Fruits.

SIR,—If your correspondent states of the Bessemianka that it has small seeds, he makes a mistake. It has no seeds at all, or, if any, they are very feebly developed. In Germany it might be Samenlose, but it is not grown there.

There are several varieties of the Titovka growing in Russia, as, for instance, the Autumn, Winter, Light, Colored, etc. ; which one of them is called Titovka in America it is difficult for me to understand without seeing the fruit.

The finite "sky," as in Borovisky, Charlamovsky, Tetofsky, etc., are names received abroad ; here they are called Borovinka, Charlamovka, Titovka. Some sorts of Russian apples have been freely named in Great Britain, as, for instance, Count Orloff, Grand Sultan, Grand Mogul, Grand Duke, Constantine, Peter the Great ; but under such names nobody in this country recognizes them, and it has still more confused our nomenclature.

In St. Petersburg there has lately been formed a society of Russian fruit growers, which wishes to make in 1894 a large exposition of fruits in Russia, and at that time will call a congress for correcting the nomenclature of Russian apples. The president of this young, but active society, is the Grand Duke Nicholas, cousin of the Czar, who, notwithstanding his excellent position, is not only president of the society in name, but always is present at all the meetings.

One of the directors of this society, General Glouchovsky, is appointed chief of the Russian section of the Columbian Exposition. He is well informed, of an amiable disposition, and will not refuse to explain any questions which interest American pomologists in relation to our native fruits.

JAROSLAV NIEMITZ, *Wimmitza, Podolie, Russia.*

The Lucretia Dewberry.

SIR,—In the debate published in our report on the profitableness of the dewberry, you suggest that people living at the north should write you their experience for publication. When I first read of the dewberry I ordered a dozen plants, and put three of them in a clean bed of rich earth (an old onion bed). I neglected covering them for two winters and, in consequence, I got no fruit. On the approach of the third winter each root had grown from two to four large, ripe canes, with a great many of smaller ones, from twelve to fifteen feet long. After clipping off some of the weak and straggling tops, I raked all the canes together in as straight a row as I could, and covered them thickly with asparagus tops from an adjoining bed. The following spring the bed, two by ten feet, was quite a picture of rich green foliage, thickly dotted with large, pure white blossoms, and on the 10th of September when the last half-pint of fruit was gathered, the garden book showed that during the season there had been picked from these three plants nine quarts of the largest and most juicy blackberries I ever saw or tasted. From this slight experience, I think that the dewberry is worthy of a place in the garden, even if they do not pay for high cultivation. The other nine roots of the dozen I planted along the grassy bank of a small creek which runs through my garden, neglected covering them, and consequently nothing but rank growth of cane in the summer and freezing back in the winter. This winter I have them all thickly covered with asparagus tops and dry corn stalks cut from an adjoining bed, and nature had aided me by sending thirty inches of well packed snow on the top, and, therefore, I expect a good crop next year. The thermometer during the past two weeks has ranged from 20° to 30° below zero here.

F. W. COATE, *Cape Elizabeth, Rosseau, Ont.*

* Our Book Table. *

WISCONSIN FARM INSTITUTE BULLETIN No. 6 has come to hand from W. H. Morrison, the Superintendent. It is really a most creditable book. We know of no other State or Province where such a work is issued. In Wisconsin they hold from seventy-five to one hundred two-day institutes each winter, and at the close all the workers come together for a three days' conference, and a competent stenographer gives a *verbatim* report of this meeting. Bulletin No. 6, a volume of 256 pages, bound in cloth and carefully indexed is the result of this meeting. It contains a large number of interesting papers and discussions thereon on agricultural topics.

CATALOGUES.

ELLWANGER & BARRY'S ILLUSTRATED GENERAL CATALOGUE of fruit, ornamental trees and roses, etc., is a creditable one of considerable value as a book of reference. The Mount Hope Nurseries, Rochester, are now in their fifty-third year, and have a world-wide reputation. The catalogue is highly illustrated, and the descriptions are trustworthy. A supplementary catalogue is added, calling attention to some special varieties of roses and other ornamentals offered for sale.

J. A. BRUCE, Seed Merchant, Hamilton, sends us his Forty-Second Annual Spring Catalogue for the year 1893, certainly a very useful pamphlet for every Canadian gardener. Mr. Bruce has long held a respectable position among our Canadian seed merchants.

SEED ANNUAL for 1893, D. M. Ferry & Co., Windsor, Ont. Illustrated, descriptive, indexed, 84 pages.

BOOK OF CANADIAN PLANTS for Canadian people, 1893. Roses a specialty. Indexed, descriptive and illustrated, 74 pages. Webster Bros., Hamilton.

A. M. SMITH'S ANNUAL CATALOGUE FOR 1893. Ornamental trees, plants and vines. Dominion Nurseries, St. Catharines.

NEW CANAAN NURSERIES, Conn., Stephen Hoyt's Sons. Fruit and ornamental trees. Specialty, Green Mountain Grape.

FRUITS. Lovett's guide to Fruit Culture. Spring 1893. J. T. Lovett Co., Little Silver, N. J. Contains two colored plates of novelties, and numerous illustrations. Formerly fruits and ornamentals were both included in the one catalogue, but now, with increasing stock varieties, they appear in separate catalogues.

SEEDS. J. A. Simmers' General Annual Catalogue of Garden, Field and Flower seeds. Toronto, Ont. 1893. 84 pages, highly illustrated, descriptive, with instructions for planting etc.

GENERAL CATALOGUE OF SEEDS AND FLOWERS. Vilmorin, Andrieux & Co. Paris, France.

SPRING CATALOGUE of seeds, bulbs and plants for 1893. The Steele, Briggs & Marcon Seed Co., 130 King St. East, Toronto.

Circular from E. M. Buechly, Greenville, Ohio. Introducing Downing's WINTER MAIDEN'S BLUSH apple, produced from seed of Fall Maiden's Blush, by Jason Downing, in spring of 1874. It is said to have the beauty of the well known Fall variety.

Also the GREENVILLE STRAWBERRY, an aspirant for the first place among strawberries. It has been tested several years at the Ohio Experiment station. The berries are described as large, of good size, plants very productive and free from rust, season medium to late, pistillate.

SPRAYING PUMPS. Notice to hand from W. E. Saunders, London, that he has a complete stock of the best spraying pumps, together with compounds needed for use against insects and fungi.

PRICE LIST OF SMALL FRUIT PLANTS, Spring 1893. John Little, Granton, Ont. Four new Strawberries, Shuster's Gem, Dayton, Saunders and Woolverton.

FOSHITE, a remedy for mildew of grapes, black rot, etc., a substitute for the Bordeaux mixture. Address C. H. Joosten, 3 Coenties Slip, New York, N. Y. A descriptive circular.

COLLED SPRING HUSTLER, a monthly paper of four pages devoted to the advantages of this new form of wire fence. Published by the Page Woven Wire Fence Co., Walkerville, Ont.

OUR APPLE MARKETS.

From all reports received it would appear that those who have been able to store their apples until this season and then forward them safely to Great Britain have realized an unusually good price. The markets there seem to be almost cleared of Canadian apples now, and those sent forward bring the highest price.

Mr. J. Nugent Johnston, our agent in Liverpool, England, forwards us large batches of circulars and report sales, from the following apple salesmen in Great Britain:—*Liverpool*, James Adams, Son & Co., J. C. Houghton & Co., Woodall & Co., L. Connolly & Co., George & Jardine and L. & H. Williams; *Bristol*, Budgett, James, Branthe & Co.; *Hull*, John Seed & Co.; *Glasgow*, Simons, Jacobs & Co., and all agree in quoting Canadian apples somewhat as follows:—Baldwins, 18/6-23/, Baldwins (2nds) 15/6-18/6, Spy 17/-21/6, Russets 18/-22/6, Greenings 17/3-22/6, Canada Red 18/-20/6, Kings 19/-23/6, Ben Davis 18/-22/6.

James Adams, Son & Co. say, Feb. 18., "There is a brisk demand for Canadian apples with the upward tendency in price. The proportion of colored apples coming forward is not by any means large and high prices are consequently paid for them. Even Golden Russets, notwithstanding their predominance, realize well. Greenings have been in small demand for some time past, but as buyers seem anxious for them, any lots coming to hand in good condition are bound to do well."

L. Connolly & Co. say that about thirteen thousand barrels of Canadian and Maine apples were offered for sale on the 11th of February and changed hands at a considerable increase over the prices of last week, Golden Russets now being in particular demand.

John Seed & Co. write us a lengthy report of the fruit in their market, much of which is not, at present, of interest to Canadians. They state that the quantity of apples imported from the continent, chiefly from Belgium, has been larger during the last three years than usual, and that received from Canada has been considerably less. These circumstances have rendered it possible to secure fair prices for sales in moderate quantities.

James Adams, Son & Co. cable on the 27th February, that the demand is light, but the prices are unchanged.

A circular from Palmer, Rivenburg & Co., New York City, quotes apples there, light receipts and firm. Spitzenburg, fancy, \$3.00 to \$5.00 a bbl., prime, \$2.00 to \$3.00, Greenings, fancy, \$3.00 to \$4.00, prime, \$2.50 to \$3.00, Baldwins, fancy, \$3.00 to \$3.50, prime, \$2.50 to \$3.00.

Simons, Shuttleworth & Co., Liverpool, cable on the 24th February:—Prices show a slight decline on last quotations. The market opened strong but declined during the day and closed weaker. Good fruit in strong demand, but poor almost unsalable.

THE PROCESSIONAL CATERPILLAR.

(See next Page.)

Our closing engraving represents a scene in the Bois de Boulogne, near Paris, showing the Processional Caterpillar on the march, and attacked by both the larva and full grown insects of *Calosoma Sycophanta*.

The moths and caterpillars are different states of the same insect, *Bombyx Processionea*, and belong to a large family of moths, called Bombycidae, or spinners, which includes the silk worms. Some are magnificent in size, as for instance, the *Cecropia*, and *Telega polyphemus*, both natives of Ontario, and very beautiful.

The Processional Caterpillars are hatched in the month of May, in families of about one hundred. Very quiet in the day, they climb and eat voraciously at night, following their leader in regular order of procession, as shown in our illustration, returning again at night, in the same order. It is a puzzle to us to know by what means they distinguish the leader from the others; evidently they are endowed with a marvellous instinct. These caterpillars are a great pest to oak trees in France, and Prof. Duncan says their hairs even penetrate the human skin, giving much pain.



METAMORPHOSES OF BOMBYX PROCESSIONEA (PROCESSIONAL CATERPILLAR)
AND OF COLOSOMA SYCOPHANTA.



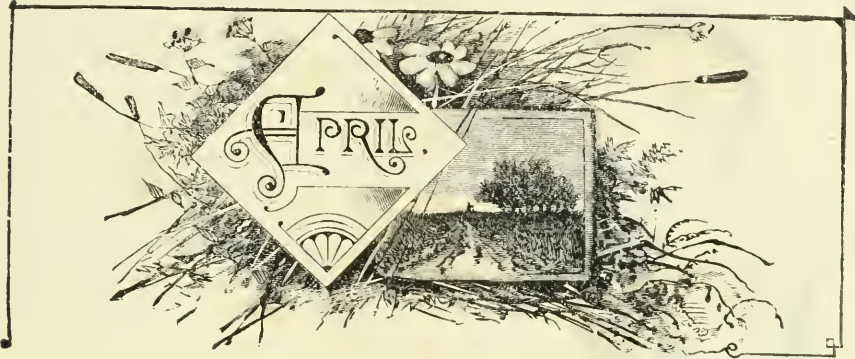
FORSYTHIA.

THE
Canadian Horticulturist

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No. 4.



FORSYTHIA, OR GOLDEN BELL.



HOW wisely planned are the works of nature! Fruits in succession from June: flowers in succession from May! Among the first blossoms in the spring is the Forsythia, a shrub which opens its solitary golden flowers, in this latitude, in the month of May. It is a native of Northern China, from whence it was brought to England in the year 1845, receiving its English name in honor of a former gardener of the king at Kensington, by name Wm. Forsyth, who died in 1804. Botanically it belongs to the Olive family (Oleacæ), of which the only native representative in Canada is the ash. It is a dwarf, hardy shrub, of dense spreading habit, which needs a little cutting back in the spring to keep it in good shape: some gardeners advise cutting back the last year's

growth to within a few joints of its base. Its yellow drooping flowers appear, in advance of the foliage, on its willowy stems, which may be used in vases.

Gardeners make three varieties, viz., *Fortunei*, *Suspensa* and *Viridissima*, but these distinctions are not very marked. The first, perhaps, is the best variety, but the last-named is very attractive on account of its bright green foliage all through the summer, which hangs most persistently in autumn.

The Forsythia should not be dotted about everywhere in the yard, as they show to best advantage as single specimens in some distant corner, or grouped together on the green lawn. They also work in well with other shrubs, serving to enliven the effect of the whole.

HOW TO SUCCEED WITH ROSES IN CANADA.—I.

PREPARATION OF THE GROUND.



SHOULD circumstances permit, let the rose bed be situated where the soil is a clay, or a clay loam, as roses invariably attain to the greatest perfection in a somewhat heavy soil. But if the soil is a sandy loam, good roses may be had by observing the following precautions: the most important being to carefully mulch the surface of the bed during the growing season, the object being to keep the roots cool. It is of great importance that the soil be not only dug deeply and well pulverized, but it should be thoroughly well dressed with rotten manure—we prefer that from the cow stable.

PLANTING.—It is desirable, if planting a number of roses, to group them; when thus planted they can be more easily cared for than when scattered throughout the garden, and the effect produced when in bloom, is decidedly better; each variety

tending to enhance the beauty of its neighbor by comparison. If the roses to be planted are of the Hybrid Perpetual class, dormant, not grown in pots, and budded or grafted, we would advise that the roots be first dipped in a thin puddle of clay (or other soil) and water. In planting, set the rose with the graft or point where the union has been made, about four or five inches below the surface. Many varieties will at once emit roots from above the graft, and the Manetti root, upon which the rose has been grafted, being thus rendered useless, will very frequently soon decay, leaving the plant virtually upon its own roots. We may say that we find this to be the case more particularly with strong growing varieties. Fill in carefully so that every part of the roots come in contact with the soil, press down firmly and finish by raking the surface. This class of roses, together with the large sizes of Mosses and hardy climbers, are better planted as early in spring as the ground can be had in nice condition; or if in the fall, from the latter part of September throughout October. Roses that have been grown in pots may be planted at any time during the growing season, care being taken to saturate the earth about the roots before planting and to prevent the ground from becoming dry. Should the weather be hot, shading for a time will be required.

CLASS OF ROSES TO PLANT.—Although the Hybrid Perpetual roses are commonly called hardy, and the Tea, Bourbon, Noisette and Bengal are known

as tender, the distinction is not accurate, for many of the latter classes will endure the winter as well as some of the more tender among the Hybrid Perpetual class. Let not the rose fancier be deterred from planting the so-called tender roses because they are not entirely hardy. For years we have wintered them outside without protection, and we also succeed perfectly by lifting them in the fall and packing them away in an out-building. It is not necessary to keep them from freezing, but simply to preserve a uniform condition through the winter, avoiding too much moisture, as this condition may develop fungus, which would injure the plants. As a rule, while the hardy roses receive a check when transplanted, the Teas may be lifted each fall, wintered in safe quarters without artificial heat, and again planted out in the spring, with the certainty of roses in abundance throughout the summer. We would not wish our readers to suppose that we would in any measure slight the Hybrid Perpetual as a desirable class for every garden, but simply to advocate the claims of the ever-blooming classes.



FIG. 523.—Showing depth to plant and how to prune budded Roses.

PRUNING.—Hybrid Perpetual roses should be pruned in the spring, when growth has nicely started, because if pruned too early and vegetation is checked by a cold day or night, the sap will fail to reach the extremities of the canes and it will be necessary to again prune back two or three buds, or leave unsightly dead ends on the canes; by delaying to prune till the weather is settled this trouble is obviated. A good rule to observe, in pruning Hybrid Perpetual roses, is to trim the weakly growing varieties back closely, while those of a stronger growth should not be cut so close.

The accompanying cut will give a good general idea as to planting and pruning. Mosses require only to be slightly shortened and the oldest of the canes removed, also any weakly growth cut away. Hardy climbers require the old wood removed, as it loses vigor, together with a judicious thinning out of young wood, cutting away what cannot be neatly tied into place. The tender or ever-blooming roses require a method of pruning peculiar to themselves. In the spring they should be carefully pruned, all dead or weakly wood being removed, and from time to time during the season, as blooms are cut, the wood should be shortened to a strong eye with a view to induce the growth of strong shoots from near the ground, or even from below the surface. This wood will be found to produce the finest roses.

DISTANCE TO PLANT.—Young ever-blooming roses, if planted in masses,

may be set for the first season 9 or 10 inches apart; as they increase in age and size they will require more space. Hybrid Perpetuals, during the first year, will do nicely at 12 inches apart, taking out and replacing elsewhere every alternate plant the second or third season. The strong two-year-old budded Hybrid Perpetual roses that we supply will require at least 2 feet apart each way.

Hamilton, Ont.

WEBSTER BROS.

FRUIT FERTILIZERS.



ECONOMICAL manuring implies the applying of elements needed for plant growth that are deficient in the soil. Ordinarily in average soil all that will be necessary to furnish is nitrogen, potash and phosphoric acid. It is often the case that there will be plenty of one or two of these, while in others all may be needed in order to secure the best results. Generally, in applying stable manure, we supply all of the elements needed. The objection to using much stable manure in the orchard is the tendency to produce too strong a growth of wood. This is rather more the case with a young orchard than after it has once become well established. For this reason, says *Western Plowman*, it is often the case that in what may be considered a fairly rich soil, strong stock manure often proves almost as detrimental as beneficial, and especially so when it contains a considerable per cent. of nitrogen. Phosphoric acid and potash are generally more needed than nitrogen. It is, therefore, largely for this reason that wood ashes and ground lime, or bone meal, can be applied to many varieties of fruits to a better advantage than fresh stable manures. If there is any difference to be made in applying the different kinds of fertilizers to different varieties of fruits, apply ground lime to the peach, cherry, and pear trees, and the wood ashes to the apple, as phosphoric acid is most needed by the first-named, and potash by the latter, but either will be beneficial to a more or less extent by the application of the other. Grapes, and in fact, all varieties of small fruits, are benefited by an application of bone meal. In all cases it is necessary to apply this fertilizer in a form that can be readily worked into the soil. One of the advantages in using either ashes, or bone meal, is that they are more readily soluble, and, in consequence, are sooner available than the average stable manure. So far as is possible, the wood ashes should be applied to fruits, both vine and tree, and if the soil is not naturally rich, stable manure may be used. But when there is a free supply of nitrogen in the soil, the most economical plan of supplying the other two ingredients, or essentials, is by using bone meal and wood ashes, using stable manure with other crops.

WESTERN NEW YORK FRUIT GROWERS.—II (*Concluded*).

THE *Pear Tree Psylla*, of which an account is given elsewhere, was mentioned by some prominent fruit growers present as one of the worst enemies of the pear. No remedy was known until this year, when Mr. Slingerland, of the Cornell University, issued a bulletin of his experiments.

The subject of the *Cold Storage* house for keeping fruit was well discussed. Mr. Hale said that, in Connecticut, some growers, who had had eight years' experience with cold storage, had come to the conclusion that there was not much advantage

in it, except for Bartlett pears. Sometimes, by prolonging the season of marketing the Bartlett, it was possible to handle them to much better advantage, and sell at much higher prices. On the whole, the opinion of the meeting was that there was money in the cold storage house for keeping fancy apples for a fancy market. We think it is quite evident to apple growers in Canada this winter that, had we first-class cold storage houses in which the best apples could be kept in prime condition until the month of February, or March, and then sent forward to the British markets, great advantages might be gained. Even now, February 14th, the prices of Canadian apples are rapidly advancing, and those who were so fortunate as to have suitable fruit to send forward will receive ample reward for their trouble.

Mr. Bailey's opinion was, that the cold storage house would be very useful in any city where fruit is to be sold, for then the fruit could be placed on the market just when it was most wanted, and when outsiders have difficulty in reaching the market with their fruits. Apples handled in this way have frequently brought as high as \$4 and \$5 a barrel in the Chicago markets, in the months of February and March.

Speaking of *Japan plums*, Mr. Willard said that the Botan (Abundance) ripened about the 20th of August. All the Botans have yellow flesh. The Burbank is the most productive of the lot: he had seen branches loaded at about the rate of one hundred plums to a square foot. The fruit is carmine on one side and yellow on the other, of medium to large size, and ripens about the 10th of September. In New England the Botan, Burbank and Satsuma have proved the most hardy in wood, and have, so far, shown no trace of black knot; and the fruit is very attractive. The Satsuma is a round plum, deep carmine, and deep red all through the flesh. These three will no doubt prove valuable for market. They are long keepers, which is an advantage over the English varieties; some samples of the Satsuma kept in good condition for two weeks after they were gathered.

An elaborately written account of the terrible ravages of the *Gipsy Moth* was given by Prof. Lintner, Entomologist, Albany. He said that it had not entered New York State, but had given much trouble to the fruit growers in Massachusetts, having been accidentally introduced in the year 1869. The amount which, up to the present date, has been expended in the State of Massachusetts is \$175,000, and the annual appropriation is \$50,000, and it is hoped that in a few years this insect will be entirely exterminated; for, should it elude their diligence and escape into other States, it would be the most terrible enemy with which we would have to contend.

In speaking of the *Rose Leaf Hopper*, erroneously called Thrip, he said that for some time after hatching, the young are found on the under side of the leaves, and at that time are easily destroyed by spraying with kerosene emulsion, diluted with 15 per cent. of cold water; but if they are left until winged, it is almost impracticable to destroy them.

A simple remedy for the cabbage worm is soft soap suds.

In using Paris green for moths on our apple trees, he was of the opinion that a pound to 250 or 300 gallons of water would prove sufficient to destroy them. He recommended also the use of the dilute Bordeaux mixture, in conjunction with Paris green, to prevent injury to the foliage.

"*Fertilizing the Apple Orchard*," was a paper prepared by Prof. Roberts, but which, in his absence, was presented by Prof. Bailey. Some of the points were: First, that the fertilization of the orchard is the foundation of success in growing apples. Second, that tile draining was an aid in unlocking the plant food which already existed in the soil, thus increasing its available fertility. Third, that barn manure was suitable, but it was not well balanced in composition, being too rich in nitrogen in proportion to the mineral matter contained. In using chemical fertilizers, a sufficient amount of nitrogen would be furnished by an occasional crop of clover. Fourth, an important point was to keep the surface of the ground covered with vegetation late in the season, for this will keep the soil loose and moist, and besides it is important to keep the ground cool during the ripening of the fruit. This late growth should be left on the ground as a protection during the winter time. The vetch is the ideal plant for this purpose, if sown in July, being rich in nitrogen. The seed can be purchased for \$1.50 per bushel, and a bushel will sow an acre. Fifth, another point was the encouraging of the growth of windbreaks.

Mr. Hale said he did not believe in having ground bare during the winter, and he thought the point made in the professor's paper an important one. He always made a point of having a late sown green crop in order to keep the ground covered during the winter. In answer to a question as to whether this is not contrary to the advice lately given, that the ground should be ploughed in the fall in order to expose the soil to the action of the air during the winter, Prof. Bailey said, that, while he believed in fall ploughing for benefit to the soil, yet

he thought that in most cases it was best to keep the ground in the orchard covered during the winter time. The vetch and buckwheat are especially suitable, because they draw moisture from the atmosphere, and do not cause the ground to dry out. One person present said he had great success in sowing clover and buckwheat together, the shade of the buckwheat favoring the catch of the clover. Mr. Munson, from Maine, said that, in his State, it was generally necessary to have the sod in the orchard for the purpose of winter protection.

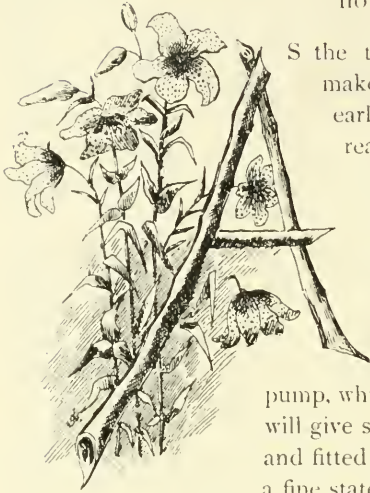
An interesting address was given by Prof. Waite, of the Department of Agriculture, Washington, on "*The Sterility of Blossoms.*" He had made very careful experiments and found that the Bartlett, Clapp's Favorite, Winter Nelis and Anjou would not fruit when the blossoms were covered with bags and thus protected from the visits of insects. This proved that these varieties are not capable of being fertilized by their own pollen, and require the pollen of other pears to be brought them by the visits of insects. The Bartlett, especially, was proved, by repeated experiments, to be completely useless in fertilizing itself: and to cause the blossoms to produce fruit it is necessary to use the pollen of such varieties as Clapp's Favorite, or Anjou. For example, the blossoms of the Bartlett fertilized by Bartlett, were found to produce no fruit at all: when fertilized with the pollen from the Anjou, 77 per cent. yielded fruit, and when fertilized with Clapp's Favorite, 76 per cent. of them yielded fruit.

Basic slag was referred to by Prof. Fairchild, of the Cornell University, as an article soon to come into the markets as one of the most economical forms of a phosphate fertilizer. In action it is slower than nitrates, and not so easily acted upon by the rain, and it is, therefore, necessary, in using it, to plough it under the ground. It contains only one element, and, therefore, would do its best work in connection with nitrogen and potash. It needs to be applied more freely than superphosphates, perhaps double the quantity.

Insectivorous Birds.—It is well to remember and protect this class of birds, as they specially benefit the farmer and gardener. The following birds (and the list should be published annually) are to be classed among the most helpful kinds in a general warfare against insects: Robins—cut and other earth worms; swallows, night-hawks and purple martins—moth catchers; pewees—striped cucumber bugs; wood thrushes and wrens—cut worms; catbirds—tent caterpillars; meadow larks, woodpeckers and crows—wire worms; blue-throated buntings—canker worms; black, red-winged birds, jays, doves, pigeons, and chippies—strawberry pests; quail—chinch bugs, locusts; whip-poor-wills—moths; hawks, all night birds, owls, etc., tanagers, and black-winged summer red birds—curculios. There may also be mentioned the following insect pest destroyers: Nut crackers, fly catchers, chimney swifts, indigo birds, chipping and song sparrows, blackbirds, mocking birds, and orchard orioles.

SUGGESTIONS REGARDING SPRAYING.

HOW TO SPRAY.



Since the treatment is entirely preventive, in order to make spraying effective it must be commenced early. All parts of trees or plants must be reached with the preventive agent. Drenching is not necessary, and is expensive. A film or coating of the fungicide deposited upon the foliage will prevent the development of the spores as well as a complete soaking; but it is important that all the leafy surface should be wetted at least on the upper side. For orchard work a good force pump, which may be fitted into a barrel—side or end—will give satisfaction. It must be of sufficient strength, and fitted with a nozzle which will project the spray in a fine state of division, yet with sufficient force to enter

the deeper recesses of the foliage. More expensive pumps drawn and operated by horse power may be purchased, but are seldom necessary except for large orchards. The Vermorel nozzle is a very satisfactory instrument for distributing the liquid.

CO-OPERATIVE SPRAYING.

Some factors which act as deterrents to the progress of spraying may be enumerated as follows: This work, like the introduction of spraying for the prevention of insect enemies, on account of involving new lines of thought and action, is sometimes regarded by the farmer as impracticable on a large scale. It *must* be done at certain periods of the year—otherwise it is ineffectual. It involves the purchase of implements and material which are sometimes difficult to obtain just when required. The success of the work depends also on intelligent adaptation of the treatment to the climatic conditions existing during the spraying period.

To obviate some of these difficulties I would suggest the adoption of a co-operative plan of spraying.

First, where orchards are not large, a few farmers might combine and purchase a spraying outfit, which would serve the community, and if it were possible to have it continuously operated by the same individual, whom practice would lend superior facility in using it, an additional advantage would be gained. Another arrangement could be made as follows:

A complete spraying outfit, including chemicals, might be purchased by a

person who would be prepared to spray under contract, by the acre, or at a stated figure per tree. If this system of combating fungous and insect enemies was introduced, it would obviate much of the prejudice and inconvenience now connected with the work, and spraying would probably in a few years, to the great benefit of orchardists, become the general practice.

SPRAYING MIXTURES.

1. *Diluted Bordeaux Mixture.*

Copper Sulphate.....	4 lbs.
Limé.....	4 lbs.
Paris Green.....	4 oz.
Water.....	50 gallons.

This may be prepared by dissolving, in a barrel, four pounds of powdered copper sulphate. In another vessel slake four pounds of fresh lime with as many gallons of water. Spread a piece of coarse sacking, held in place by a hoop, over the top of the barrel in which the copper sulphate has been dissolved. Strain through this the creamy mixture of lime and water. Paris green may then be added, after which the barrel should be filled with water. This forms an excellent insecticide as well as fungicide and therefore useful to destroy codling worm, bud moth, and canker worm. It should be used soon after being prepared.

2. *Ammoniacal Copper Carbonate.*

Copper Carbonate.....	5 oz.
Ammonia.....	2 qts.
Water.....	50 gallons.

This is more expensive than the former, is more easily applied and is used as a substitute, especially in the case of grapes, where the Bordeaux mixture might, by adhering to the fruit, injure its sale.

It is prepared by dissolving the copper carbonate in the ammonia and diluting with water to fifty gallons. The concentrated solution should be poured into the water. Care should be taken to keep the ammonia tightly corked in glass or stone jars.

TREATMENT OF APPLE AND PEAR SPOT.

1. Before growth begins in spring, spray with a solution of copper sulphate, 1 lb. to fifty gallons of water. On no account should this be applied after the foliage has appeared, as it will severely injure it.

2. Just before the blossoms open spray with diluted Bordeaux mixture (No. 1). Repeat this after the blossoms have fallen, and make a third application two or three weeks afterwards. If the season is wet and rainy a later application may be advisable.

GRAPE DISEASES

Downy Mildew, Blackrot, Anthracnose.

Spray the canes with copper sulphate 1 lb. to 50 gallons before growth begins. Follow this solution with diluted Bordeaux mixture (omitting Paris green) or ammoniacal copper carbonate immediately after the fruit sets. Repeat at intervals of three weeks, till the bunches begin to color. Ammoniacal copper carbonate should always be used for the later applications.

PLUM AND PEACH ROT—(*Monilia*.)

Without being fully tested the following course of treatment is recommended for trial. Spray as soon as the fruit sets with sulphate of copper 3 ozs. to 45 gallons; follow this with diluted Bordeaux mixture to which Paris green has been added, for the purpose of checking attacks of the curculio. If rot develops late in the season, as is sometimes the case just before the ripening of the fruit—spray again with sulphate of copper solution, or ammoniacal copper carbonate.

GOOSEBERRY MILDEW.

This disease can be effectually treated by using either ammoniacal copper carbonate or Bordeaux mixture (No. 1), but as potassium sulphide (liver of sulphur) serves the same purpose, is somewhat cheaper and more easily prepared, it is therefore recommended here.

Treatment should commence with the first signs of growth and continue at intervals of ten or twelve days till five or six applications are made.

Horticulturist, Central Experiment Farm.

JOHN CRAIG

THE NIGHT-BLOOMING CEREUS.

Like one enchanted, waiting in dark tower
 The "fated fairy prince" to break the spell,
 A sheath-hid bud all day did darkly dwell.
 No morning breeze had kissed it into flower,
 Nor had it freedom found through sun or shower:
 World-hidden as a nun in cloistered cell.
 Vainly the bold bee strove its sweets to tell,—
 A star in daylight veiled, it bode its hour.
 At evening's dusk a mist-pearled moonbeam came;
 By love-light wakened, swift the flower soul thrilled.
 Slipt its dream robe, shone forth in life fulfilled!
 Folding snow petals back from heart of flame,
 In sweet amaze it perfumed all the air,
 To find itself so blest, the world so fair.

—E. P. WELLS, in *McMaster Monthly*.

PROPAGATION AND PRUNING OF CURRANTS.

THE rules for the propagation of the gooseberry may be applied to the currant. For the purpose of making well-formed bushes the cuttings should be fifteen inches long, and all buds carefully taken out, excepting the three at the upper end. The cuttings should be inserted into the soil six inches; there will then be left from four to five inches of clean stem between the surface of the soil and the first branches. If the cuttings are planted in the fall, the three buds that are left

will each make a growth of at least eight or ten inches during the following summer. At the fall pruning these shoots should be cut back to two buds each; from these two more shoots will be formed the next season, thus forming a bush of six branches. These branches should all be cut back at the winter pruning, so as to leave them from four to six inches long, being always careful to cut back to an outward bud. Each terminal shoot should be cut back, at the winter pruning, until the required height is attained, which need not exceed three feet. If the soil is rich and the bushes make strong growth they may be permitted to grow to a height of four feet. All laterals that are thrown out from each main branch should be cut back to two buds, at the winter pruning. It will be found when the laterals are treated in this way, that fruit spurs will be formed throughout the whole length of the main branch. The object in cutting to a bud pointing outward, is to encourage the bush to form an outward growth. Under this treatment, work among the bushes will be found much more convenient, and better fruit will be produced. There will be an abundance of leaves and laterals formed each year, to shade the fruit from the direct rays of the sun; thus the gathering of the fruit will be made much easier, and a better appearance given to the plants.

The accompanying cut Fig. 524, shows the manner of pruning and the position of the fruit buds on the main branch.

Fig. 525 represents a branch of the currant in its natural state, with but few fruit spurs. It will be readily seen that the plant has to produce a great amount of wood which should go to the production of fruit, if pruned as in Fig. 524.



FIG. 524.

This system of cultivation has been used at this Station, and has proved very successful. It will be understood that the system referred to above does not apply to the treatment of the black currant. It is practiced only with the white and the red varieties. The fruit of the black currant is produced on the one year old wood, and consequently it must not be spur-pruned. Simply thin



FIG. 525.- NATURAL GROWTH OF THE CURRANT.

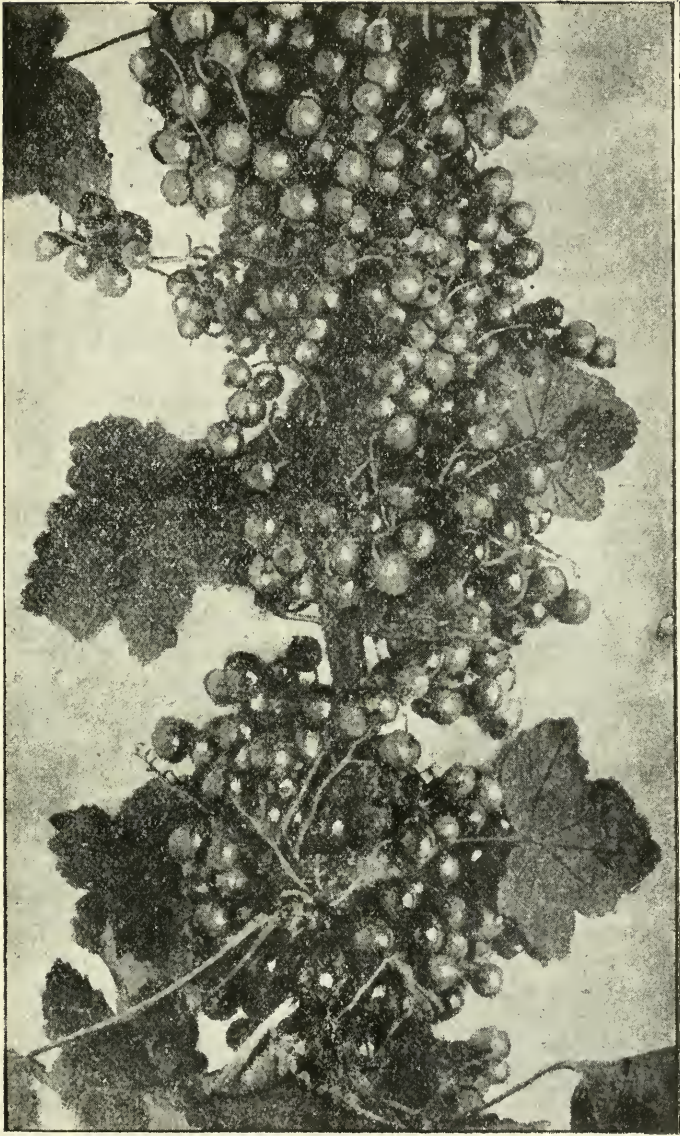


FIG. 526.—THE ABOVE PLATE SHOWS THE FRUITING OF THE CURRANT WHEN TREATED AS IN FIG. 524.

out all wood that has already fruited and leave the young wood for the production of fruit the following season. This treatment encourages it to produce a strong growth of young wood each year.

NOTES ON CURRANTS.

Fay's Prolific.—Color dark red; produces large clusters; is less acid than the cherry. The only objection to it, is that it produces a large number of seeds which injures it for preserving.

Cherry.—Color dark red; very large; the bush makes a strong growth: is very productive, and of good quality.

Red Dutch.—Color dark red: this variety is well known, but has been superseded by the larger varieties: but for preserving purposes it is valuable.

White Grape.—This is a very large variety, the largest of the white. The habit of the bush is to spread. It makes a strong growth.

Yellow Transparent.—Color, yellowish white: of excellent quality; good for table use, and for preserving.

La Fertile.—Color whitish-yellow; acid to sub-acid in flavor; many-seeded; small clusters: large; productive. Bush a free grower.

Victoria.—Color, bright red: clusters of medium size. Fruit hangs a long time on bush. Its buds do not commence to grow so early as other varieties by two weeks, thus protecting it from late frost. The bush is not quite so strong, resembling the cherry currant in growth.

La Versailles.—In all respects the same as the cherry: produces large clusters, and is very productive and valuable.—GEO. COOTE, *Horticulturist*, Oregon Experiment Station.

Oil of Sassafras—In making this only the green roots are used. They

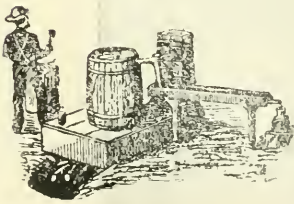


FIG. 527.

produce about 2 per cent. of oil, which sells at 35c. to 45c. per lb. to wholesale druggists. Twenty-five cents per 100 lbs. is the usual price for digging and washing the roots ready for distillation. Much oil is distilled in North Carolina, chiefly around Greensboro and Statesville, where they also make oil of pennyroyal. Any means of passing live steam through barrels of chopped and bruised roots, and thence through a worm or condenser of some sort, will make the oil. The business is not

nearly so remunerative as it was ten years ago. Oil with a specific gravity of 1070, or over, finds a ready market.—Farm and Home.

GRAPES IN QUEBEC.



THAT outdoor grapes can be successfully raised in this Province has of late years become an established fact, yet, from a commercial standpoint, the large influx of fruit sent to us from the south and west, ventures in that direction are impracticable. But for home supply, latterly the introduction of earlier varieties has wonderfully stimulated the production here. Most every one desires to "have grapes in the garden," and the measure of success depends on the attention given to methods insuring early ripening and well developed fruit. These conditions observed with a few well selected varieties, the table can be supplied with this delicious and healthful fruit from August till spring. If a man is blessed with industrious and intelligent boys, their interest may be enlisted in helping to look after the vines, their acuteness of observation will soon master the most important points necessary to success. In lower latitudes grapes will flourish with much less care; here we are obliged to force results and adopt measures in the treatment of the vine that will confine the energy to the development of the fruit, within a reasonable quantity; restricting the growth at a suitable time to insure strong buds on the canes desired for next year's fruit.

Through the labors of the late Charles Gibb, B.A., in organizing Fruit Growers' Associations, exhibitions, etc., a great amount of information has been obtained in the culture of this and other fruit. He encouraged experimental efforts, resulting in the trial of over 150 varieties of outdoor grapes, half of which number are still under cultivation at Clarenceville. This work is now done at the Central Experiment Farm of the Department of Agriculture, at Ottawa, under the very able management of Prof. John Craig.

The varieties in general cultivation in this Province are, in Blacks: Moore's Early, Hartford, Worden, Early Victor, Barry, Herbert and Champion. Reds: Massasoit, Delaware, Lindley, Brighton, Gaertner, Ulster Prolific, Vergennes and Northern Muscadine. White: Lady, Duchess, Martha, Niagara, Pocklington and Jessica. Those raised to a limited extent, and some in a few very favorable localities are, in Blacks: Concord, Cottage, Belvidere, Eumelan, Aminia, Essex, Wilder, Adirondac, Othello and Brant. Reds: Wyoming Red, Poughkeepsie Red, Owassa, Agawan, Salem, Roger's Nos. 8 and 30. Jefferson and Walter. Whites: Lady Washington, ElDorado, Frances B. Hayes, Chaselas of Aylmer and Prentiss. The new varieties at Clarenceville are, in Blacks: Nectar or Black Delaware and Metterney (Caywood), Jewel, Standard and Paragon (Burr), Peabody, Waverly and Frances Scott (Ricketts), Rommel's Early Black, Senasqua, Burnett, Eaton, Norwood, Bacchus, Garber, Rockland Favorite and August Giant. Reds: Ideal (Burr), Woodruff's Red, Mary and Beauty. Whites: Empire State, Naomi, Golden Gem, Gazelle and Undine (Ricketts), Eclipse (Burr), Antoinette and Belinda (Miner), Mason's Seedling, Grein's Golden and Rommel's July. A number of these will probably be discarded, others may prove to be of much value.

Clarenceville, Que.

WM. MEAD PATTISON.

GOOSEBERRIES.



IN connection with the test of varieties of gooseberries, it is desirable to give a few practical hints on their propagation, pruning, and culture. The gooseberry is a greedy feeder: it is, therefore, necessary to supply it well with good stable manure, the well rotted being preferable. This should be worked into the soil with a digging fork, to prevent the roots from being damaged, as would be the case if it were dug in with a spade. The best time to put in cuttings is in the fall: vigorous, firm wood should be selected. If the cuttings can be taken off close to the branch from which they spring, so much the better. The joints should be cut off so as to leave the cuttings from ten inches to one foot in length. The buds on the lower end of the cuttings must all be removed. This disbudding should be carried to a height of six or eight inches from the base. By so doing suckers may be prevented. If cuttings are inserted early in the fall, success is almost certain. Propagation from cuttings has a decided advantage over the process of layering. In the former case the suckers can be entirely done away with, while in the latter, they cannot be prevented. Layering is a sure mode and may be resorted to when any particular variety is required to be speedily obtained, though the plants will not be as handsome as those raised from cuttings.

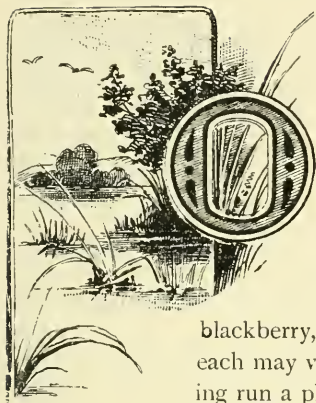
PRUNING.—The stem should be kept clean to the height of three or four inches above the surface of the soil to permit the ground to be well cultivated, close up to the tree. The general system of pruning consists in retaining a moderate supply of strong, healthy, young shoots, from which alone can be expected large fruit. It is best not to head back too much; it would be better to remove the whole branch. Heading back tends to thicken the bush with shoots, so that gathering the fruit is made very difficult; therefore we must bear in mind to thin out so that the hand may be passed between the branches with ease.

The greatest drawback in successful cultivation of the gooseberry is the mildew. Spraying with the following solution just before the buds open in spring, and three times at intervals of three weeks, after the fruit has formed, will prevent its spreading:

Take of sulphide of potassium (liver of sulphur), $\frac{3}{4}$ oz., to five gallons of water: apply with a fine spray, such as the Nixon or Cyclone nozzle.

Experiments were made with the above solution at this Station last season, with good results. —GEO. COOTE. *Hort., Oregon Experimental Station.*

RASPBERRY CULTURE.



OCASIONAL queries convince me that some raspberry notes may be useful. They succeed very well upon well-drained sandy loam, which should previously be deeply plowed and thoroughly clean as respects grass and weeds. A root crop is a good forerunner. When planting time arrives the ground should be smoothed and marked at right angles. About six feet is a good distance for the rows, with hills four feet asunder. This distance of four feet may be used across the

blackberry, currant and gooseberry patches, while the rows of each may vary in width to suit the nature of each. In planting run a plow along the mark and plant while the soil is fresh and moist. This can be done with great speed. During the

first year, and all subsequent years, the cultivator should operate lengthwise and crosswise about once every fortnight, avoiding wet weather; hoe as often as weeds show themselves. Beans, cabbage or potatoes may be grown between the rows the first year. Plants may be shortened in to keep them out of the way. About July 1st, the second year, we shorten the young canes to two feet and shorten side shoots early in August if they become obstreperous, after that leave them till late in the fall, or the next spring, for the final shortening in. The cultivator should have sharp horizontal steel knives when sprouts show themselves. Cultivation is necessarily suspended during the picking season, but should be promptly resumed after picking season is past.

The books tell us to cut out the old wood and leave but few canes so soon as picking is done. This plan has some advantages, but large growers prefer to wait till spring. The old canes support newer ones and stop the drifting snow, and can be speedily removed when leaves are absent. In Northern Ontario it might be as safe to neglect all summer shortening in and grow long single canes. These could be bent over in late autumn and some dirt thrown upon their extreme tops to keep them down. In April the tops should be cut off at say, three feet from the ground. The canes would soon straighten up and go to work. The so-called winter-kill occurs, I think, in April, and is quite apt to show itself with Cuthberts, when the winter is very mild. Cuthberts were injured here in the spring of 1892, when every blackberry, grape, peach and quince came through unharmed. A winter mulch of coarse manure, free from weed seed or grass seed, would no doubt be useful.

The treatment of raspberries above indicated, will apply fairly well to blackberries, and, except in respect to pruning, to currants and gooseberries. That the

hill method with cross cultivation has been generally adopted by my neighbors shows that it has much to recommend it. The old-fashioned hedge rows usually cease to be productive after a few years. Cultivation, aggressive, early and often, will keep hedge rows and hills within bounds if pruning is attended to. On my soil the use of the plow in a raspberry plantation would mean my defeat by the weeds. Upon some soils, or under special circumstances the plow might be admitted. I stop the cultivator late in November and start in April. Weeds should be grown in a patch entirely separated from other crops.

Niagara Falls, Ont.

E. MORDEN.

FERTILIZING AND CULTIVATING THE STRAWBERRY.



N reply to your inquirer (page 110), I would say, that I have not had much experience with nitrate of soda on strawberries; intend to experiment this season to quite an extent. It must be used with care as any small lumps that come in contact with the foliage of any plant will burn the leaves or any soft stem it touches. About 200 or 300 lbs. to the acre applied when growth begins will be a good dressing. There is some difficulty in applying it, as it is coarse and mixes badly on that account, otherwise it could be mixed with twice its bulk of gypsum or dry loam.

I think the "Planet Junior," is the best implement to cultivate strawberries with, as it has several attachments that can be used, some of which will always do the work required, unless the weeds have been allowed to grow too large; in which case they must be cut with the hoe and raked out. I do not know any hand implement that will work among large weeds; in fact if weeds are allowed to get large in a newly planted strawberry patch, the plantation will not amount to much. I do a large amount of work with a short-tooth steel garden rake among my plants, especially in the rows where I cannot get with the cultivator. When the weeds are just starting the rake works well, and that is the time the work should be done.

Yours very truly,

W. W. HILBORN.

N. B.—I believe nitrate of soda will increase the yield of strawberries very much, especially if there is already a sufficient amount of potash and phosphoric acid in the soil. The nitrate gives a quick growth, just what is wanted for the strawberry. I would not expect satisfactory results from soil not already containing quite a large percentage of potash and phosphoric acid, as nitrate is not a complete fertilizer.

W. W. H.

McMAHAN APPLE.—Mr. E. S. Goff, of Wisconsin, says this apple originated in 1860, from seed of the Alexander, sown by the late Isaac McMahan, and was first introduced to the public in 1873. The fruit is rather acid for dessert use. Season, from the middle of October until Christmas; but with care may be kept till February.

PRUNING FRUIT TREES.

APPLES.



HERE is yet room for great improvement in this much-written-about operation, judging from the specimens one is continually meeting with in gardens. More original thought on the subject and less adherence to old methods handed down from generation to generation is wanted. Take espaliers and dwarf trees, for instance ; how much more

fruit might be gathered if one half of the stronger wood was cut right away and thinner and more extended growth allowed, instead of pruning off all the annual shoots only and forming the thick, stubby and scrubby-headed samples of professional skill, which will not admit any light and scarcely leave room for fruit to grow at all. It is very necessary with any kind of apple tree that the branches should be kept thin enough to allow the rays of the sun full play amongst the fruit. I am speaking now with reference specially to the garden, where only choice fruit should be grown. Gather an apple from an outer branch and another from the inside of a thick-foliaged tree. On tasting, the latter will be found to bear no comparison to the former with its rich appetising flavor and rosy, attractive color ; therefore, get as much as possible of this health-giving sunshine concentrated in the fruit, and do not be afraid to use the saw on a tree that has been neglected in this respect for many years. Of course, in the case of a tree properly pruned from the first, and some kinds scarcely require pruning at all, a saw would not be required, as cutting off large branches must be considered as only a necessary evil. When done, the bough should, for appearance sake, be cut right away and no stump left. As regards profit, this thinning out is of great importance with some varieties, especially in these times when size and color in fruit are of so much more value than quality. We cannot, or we do not care to, well thin out the fruit to advantage on a standard tree, so the next best course is to thin the branches. I had an instance the past season of the advantage of thorough thinning. An apple tree of a good local variety, was so laden and the boughs so fallen together that the fruit reached only half the usual size and was devoid of color, while on a tree of the same sort recently grafted, the apples were very fine, well-colored, and a fortnight earlier, and, consequently, worth quite double in the market.

But I cannot approve of the general orchard method of taking out all the inner bearing sprays ; rather I encourage this central growth to a certain extent, and in re-grafting even insert grafts on young shoots strong enough for the purpose, as this tends to preserve a well-balanced head and is conducive to the longevity of the tree. Many an apple tree which has long succumbed to the elements would be standing to-day if more central growth had been the aim and

outer branches thinned to entice the sunshine to the fruit, instead of forcing all the fruit out to the sunshine by persistently trimming off all the young growth up a branch, leaving bearing spray only at the extreme end, thereby giving the wind every chance to do damage with this leverage of, in some instances, 12 feet or 15 feet of bare limb.—The Garden.

DO VARIETIES OF FRUITS RUN OUT?—This question was discussed by Prof. Bailey, in a very thoughtful paper read before the W. N. Y. Horticultural Society. In his opinion the disappearance of varieties is not due to age. The Ribston is at least two hundred years old, and still one of England's now popular apples. The explanation is rather to be found in the fact that varieties are more or less local in their adaptation, and are ill adapted to their new environments. English apples are not well adapted to American conditions, and even New England apples, such as the Baldwin, are not so well adapted to the Western States as some varieties originating in the west.

Growing Tuberoses.—The secret of success with tuberoses is to sun and thoroughly dry the bulbs after digging them in fall. If the weather is clear and warm, cover them at night to protect them from frost. If it is rainy or cold, dry them with fire-heat. Keep them through the winter in the warmest dry place available. Macon county, North Carolina, on account of its altitude has a climate much like that of Philadelphia. To grow early blooms, I select perfect bulbs with a healthy centre-shoot, and plant them in a depression in a raised bed with a south-east exposure. I do not wait until the weather is quite settled, but plant when the days are beginning to be warm, even if the nights are quite cold and frosty. The depressions in which the bulbs are planted are from three to four inches below the general surface of the surrounding soil. I cover only the central shoots—that is, the sharp points of the bulbs, which, if they have been kept sufficiently dry and warm, will show signs of growth—with an inch of dry soil. When it rains, freezes or is quite cold, I cover the bed with boards. I also cover it at night and do not uncover in the morning until the air is warm. If the nights are very cold I put on some additional covering, such as bundles of fodder, straw or strips of old carpet, until the sun gets warm next day. I am careful that no rain falls upon the bulbs until both days and nights are quite warm. By that time small roots are formed, and the tops of the tuberoses soon start into a vigorous growth. Bulbs started in this way blossom from two to three weeks earlier than those not planted until cold weather has gone. Tuberoses do not require a very rich soil, but it should be light, warm and fairly good. Poor soil gives delicate blossoms and small spikes. Good soil gives firm, medium-sized blooms, and handsome spikes, that last well. Soil made very rich gives long, heavy spikes and large blooms, but they fade quickly.

❖ New and Little Known Fruits. ❖

McMAHAN'S WHITE.

I said of this in my report for 1891:—"Among the many new varieties which are being constantly heralded from different points, it is often difficult to discriminate between the useful and useless. Of the prominent aspirants for public recognition I think none more worthy than that known as 'McMahan's White.' The fruit of this was exhibited at the last meeting of the American Pomological Society in Washington, grown both in Wisconsin and Minnesota. A large oblong waxy-yellow apple, with a light blush on one side, flesh white, juicy and of fair quality. Mr. A. L. Hatch, of Ithaca, Wisconsin, writes me as follows: 'A seedling from Alexander, introduced here about 20 years ago, and is proving more valuable than any other. It will grow and bear apples "next year" when other varieties are tired out. I had 80 barrels of it this year—sold higher in Chicago and St. Paul than any other of its season.'"

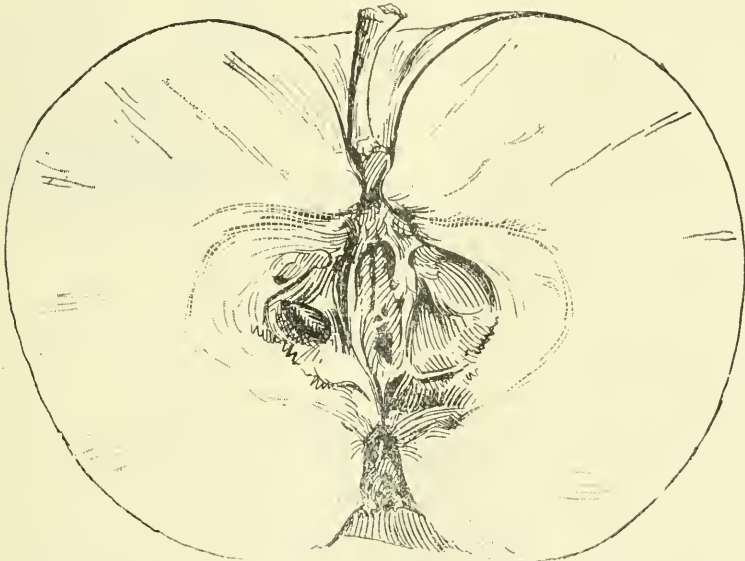


FIG. 528.—SECTION OF McMAHAN'S WHITE.

Nine trees of this variety were planted here in 1888. They were all vigorous, have never been injured by winter's cold or spring suns, and are now among the largest trees in this orchard. They fruited last year and upheld the good opinion which I had previously formed as above expressed. On account of the delicate and tender character of skin and flesh, it will need careful handling in shipment. It must be remembered, also, that with all its good points it does not fill the bill as a long-keeping winter apple for export. I do not think it will keep in this latitude longer, if as long, as Wealthy."

Central Experimental Farm, Ottawa.

JOHN CRAIG.

BELLE DE BOSKOOP.

During the past two years, specimens of the fruit of this variety have been received from many widely-separated sections in the Dominion. Judging from the samples received and from its behaviour at Abbotsford, Que., where it was planted in 1885, I am led to believe, in the event of it proving a reliable bearer, that it will be a valuable addition to the list of winter varieties in the apple growing sections of the Dominion. Trees of this variety were obtained by the late Charles Gibb, from Frères Simon-Louis, of Lorraine, France, about nine years ago. At Abbotsford the tree is rather a slow grower, round topped or spreading in habit. Fruit medium to large, sound; skin a russety-green overlaid with dark red. Calyx open, basin moderately deep, stem stout, an inch or more

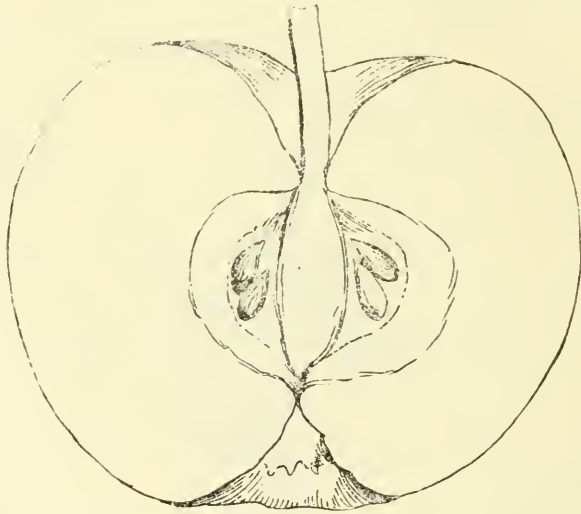


FIG. 529.—BELLE DE BOSKOOP.

in length, set in a deep wide cavity. Flesh firm, of fine texture, tinged with green near the skin, rich and juicy with a breaking quality very agreeable. Season late winter. The drawing has been made from a specimen grown by Mr. R. W. Starr, Wolfville, N.S. Scions were sent him by Mr. Gibb some years ago. The fruit grown by Mr. Starr, excels in beauty and size any that I have seen elsewhere. Frères Simon-Louis have included it in their first selection of valuable winter varieties, and say that in their opinion "it is one of the finest and best of the late table apples."

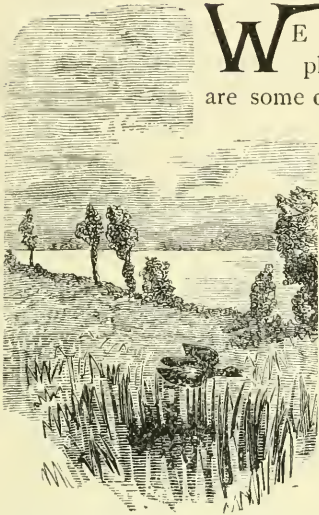
Experimental Farm, Ottawa.

JOHN CRAIG.

❖ The Garden and Lawn. ❖

CANADIAN WILD-FLOWERS.—III.

BUTTERCUP FAMILY—(Continued).



WE stated in the December number that some of the plants of this family climb by their leaf-stalks. Such are some of the members of the clematis tribe. Two of these are to be found growing wild in Canada, of which the *Clematis verticillaris* is the most showy. Its flowers are about three inches across, composed of four bluish-purple sepals, appearing in May. It is not very common; to be found usually in rocky woods or ravines, and in mountainous parts of the country, especially north-westward. Some of the outer filaments of the stamens are usually enlarged, gradually passing into small spatula-shaped petals. The leaves are trifoliate; that is, divided into three leaflets or little leaves; the leaf-stalks are slender, and the leaflets slightly heart-shaped. The seeds are ornamented with

feathery tails, so that the plant is not only showy when in bloom, but also in the autumn when covered with these feathery appendages of the seeds.

The other climbing clematis is quite common, it is *Clematis Virginiana*, usually known by the name of Virgin's Bower. It will often be found growing on the banks of streams, climbing over small trees and shrubs. Its leaves are also compound, being formed of three ovate acute leaflets, which are lobed, and somewhat heart-shaped at the base. The flowers are borne in paniced clusters, differing in this from the one above described, the flowers of which are borne singly upon the flower-stalk. There are no petals, but the sepals are thin and white; and the seeds are also furnished with feathery tails. Both of these can be easily grown and trained over a trellis, veranda, or door porch, making pretty ornaments wherever climbing plants are wanted.

In British Columbia will be found other varieties of clematis, known to botanists as *C. ligusticifolia* (Nuttall), and *C. Douglasii* (Hooker).

ANEMONÆ, ANEMONE TRIBE.

This tribe is represented by three genera in Canada, if the genus *Hepatica* of Dillenius is to be retained as distinct from the genus *Anemone* of Linnæus. These are *anemone*, *hepatica* and *thalictrum*. The plants of this tribe produce

for the most part incomplete flowers, for they are generally destitute of petals, and when these do exist, they are small and stamen-like.

Of the genus anemone we have a number of species. *Anemone parviflora*, the small-flowered anemone, is a low-growing plant, varying from three inches to a foot in height, the flowers of which are white, and, as its name implies, small, composed of five or six oval sepals, an indefinite number of stamens, and numerous pistils. It is abundant about Lake Superior and northward. Blooms in June.

A. multifida, the many-cleft anemone, so called because the leaves are twice or thrice three-parted and cleft. The flower is usually red, but sometimes greenish-yellow or whitish. The sepals, varying from five to eight in number, are from a third to half-an-inch long, and obtuse in form. This species grows from six to twelve inches high, and is to be found from New Brunswick to British Columbia, blooming in June.

A. cylindrica, the long-fruited anemone, grows to the height of two feet, is slender and silky, the leaves of the involucre have long stalks; the somewhat obtuse sepals are five in number, of a greenish-white color; the fruit head is cylindrical in form and about an inch long. It is very common in light soils throughout Ontario, blooming in May and June.

A. Virginiana, the Virginian anemone, is the tallest of our species, attaining a height of from two to three feet, and is well worthy of a place in our flower gardens, where it thrives luxuriantly if the soil is rich, and the situation one of partial shade, the flowers increasing in size and beauty under careful cultivation. The sepals are five in number, covered with minute silky hairs; ivory white; obtuse in shape, and the fruit head oval. In some instances the flowers are greenish, and the sepals acute. The leaves are three-parted, pointed and toothed. The flower stalks are elongated, the central naked, the lateral have a two-leaved, small involucre at the middle. The central flowers are the largest; these open first, followed, as they fade, by the lateral blossoms; in this way by a succession of bloom there is a continuation of the flowering period for several weeks. This species is to be met with from New Brunswick to the Rocky Mountains, and may be found in bloom from June to August.

A. nemorosa, the wood anemone, is a pretty species that blooms in April or May, usually found growing in light loamy soils in the partial shade of somewhat open woods, through which the quivering sunbeams gently fall. The flowers are about an inch broad, composed of four to seven oval sepals, white on the upper side, but frequently tinted on the outer side with purple, or a dull pink. The plant is only from four to nine inches high; the stem perfectly simple, slender and leafless, except the involucre, which is composed of three leaflets, borne on long leaf-stalks, and which are wedge-shaped and toothed. It thrives well in cultivation if given a partially shaded situation. It is found growing from New Brunswick to British Columbia, and, though local in its distribution,

is by no means rare. It is of this one that Bryant, America's woodland poet, is singing as he tells that

“ The sun of May was bright in middle heaven,
 And steeped the sprouting forests, the green hills
 And emerald wheat-fields in his yellow light.
 Upon the apple trees, where rosy buds stood clustered
 Ready to burst forth in bloom,
 The robin warbled forth his full clear note for hours.
 And wearied not. Within the woods,
 Whose young and half transparent leaves scarce cast
 A shade, gay circles of anemones
 Danced on their stalks.”

A. Pennsylvanica, the Pennsylvanian anemone, the flowers of which are composed of five obvate white sepals from half to three-quarters of an inch in length, and which are to be found from June to August, is also not rare in Ontario.

A. Baldensis, Hooker, is found growing in arid places on the eastern summits of the Rocky Mountains in latitude 52° to 55° . Also *A. delboidea*, Hooker, occurs in British Columbia; *A. Richardsoni*, Hooker, is found on the shores of Hudson's Bay; and *A. narcissiflora*, Linnæus, on the north-west coast.

The most beautiful of Canadian anemones is found in our western prairies, and is known to us only by name and the description of botanical writers. It is called the pasque-flower; by botanists *A. patens* var *Nuttalliana*. Mrs. Traill says. “ It is one of the earliest of the spring flowers to gladden the earth with its large azure-blue b'ossoms.” Gray describes it as being villous with long silky hairs; flower erect, large, with usually some glandular bodies like abortive stamens answering to petals, and developed before the leaves; sepals five to seven, one inch to an inch and a half long, purplish or whitish, appearing in March and April.



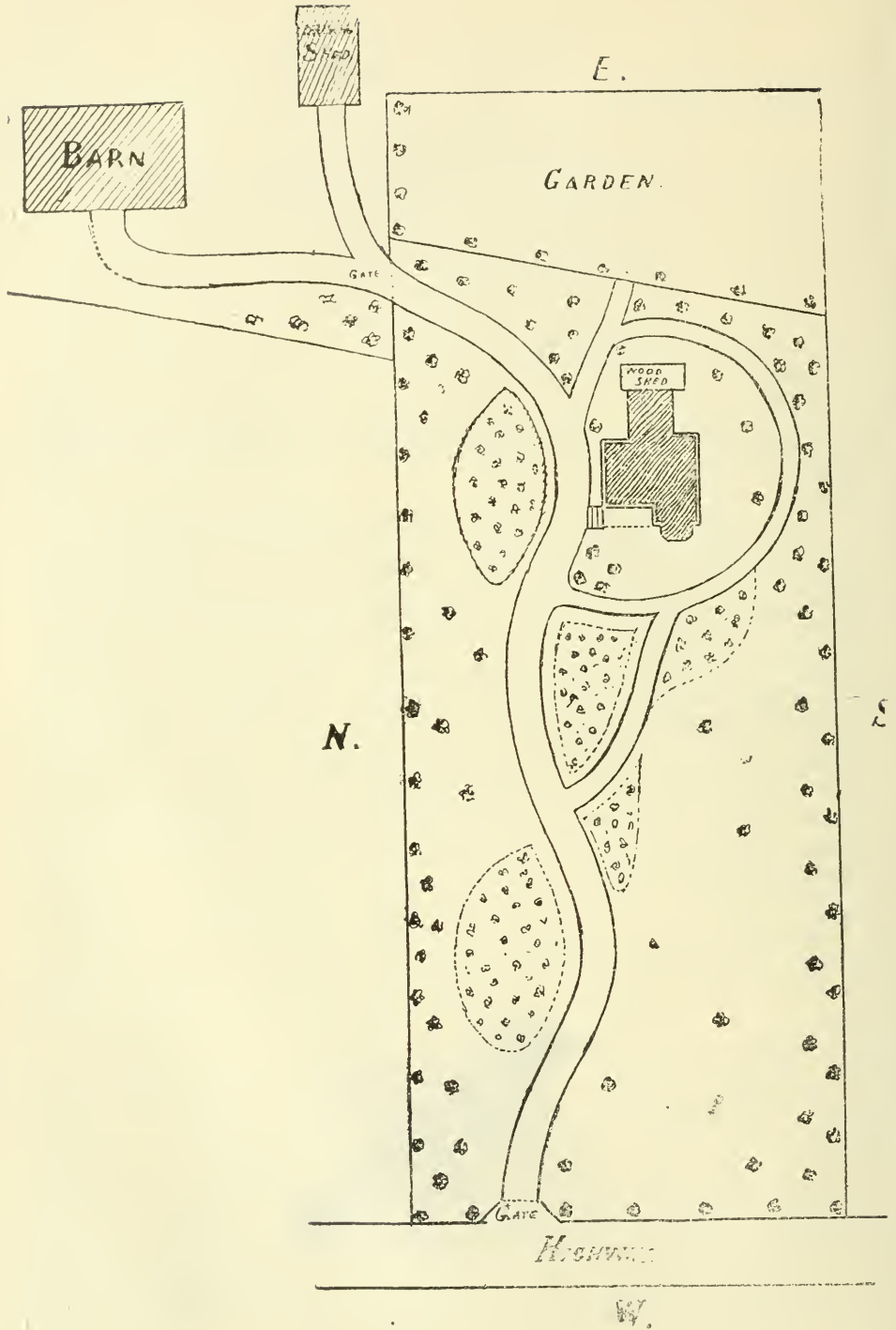


FIG. 530.—PLAN OF HOUSE YARD]

PLAN OF HOUSE YARD.

SIR,—I want to lay out the grounds in front of my house with trees and shrubs and walks. I first referred the matter to Principal Mills, of the Ontario Agricultural College, and he referred me to you. I have already a row of large soft maples on the north, besides which is the drive-way to the barn. On the south side, I have two rows of Norway spruces, planted last spring. In front of the house, there is an elevated lawn 140 feet wide, around which is a circular road to the south side of the house. I want to know how to lay out and plan the ground between the elevated lawn and the highway. It is level and smooth, and seeded down to grass.

ANGUS MCKAY, *Embryo*.

Not having seen Embro subscriber's place, and having no measurements, any plan for improvements which I could make would be very imperfect. However, this plan which I herewith send you may give him some assistance. On whatever part of the lot the dwelling house is located the natural way of approach, which is commonly adopted, is by a straight road from the entrance gate to the front door of the house. Graceful curves are more pleasing to the eye of the landscape admirer: yet, curves should not be made in driveways, unless there be some apparent reason for making them; therefore I would plant clumps of flowering shrubs and plants where indicated in this plan. These shrubs should be suitable for the climate. I think the following kinds would do well there, without much protection: Dogwoods, elders, strawberry tree, forsythias, fringe tree, mock orange, lilacs, hardy hydrangea, spiræa, snow berries, honeysuckles, viburnums, wiegelias, and Japan quince. These clumps should be cultivated and intermixed with hybrid perpetual roses, pæonias, phloxes, hardy lillies, delphiniums, aconitums, columbines, campanulas, dielytras, rudbeckias, irises, etc.

In addition to the trees already growing along the fence lines as indicated in subscriber's sketch, I would plant in rear of the dwelling house some American elms, American lindens, silver-leaved and cut-leaved maples. For ornamental trees on the lawn in front of the house, I would plant, weeping birch, purple birch, oak-leaved mountain ash, tulip tree, arbor vitæ and Austrian pines; but they should not be planted so thickly as to prevent a view of the dwelling house from the highway. No trees should be planted very near the house. I would plant some clematises to climb on the veranda railings.

Be it observed, that the approach, driveway and gravel walks must be kept clean and neatly edged, and the lawn kept cut short; otherwise the boorish straight road, native plants, shrubs and trees in their wild state is much to be preferred. I am sure this need not be mentioned to your intelligent subscriber, although I have no doubt you have seen many instances of designs being half neglected.

Cataraqui.

D. NICOL.

PALMS.



ALMS are among the most useful, and are fast becoming the most popular, of all plants for house decoration. When specimens of sufficient size are placed on the lawn, separately or grouped, or mingled with flowering plants, they impart a tropical appearance to the surroundings that can scarcely be obtained by the use of any other plants. There are a great many varieties that are excellent for hot-house decoration, but only a few that will endure ordinary house culture or exposure to our climate, and a great deal of loss and disappointment is caused by purchasing rare and high-priced kinds, which are quite unsuited for this purpose. The following varieties are among the best for house culture and summer display. The amount of hard usage some of them will endure is surprising: *Latina Borbonica*, *Phoenix rectinata*, *Corypha Australis*, *Chameroyis excelsa*, *Kentias*, *Seaforthia elegans*. These kinds will stand full exposure to the sun and atmosphere, if the roots are kept moderately wet. If the pots are plunged to the rims they will retain the moisture much longer. A few handfuls of ashes put under the drainage-hole will keep out the earthworms. The proper soil for palms is loam two parts, leaf mould or peat 1 part, sand 1 part. Care should be taken not to overpot the plants. Large specimens can be kept healthy without shifting for many years, by the judicious use of stimulants.

Hamilton, Ont.

WEBSTER BROS.

Saccharin.—The Berlin correspondent of the *Louisiana Planter* states that "the parties interested in saccharin are now making every effort to widen the markets and multiply the uses of the article. The well-known factory of Messrs. Fahlberg, List & Co., at Salbke, has brought a product into the market called saccharin essence, which is said to be 500 times sweeter than common beet sugar. It appears that this essence is sweeter yet than the saccharin proper and is to be used for the manufacturing of liquors. Furthermore, its use for preserving fruits is advocated as follows: In the process of preserving fruit it frequently happens that as soon as certain microscopical organisms, sticking to the peel of the fruit, come in contact with common sugar, fermentation arises, which causes the fruit to be spoiled altogether, or at least to be deteriorated. In order to prevent this, a certain amount of sugar is added, or the fruit must be boiled so much that the germs of the microbes die off. But in this way the taste and appearance of the fruit loses greatly. Experiments with saccharin are said to have led to good results in this respect. If saccharin is used alone a perfect sterility is obtained when the fruits are boiled up to 80° C., and then left for two and a half hours in this temperature. The quantity of saccharin to be added is fixed at 35 grammes for 17 litres liquid. Taste, color, and appearance of the preserved fruit are said to be excellent when the latter is treated in this way."

PALMS FOR HOME DECORATION.

SIR.—An article on the Cultivation of Palms would, I am sure, interest your readers, for almost every house aspires to have one, and it is seldom that one sees in a horticultural paper what soil they should have and whether they will bear exposure and sunshine.

L. H. K., *Collingwood*.



HERE is very little difficulty in growing a few palms for house decoration, and nothing is more suitable for that purpose, if the proper varieties are procured. The following are rapid, easy growers: Lantania Borbonica, Kentia Fosteriana, Areca Beneri, Kentia Canterburyana, Scaforthia elegans, and some others. The method now mostly adopted is to procure seeds from seedsmen, but, as their vitality is of short duration, they can only be had at certain times, and respectable seedsmen will not sell them unless they are fresh, and the time of their production varies with the varieties. They are now raised in such quantities in this way by nurserymen that it is scarcely worth while to do it unless large quantities are wanted. I saw, a few days ago, five nice plants sent by mail to a party for one dollar, in very fine condition. If seeds are preferred, sow in nice friable loam with a fair amount of nice sand intermixed. Drain your pot well, that no stagnant water may remain to sour the soil. Keep them moist; never allow them to become dry, or you cannot expect success. Their cultivation is easy. Use a good yellow loam, if it can be had, with a small proportion of well-rotted manure and some silver sand. Keep the leaves well and often syringed, or washed with a sponge, to keep down insects. The scale seems to be their greatest enemy. The sponge reaches them best, and their destruction is easily accomplished, owing to the flat nature of their leaves. In re-potting, never break their roots. They have a tendency to root mostly in the bottom of the pot. If the roots are broken it will take time for them to recover, and perhaps you may lose them entirely.

Government Grounds, Ottawa

N. ROBERTSON.





The Canadian Horticulturist

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Notes and Comments.

AT THE GREAT EXPOSITION.—Having been appointed by the Minister of Agriculture for the Dominion to take the oversight of the Canadian Horticultural Exhibit, at Chicago, the editor of this journal craves the kind indulgence of its readers during his absence. He hopes, however, to gather so much useful and interesting information through the advantages thus afforded him, that the journal will gain rather than lose in consequence. It is his intention to write in detail such events and descriptions as may be interesting to those who stay at home, and thus, in some measure, bring before them a general idea of the World's Exhibit, more especially from the standpoint of a Canadian Horticulturist. All mail matter, questions, papers for publication, subscriptions, etc., will, as usual, be addressed to him at Grimsby; and his assistant will give them the usual attention, forwarding to Chicago those which require his personal supervision.

A LADDER FOR PICKING FRUIT.—Mr. S. H. Mitchell, of St. Marys, sends us a model of a ladder for picking fruit, which appears to be very strong and durable. He describes it as follows: This ladder can be made of the required length, the size represented by the model is fourteen feet long, and the manner of making it is as follows: Take a clear lumber $1\frac{1}{2}$ inches thick and fourteen feet long, dress on both sides to $1\frac{1}{4}$ inches plump. Now rip it up into two-inch strips, dress both sides down to $1\frac{3}{4}$ inches. Use four of these strips for the uprights of the ladder and cut up the balance for steps, cutting the bottom step twenty-two inches long and the one for the top fourteen inches long. Lay down two of the uprights and nail the steps, and cut the other steps the length required to suit and nail them on about ten inches apart. Lay on the other two uprights and nail them on firmly, using wire nails long enough to go through and clenched. Give two coats of paint and the work is done.

❖ Question Drawer. ❖

Diseased Pear Trees.

551. SIR,—What is the cause of the pear leaves turning black and the limbs dying? Is it blight? and is there a cure? My Flemish Beauty pears were badly rusted and cracked last summer. Is there any remedy?

S. W. BIGHAM, *Islington.*

There is no doubt that the trees referred to by our correspondent are troubled with the ordinary pear blight. Numerous remedies have been proposed, but none which is certainly effective.

Flemish Beauty pears are notably subject to the scab, and are, in consequence, easily cracked, but we believe a remedy for this evil has been found in spraying the trees with copper solutions, so often referred to in these columns. The latest plan recommended is to spray with sulphate of copper, one pound to twenty-five gallons of water, before the foliage appears, and, after that, give several applications with Bordeaux mixture, which is described elsewhere. This treatment may possibly also help to prevent the blight, and it will certainly increase the health of the foliage of the trees, and, consequently, their thrift. It has been shown to be also decidedly useful in causing the fruit to grow larger and cleaner.

Diseased Grape Vines.

552. SIR,—For the last two years I found on my Niagara grapes one or two berries in many bunches that were bad. Each year they were the same, but I did not mistrust any danger until last season when they were very bad, some rows scarcely showing a clean bunch. Many of them would take four baskets, as they came off the vines, to make one for market, and that with a great deal of work. I sent for F. Lawson Scribner's "Fungus Diseases," and found that he exactly described my trouble. Can you tell me where the ingredients can be bought the cheapest, as a large quantity will be required this season, many people around here being in the same trouble as myself?

B. A. BAILEY, *Niagara.*

It will be necessary for the vineyardists to spray their vines faithfully in order to secure immunity from these evils. Try spraying with copper, one pound to twenty-five gallons of water, before the foliage appears, and then use Bordeaux mixture, two or three times after the foliage appears, and excellent results will be evident.

A Fertilizer.

553. SIR,—I send you a formula for a fertilizer recommended in the New York World. It is as follows: 500 lbs. air-slacked lime, 300 lbs. common salt, 300 lbs. fine ground phosphate of lime, and 100 lbs. nitrate of soda. Please tell me where the phosphates can be got and what they are worth. This mixture is said to be worth less than \$15 per ton. Do you think it suitable for the orchard and garden?

M. A. BAILEY, *Niagara.*

Doubtless each of these elements are valuable on land and the fertilizer will be worth all it costs. It is only by experiment that we can tell which elements

are most needed on a given soil for a given crop. It will be generally found that the best plan is to buy the fertilizers separately and apply them to the soil according to one's judgment, until the results can be compared.

Spraying Pumps.

554. SIR,—In your February No. I notice the "Little Dandy" spraying pump. It seems to me to be lacking an important point, viz., an arrangement for agitating the water and mixing the ingredients. The new Lockport sprayer has added a stirring hose in the rear of spout which agitates completely. I have an old one without an agitator, and I managed to fit one to it. My plan of arranging my spraying apparatus was to place a barrel on its side in the wagon. I made a frame with four pieces, 3x4, crossed and bolted at the corners. I then raised four legs from the sills to the top of the barrel, and then placed a plank on these. I placed my pump in position, bolted it to the plank, running the main pipe through the bung hole. I then bored a 5x8 hole for the agitator pipe, and in this way you have the spraying frame, pump and all attached and always ready for business. It can be put in a cart or wagon in a few minutes, and there is no danger of upsetting. This plan is safer than having the pump on the end of the barrel, which might cause it to upset.

M. A. BAYLY, *Niagara.*

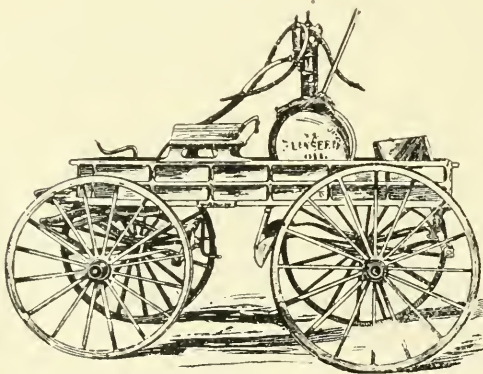


FIG. 530.

shown having two hose, and a wooden agitator, the latter to be used as often as thought necessary. The frame described by our correspondent seems commendable.

The liquid used for spraying can be easily agitated with a long stick, but an agitator which works continuously is more convenient, and one could easily be attached to the "Little Dandy," or to any other of the pumps. The plan of laying down the barrel on its side is an advantage, being safer from tipping. We give an engraving of this way of placing the barrel in a spring wagon, the pump here

Hybridizing Apples.

555. SIR,—Will you please tell at what precise moment the pollen on apple blossoms is best fitted for hybrids? Years ago I experimented with apparent success, but during four consecutive days I could never see any pollen on my brush, neither could I see any on the blossoms.

Reply by J. A. Morton, Wingham, Ont.

At the opening of the anther cell under natural conditions, is the most potential period of the pollen for fertilization. How long after that the pollen

of the apple will retain its vitality I cannot say, probably for a few days. The wallflower's pollen retains its for fourteen days, bladder ketmia for at least three days, and the hemp, the date and others for a year.

Novelties.

556. SIR,—An agent here is selling peach trees grafted on Minnesota hazel stock, which he states causes them to be much hardier than on peach or plum stocks, and that they are giving good crops as far north as Guelph. He is also selling the grape vine raspberry, which he states will do well on clay soil, on which the ordinary raspberries will not do well. Can you offer your subscribers any information with regard to the above?

A. G. HEAVEN, *Boyne, Ont.*

We would advise our subscribers to beware of such untried novelties as are here spoken of. If any of them take pleasure in spending money for what they consider the luxury of trying new things worth the expense, but for ourselves we prefer to wait until they have been fully tested by reliable persons before investing. If any of our readers have had any experience with these new things, let us hear from them.

Japan Plums.

557. SIR,—Are Japan plums really exempt from black knot, as is claimed for them in the *Rural New Yorker* of February 18th?

D. S. McD., *Mabou, N. S.*

558. SIR,—Are the following plum trees hardy, and what degree of frost will they stand,—Ogan, Grand Duke, Botan, Spaulding, Monarch, Abundance and Mariana?

G. H. NIXON, *Hyde Park, Ont.*

The Japan plums have not been long enough tested for us to give any very decided opinion regarding them. Mr. S. D. Willard, a noted plum grower of New York State, has probably had the most experience of any one with them, and he stated recently that they appeared to be very hardy in wood, and, so far, exempt from black knot. Just what degree of frost we are not yet prepared to say. We will be pleased to hear from any of our subscribers who may have tested them, or others above mentioned.

Labels.

559. SIR,—Is Manilla paper, or zinc painted white, the most desirable for tree labels.

G. H. N., *Hyde Park.*

Manilla paper might answer well, if it is not intended to be exposed to the weather, but the most satisfactory label that has been used by the writer is zinc without paint. Lead pencil marks on zinc, when exposed to the weather, become almost indelible.

Hardy Vines.

560. SIR,—Please give a list of hardy climbing vines for the north side of a house in Cape Breton. D. S. McD., *Mabou, Cape Breton.*

Not being familiar with the climate of Mabou, we can scarcely give a very complete answer. The following would be worth trying: *Ampelopsis Virginiana*, *Celastrus scandens*, *Clematis Jackmani*, *Clematis viticella*, *Lonicera Halleana*. Will some reader reply more exactly?

Pruning Plum Trees.

561. SIR,—About four years ago I had two white plum trees given me, and I was strictly charged and warned not to prune them, but let them grow as they liked, because, if I pruned them, they would die. Well, now they are large, straggling trees, and last year bore a few plums, the most of which were spotted. What must I do; and when is the proper time to prune them? M. E. S., *Mount Royal Vale, Que.*

It is a mistaken notion that any of our fruit trees will do as well neglected as if cared for. No branches should be allowed to grow long and straggling; all such should be cut back in the spring. It will be difficult now to bring these trees into proper shape, but a good deal can be done by the intelligent application of the knife in March or April.

Varieties of Cherries.

562. SIR,—In an orchard of one thousand trees or so, would it be better to plant equal proportions of sweet and sour varieties, or would you, in Southern Ontario, plant a larger proportion of the Hearts and Bigarreaus? ALLAN BROS., *Winona.*

In Southern Ontario we would advise the planter to include in his orchard an extended list of the best varieties. The Heart and Bigarreau cherries are like peaches, very uncertain, but when they do yield a crop the prices are high enough to make them profitable. At Maplehurst the following varieties have succeeded well: Hearts—Black Tartarian, Early Purple, Elton, Governor Wood, Knight's Early Black; Bigarreaus—Mezel, Napoleon, Elkhorn. Windsor might be added to these. Of Dukes and Morellos, the Early Richmond, the two varieties of Montmerency, English Morello and Reine Hortense, the latter an excellent variety for all purposes.

Training Grapes.

563. SIR,—I was overtaken with winter before I pruned my vines last year; and the weather this month is so far (March 13th), very unfavorable. Kindly inform me what is the latest period suitable for pruning the vineyard? GEO. STRAUCHEN, *Woodstock.*

The only objection to pruning the grape in the month of April is the loss of sap, commonly termed bleeding. Many vineyardists do not finish the work till past the middle of that month, and the loss of vitality, so far as we have noticed, is not observable.

Question Budget

(Will readers please answer.)

26. SIR,—Has apple pomace any manurial value? If so, would it pay to haul it a quarter of a mile, if it could be had free of charge? Also, when should it be applied?
L. S. MORGAN, *Port Dover.*

27. SIR,—How would I go to work to renew the bark on old apple trees; it having come off in patches?
L. G. M.

28. SIR,—Which is the earliest and which is the latest plum to grow for market?
WM. SWITZER, *Kirkton, Ont.*

❖ Open Letters. ❖

Apples Near Montreal.

SIR,—I had a medium crop of apples last year. Two-thirds of mine were Fameuse, the rest were summer and fall apples; I sold \$950 worth of apples, but of this only \$325 was for Fameuse, which were so spotted. I tried fungicides for the apple scab, but, unfortunately, it rained immediately after each application.

☐ I shipped a trial lot of Wealthy, Alexander, and Plumb's Cider to Scotland. They carried well, and the receivers were delighted with the Wealthy; the Alexander was too ripe, and the Plumb's Cider had not enough color. The Wealthy sold for 16/ a barrel, the Alexander for 15/ and the Plumb's Cider for 12/ to 14/. They were put on board ship the day after they were picked.

☐ How does the Beurre d' Anjou compare in hardiness with the Flemish Beauty? It has done very well for three seasons, but, before going more extensively into them, I would be glad if some of your subscribers who have tested them in a climate the same as this would give their experience through your valuable paper. The Flemish Beauty pear appears to be as hardy here as the Fameuse apple and it has the same fault of spotting in unfavorable seasons. In a sheltered spot in my garden I can grow Bartletts for home use.

R. BRODIE, *St. Henri, Montreal, Que.*

Care Plum Trees.

SIR,—There is a great deal of talk about the black knot on plums, a disease which deters many people from engaging in plum growing. I do not wonder that plum trees die with the treatment they get. They are planted in a hole, about a foot across, in which the roots are cramped like a wisp of straw, and two or three shovelfuls of earth are thrown in and tramped with the foot, removing some of the bark at the same time. Neither root nor top are ever pruned and they are left to grow in grass or poor land that would not grow thistles, and then the planter expects the tree to grow and yield \$12 or \$15 worth of plums, the second or third year. More than half the trees die the first year, and the remainder will live a year or two and then die from black knot. These people then want a black knot law put in force.

Now, I will give you my plan of caring for my plum trees. First, my land must be well enriched with barn manure and wood ashes, the year before. I dig a hole two or three feet in diameter and ten or twelve inches deep, and then taking the tree in my left hand, with the roots towards me, I cut off, with a sharp pruning knife, all the broken and damaged roots, turning the tree around as I cut, and drawing the knife toward me to make a clean shave. Then standing the roots of the tree on the ground, I cut off all side branches, except three or four nicely balanced ones around the top; then cut off one third from each of these, and the tree is ready to plant. Then I set the tree in the centre of the hole, perhaps one-half an inch deeper than it was in the nursery, and spread out the roots evenly, covering them with fine earth which I press down firmly with my foot. I continue

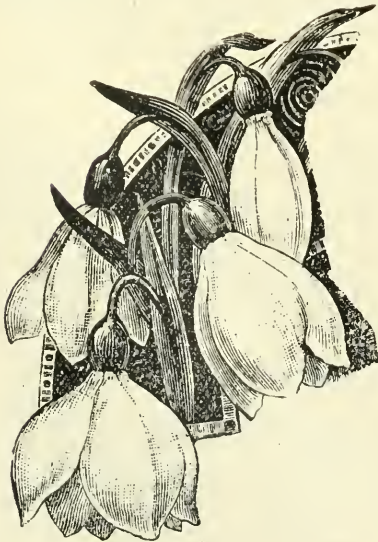
in the same manner with the upper roots, firming the earth as I proceed, and keeping back a little earth to cover loosely the top. This I keep loose all summer, hoeing it every ten days or so. Some people think that there is no use of hoeing except to keep down weeds. I hoe to keep the ground moist, and prevent it from becoming too dry. The following spring I put a good coat of manure all around the tree over a space of three feet from it, and keep it stirred and worked in with the hoe, so that it will rot, and that the rain will carry it to the roots. If this process is continued three or four year, there is no danger of being troubled much with the black knot, and a first class crop of fruit is almost sure. We must feed our trees. The plum is a great bearer and will stand any quantity of manure. I consider it the best paying of all fruit crops.

Some people say that they have no room to plant. I have an eighth of an acre, a house x 27, woodshed 24 x 16, well and clothes drier, besides, and I grew \$40 worth of plums last year; I have never failed in a crop. I have taken most of the prizes at our fall shows the last fifteen years. Some of my Lombard trees have been bearing fifteen years and I have never failed in taking first prize with them. The Lombard is very much subject to the black knot. Last winter I cut off some large branches which were affected with the knot and last summer young shoots grew out from accessory buds five or six feet long and from one-half to three-quarters of an inch in thickness. This is my plan of renewing my trees.

Now, sir, I would like to see a man come into my yard and order me to cut down my trees because he found a small batch of black knot here and there. Had such a thing been done a year ago it would have cut \$40 out of my pocket besides the prizes I got at our fall show. I think it would be better for the Association and the Government to teach the people how to grow plums and renew their trees than it would be to destroy the trees. The Lombard plum will take black knot, but what if it dods, it will bear \$10 or \$15 worth of plums each year by renewing the wood as above.

THOS. HOLLOWAY, *Clinton, Ont.*

NOTE BY EDITOR.—The plan of planting plum trees and caring for them, as described by our correspondent is excellent and should be followed by all who wish to succeed in plum growing, and, while we do not agree with him that neglect causes black knot, there is no doubt that neglected trees are more liable to take the disease than those which are well cared for.



THE SNOW DROP.

The Snowdrop! the Snowdrop!
 The foremost of the train;
 The snowdrop! the snowdrop!
 Who's lustre bears no stain.
 In modest beauty peerless
 It shows its little bell;
 Through frost and snow so cheer-
 less,
 Of sunny days to tell

J. W.

Toronto,
March 16th, 1892.

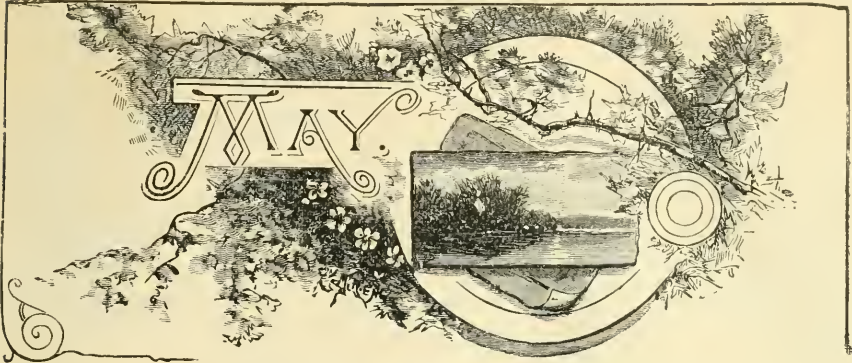


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THE BRIGHTON GRAPE.



Our taste there is no more delicious grape of its season, for table use, than the Brighton. Its thin skin, juicy, tender pulp and excellent quality make it such a favorite for eating that, while it is at hand, no other variety, not even the famous Delaware, is preferred to it. The Hartford, Eumelan and Delaware, ripen about the same time, and the latter has always been considered the standard of excellence in quality, but the Brighton is now esteemed by many its superior.

Of course, a good deal depends upon the locality on which it is grown, but, when one considers the larger size of the bunches and the greater productiveness of the latter, we are not surprised that it should be valued as one of the most promising and successful of the newer varieties and that it should be largely planted in the Eastern States where it has already taken its place as the leading table grape.

We feel warranted from our own experience in recommending this grape for extended cultivation in Ontario, especially in those localities where hybrids of foreign extraction have been found to succeed, and where early table grapes are in demand.

In size, color, form of bunch and berry, the Brighton somewhat resembles the famous Catawba, but it ripens a month earlier. Our colored plate scarcely does justice to its color; the bunches too, though often very large, have usually some berries smaller than others, and this is not represented in our illustration.

The Brighton was raised by Jacob Moore, of Brighton, N.Y., and is a cross between the native *Labrusca* family, of which the Concord is a type, and the Diana-Hamburg, of foreign extraction. The vine is a strong grower and pretty hardy, though it needs protection in our severe winters. It is also fairly productive when well cared for. The stems are medium to long-jointed and ripen early. Thinning out the smaller bunches is a wise practice and will result in the better development of the bunches that remain.

The following description of it by A. J. Downing will be interesting, in connection with this monograph: "Bunch medium to large, shouldered, moderately compact; berries medium to large, round, light red at first, changing to a dark crimson or maroon when fully matured, sometimes almost black, and covered with a thick lilac bloom. The berries adhere well to the peduncle; skin thin but tough; flesh tender, very slight pulp, sweet, juicy, slightly aromatic, very slightly vinous, and of very good quality for an early grape. It has its best flavor when it is first ripe, but becomes pasty and loses its sprightliness when fully ripe. It ripens nearly as early as the Hartford Prolific and before the Delaware."

This grape has been fully tested in Ontario so long ago as 1886. Mr. J. P. Williams, of Bloomfield, P. E. Co., then wrote concerning it in this Journal: "As to the best varieties, the Delaware has till lately held first place, but now the Brighton stands pre-eminently victor. It has steadily improved, with age, in the strength of the vine. This year I gathered all the fruit before the frost, beginning soon after the Champion. I could pick dozens of bunches that weighed $\frac{3}{4}$ lb. and a few turned the scale at $1\frac{1}{2}$ lbs. I placed a number of different kinds of grapes in the fruit room separately, and, while the Brighton remained, none of the others seemed to attract my visitors. All pronounced it the best out-door grape they had ever eaten."

It is not, however, without its faults. In some localities it is quite subject to mildew, which quickly ruins the beauty of the bunches. It is not a good keeper in packing because of its tender skin, and this unfits it for carrying long distances without the greatest care in handling.

As grass seed is so light and easily blown away by the slightest wind, when you are sowing it you may anticipate trouble, but you needn't. Go into the garden and get a barrowful of light loam and sift it moderately fine, and into this mix your grass seed, mixing loam and seed very thoroughly and finely, then sow the mixture. This is how we do it all the time; caring little for the weather whether it blows or not.

Combined fungicides and insecticides are recommended whenever applicable, because of a saving of time; a less liability of injuring foliage; greater efficiency in some cases, and as a precautionary measure in others.

PETERBORO' FRUIT GROWERS' ASSOCIATION.



ON invitation from the Peterboro' Fruit Growers' Association, the writer was present at the annual meeting of that Society, held in the City of Peterboro' on the 22nd of February. Mr. E. B. Edwards, the former Secretary, was elected President. In opening the meeting he stated that the object, which in his opinion should be kept prominent by a local Association such as theirs, was to encourage farmers to devote their attention to the growing of fewer varieties of apples, and those only the very best for export. In this way they would be able to combine in their shipments and become known in the foreign markets for excellence in some one line. His advice was, that farmers of that neighborhood should plant five or ten acres of their land with one or two varieties of first-class apples, and give them the very best cultivation; and then, when the Peterboro' fruit growers could produce a large stock of first-class apples, they would command notice in the markets of the world, and perhaps bring buyers to their very doors. He would like to see the Peterboro' brand known in the markets of the world as indicative of high grade apples such as would command the top prices.

Apple scab was ably treated of by Prof. John Craig, of the Central Experimental Farm, Ottawa. He showed that it belonged to that class of fungi which feeds on living matter, as distinguished from those kinds which live on dead matter. It attacks both the fruit and foliage, weakening the vigor of the tree and marring the appearance and size of the fruit. The spores of the scab live through the winter on old wood and scales of the fruit buds. Some twigs of the Fameuse, King, and other varieties, well known to be subject to scab, were sent to him by Mr. Joseph Tweedle, of Stoney Creek, for microscopic examination; and, although the spores were at first invisible, even with the microscope, yet, after exposure to certain conditions favorable to their development, the spores germinated and could be seen to be present in large numbers. He advised the following treatment for scab: First, spraying with sulphate of copper, 1 pound to 50 gallons of water, in the spring as near the time when the spores are likely to germinate as possible. Afterwards, he would treat them with Bordeaux mixture and Paris green, made as shown in the following table, which also explains the probable cost:

Water	100 gals.	
Paris green.....	8 ozs.	8 cents.
Lime.....	8 lbs.	5 "
Sulphate of copper.....	8 "	80 "
		—
		93 cents.

This mixture would be found most serviceable for the destruction of the apple spot, grape mildew, codling moth, raspberry anthracnose, canker worm, etc. The amount of the mixture required would be about a gallon and a half per tree of ordinary size, and this would amount to about \$2 per acre for the two applications which would be necessary.

The first application of the Bordeaux mixture should be made just before the blossoms open, and the second application soon after the fruit is formed.

For gooseberry mildew, he recommended eau celeste, which should be applied early as a preventive, or potassium sulphide, eight ounces to 25 gallons water. This latter would only cost about 20 cents, and the price, therefore, need debar no one from using it.

The time for picking apples was discussed by Mr. Craig. In his opinion it was not best to allow apples to hang after the seeds had matured. Mr. Craig showed two samples of the Wealthy, one of which had hung on the tree ten days longer than the other. The latter had colored after it was picked, and on the first of March it was in better condition than the former. Mr. Craig had gained his experience in the following way: he had picked one-half the apples from a tree of Wealthy, early, just when they were mature, and the other half was left ten days longer. Of those first picked, only 15 per cent. were spoiled when last examined, while of the second picking 25 per cent. were decayed up to the same date, February 20th.

Propagating raspberries by layering was also treated of by Mr. Craig. This was the common method employed by nurserymen who shovel the earth in among the branches, covering nearly every part of the bush; the parts thus covered would all throw out small shoots and could be easily used in making new bushes. Most shrubs may be propagated from green wood slips having three or four leaves, if made in July and firmly set in the ground and kept shaded.

The writer, in his address, gave a detailed account of the common mistakes made by Canadian apple growers, and afterwards replied to numerous questions.

Grafting Nut Trees.—Top-working a hickory or walnut, or all common trees and shrubs, can be done by annular budding. June, when the bark slips easily, is the time. The method is simply this—take scion $\frac{1}{4}$ to $\frac{3}{4}$ of an inch in diameter; remove a ring of bark $1\frac{1}{2}$ to 2 inches long, bearing a good strong bud: cut off a limb of the stock, leaving a stub, from which another and similar ring of bark is removed. The ring from the scion is carefully split, if necessary, and substituted, taking care that it neatly fits the remaining bark of the stub, and its edges when split are close enough to unite. Cover the whole with a paper sack tied below the wound and success is sure. Care is necessary that the parts to be united fit, and are not bruised.—Prof. J. L. Budd.

HORTICULTURE IN PUBLIC SCHOOLS.



THE fact, that by far the largest interests of our province are agricultural, is of itself sufficient reason for giving agricultural subjects prominence in a rural school course ; but when we consider the practically indefinite expansion of which they are capable, it becomes a matter of natural importance that something should be done to bend the inclinations and direct the energies of a larger proportion of the population towards them. Not only is there a distaste for these pursuits, as shown by the disproportionate growth of urban population, but there is a lamentable ignorance of the scientific principles on which they rest. Among the many agencies to which we may look for improvement, none possess more advantages than the public schools, and horticulture presents the readiest means of introducing agricultural subjects in these schools. There is not a family represented that has not at least a small garden, so that many of the facts and theories of a class lesson could be verified or tested immediately by the pupils with little trouble and no expense. The material for the practical study of plant is always at hand, Horticultural subjects can be taken with pupils of all ages, along the lines of the most approved modern methods of teaching without disturbing the ordinary school work in the least. Indeed, natural science cannot well be introduced in primary schools except through the study of plants and their modes of growth. Any pupil who is old enough to notice the difference between a leaf and a root, or that a plant droops when pulled from the ground and revives again when placed in water, is old enough to begin the study of plants ; and no pupil is so far advanced that he does not find something to interest him in even a limited garden.

As a mental discipline, quite apart from its practical side, this subject would have as much value as any on the course, and in point of interest is much beyond many of them. I have seen a high school class of boys and girls, partly from the town and partly from the country, listen as they would to a fairy tale while their teacher told the story of the common red clover and its relation to other crops on the farm.

But the difficulty lies rather with the teacher ; unless he has an appreciation of the importance of the subject, and a living interest in it, I fear little progress would be made. Many of our teachers are young girls who, in addition to their intellectual immaturity, are supposed to have no interest in the theory and practice of horticulture, and possibly for that reason none. A large portion of the male teachers are from the country, but they too often think of the garden only as a place where they were forced to toil evenings after they had already done a fair day's work in the fields. The case, however, is not altogether hopeless.

Women are quite capable of inspiring love for fruits and flowers and giving useful instruction in their culture, if they can overcome a few conventionalities ; and young men, who have left the farm disgusted with its drudgery and isolation, might be persuaded, especially after a few years experience in school teaching, that drudgery is not confined to the farm and that isolation itself is sometimes very desirable.

The introduction of horticulture into the school depends almost entirely on the teacher, and therefore, any efforts to bring this about must be directed towards meeting the teacher and influencing him. I will suggest that the co-operation of the County Inspectors be secured either by presenting the subject to them at their yearly meeting in Toronto, or by special circulars, or by both methods. They, more than any other men except teachers could enforce and impose the teaching of Horticultural subjects in the public schools, and their aid would be invaluable. Every teacher must get his profession and County Model School, and it might be possible to induce some competent local horticulturist to address the teachers-in-training once or twice during the session to excite interest in the work, and at the same time secure the co-operation of the head-master. In every county, too, there is a yearly convention of teachers at which something might be done. The science master of the high schools are also able to influence the teachers of the country in this direction to a very large extent.

These suggestions are made to show that some definite steps might be taken, if the subject were thought of sufficient importance, and, whether it is or not, might very properly be a subject for discussion at the next meeting of the Association; and the whole matter, if favorably considered, be placed in the hands of an energetic or efficient committee. There is already an excellent text-book on agriculture, and the education department, I am sure, will assist in any well-developed scheme.

Windsor.

A. McNEILL.

KEROSENE FOR BLACK KNOT.

My next door neighbor had several plum trees bearing fine fruit, and all died covered with knots; but before dying I had secured a few sprouts and had some fine young trees, on which, when they were about six feet high, knots began to break out on the trunks, some six inches long. Having filled a small sewing machine oil can with coal oil, I gave the knots a dose ; they stopped growing, but in about a month a few more made their appearance and some old ones began to swell again, then another dose finished them. The next year (last summer) a few spots appeared, they were treated before they broke out, and all the trees are now very thrifty, only scarred where the large knots were, as the knots died and fell off like loose bark, leaving dead spots over which the new bark is growing. If the trees are very badly affected, it is better to cut them down, they are so unsightly. The oil does not seem to have any bad effect on the sound part of the tree ; but, like all other medicine, too much might be injurious, but I'd rather kill it trying to save than let the disease have its way.—R. N. Y.

— Key to Midway Plaisance —

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- 129 DuSable School
- 130 DuSable School

MAP OF THE BUILDINGS AND GROUNDS OF THE WORLD'S COLUMBIAN EXPOSITION AT THE SON POND, MIDWAY PLAISANCE, CHICAGO, ILL., U.S.A. 1893.

— Scale —

Prepared by the Department of Parks and Gardens
 W. Stone, Chief Designer
 J. M. Wood, Chief Designer

— KEY TO —

— State Sites and Buildings —

- 111 DuSable School
- 112 DuSable School
- 113 DuSable School
- 114 DuSable School
- 115 DuSable School
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- 117 DuSable School
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- 130 DuSable School

— Foreign Sites and Buildings —

- | | |
|---|---|
| <ul style="list-style-type: none"> A Great Britain B France C Germany D Austria E Belgium F Italy G Spain H Portugal I Greece J Turkey K Prussia L Denmark M Sweden N Norway O Finland P Russia Q Japan R Korea S China T Siam U暹羅 V 暹羅 W 暹羅 X 暹羅 Y 暹羅 Z 暹羅 | <ul style="list-style-type: none"> 1 暹羅 2 暹羅 3 暹羅 4 暹羅 5 暹羅 6 暹羅 7 暹羅 8 暹羅 9 暹羅 10 暹羅 11 暹羅 12 暹羅 13 暹羅 14 暹羅 15 暹羅 16 暹羅 17 暹羅 18 暹羅 19 暹羅 20 暹羅 21 暹羅 22 暹羅 23 暹羅 24 暹羅 25 暹羅 26 暹羅 27 暹羅 28 暹羅 29 暹羅 30 暹羅 |
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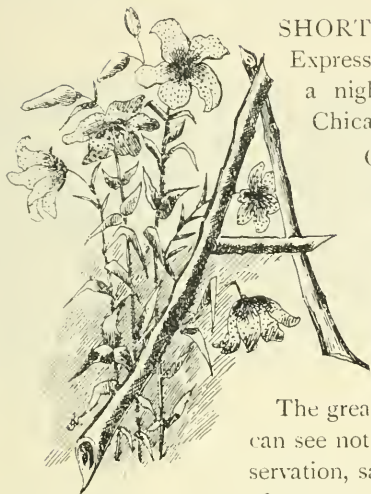
— Other Buildings —

- | | |
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LAKE MICHIGAN

NOTES FROM THE WORLD'S FAIR.—I.



SHORT journey from Hamilton! The Chicago Express leaves at 4.10 p.m. and arrives at 8 a.m.; a night's rest in a sleeper, and you awake in Chicago.

On board were some Frenchmen—good-looking fellows, full of life and vivacity; only one of whom could speak English. The others speak French so fast it is almost impossible to catch the words. One is an artist, and interests the others with his sketch-book, adding an additional outline wherever he sees an interesting subject.*

The great tunnel at Port Huron is so dark that you can see nothing, and so one can give no items of observation, save that in its dark recesses several officers of customs make us open our valises, and bid us attend at the baggage room on the American side, to open our trunks. Finding the writer was commissioned by the Minister of Agriculture of our Dominion, the officials at once gave way, out of courtesy, and he was passed without question.

The ride through Michigan was rather monotonous—an ordinary farming country, with little to indicate that the farmers were very prosperous. As we neared Chicago, the proximity of a large city was evidenced by the hundreds of

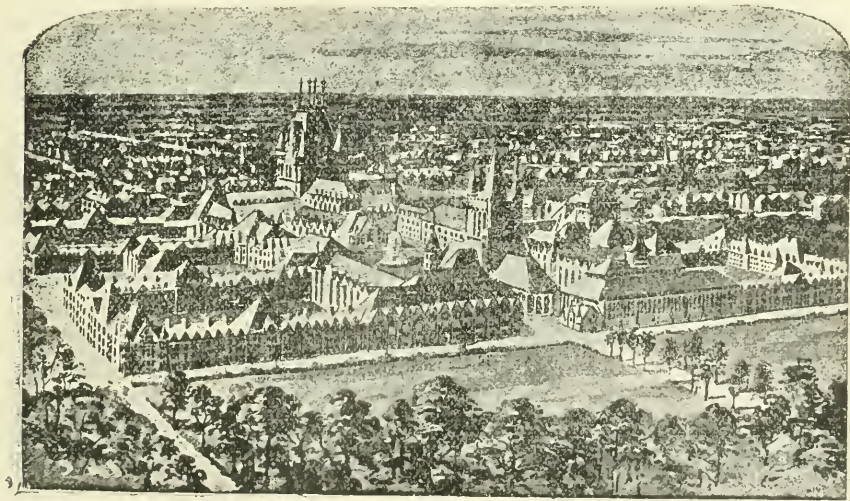


FIG. 531.—BIRD'S EYE VIEW OF UNIVERSITY.

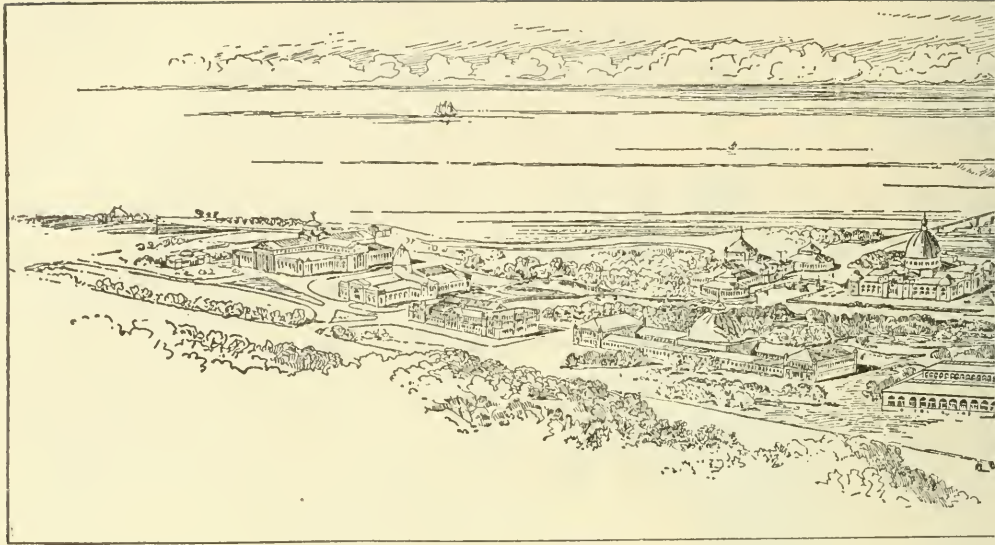
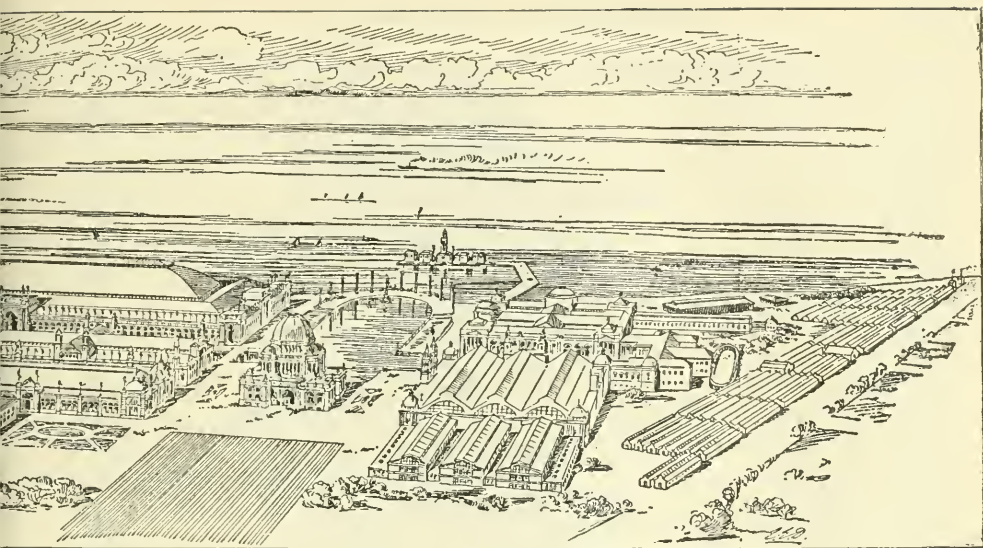


FIG. 532—BIRD

acres laid out in building lots, with sidewalks and streets, and even shade-trees planted in advance of any houses.

Polk Street Station, where we leave our train, is a fine one, with every accommodation for a large crowd, such as may be anticipated very soon. Here our party of vivacious Frenchmen are ubiquitous, at the parcel-room with grips and rugs innumerable, or at the refreshment-room doing full justice to the needs of the body. At this Station you are in the centre of Chicago, but by no means near the fair grounds. Such an immense area is, of course, only to be had outside the city, and Jackson Park is eight miles away. The Cottage Grove cable cars, or the elevated railroad, and the Illinois Central are the best means of reaching it, but these are busy enough carrying exhibitors and workmen. How they will be able to carry the hundreds of thousands is a problem. To be within walking distance will be an advantage, and in recognition of this a great number of enormous temporary hotels are being rapidly pushed forward toward completion, outside the grounds, with single rooms at \$1 per day without meals. Fortunately for all concerned, an immense railway depot is being completed just inside the grounds, and here railway trains from all lines are expected to land their hundreds of thousands of visitors.

The writer is fortunate in having a nephew at the University of Chicago, and through his kindness a visit to it was one of the first things on the programme. This is one of the great Universities of modern times—endowed with 7,000,000, largely by Mr. J. D. Rockefeller, its foundations are being laid broad and deep, and the buildings already open are but a promise of what is to follow. Only one year in operation, it has 700 students, with a promise of double that num-



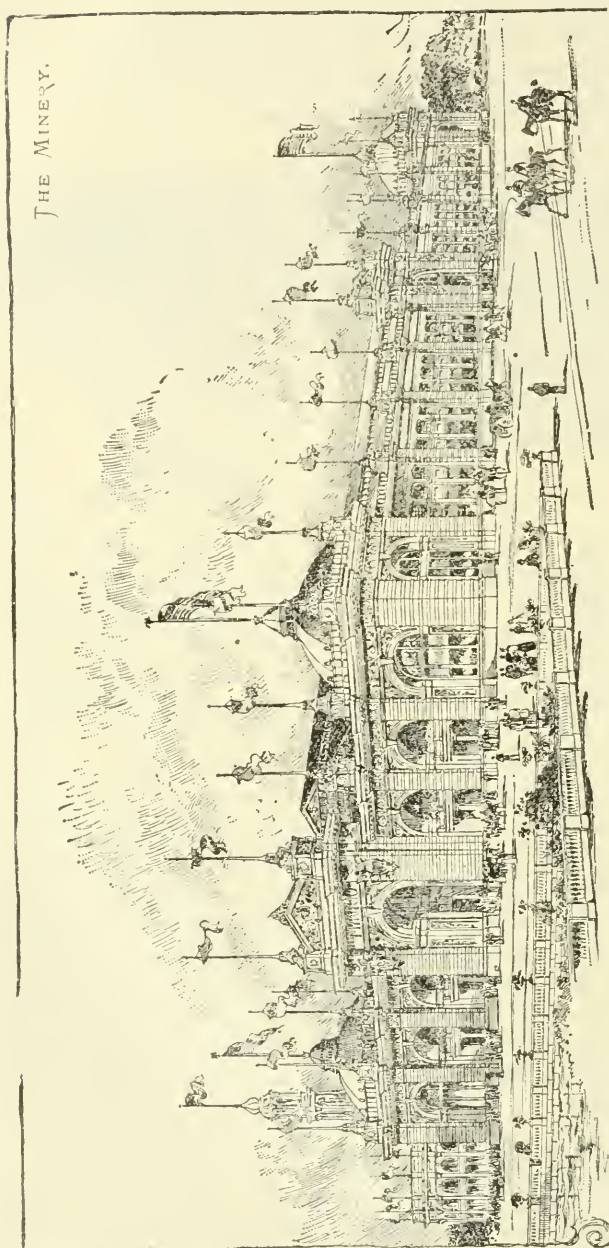
WORLD'S FAIR.

ber next year. Our engraving shows a view of the huge quadrangle of buildings, as it will be when completed ; only a portion is yet finished, but the work is being pushed forward with vigor, under the able supervision of the President, Dr. Harper. There are no bars of sex, color or nation, but the whole course is more in the interests of postgraduates than undergraduates, the design being to turn out scholars of very high attainments in special lines.

But how can we describe the great exposition to our readers? Pen and paper seems utterly inadequate even if employed all summer. Imagine 650 acres filled with immense buildings of the very finest architectural design ; one of them alone, the Manufacturers and Liberal Arts, covering thirty acres ! Besides the numerous magnificent buildings devoted to exhibits proper, every country and every state has its own respective building, for some prized relics and characteristic displays and for use as State offices ; and intersecting the grounds there are several lagoons, with islands and bridges which give a fine effect to the whole. Standing on the tower of our Canadian building, and viewing the whole, to-day, the writer could not help feeling sad at the thought that seven months hence, these buildings will be taken down, and all the grandeur departed. It reminds one of those lines :—

This world is all a fleeting show,
For man's illusion given.

No one can get any good of a short visit ; there is too much to be seen for a day or a week. Why one can hardly see the outside of the buildings in one day ; and a day to each of the principal buildings is very little, besides the



attractions of the State buildings, and the glimpses of street life of Egypt, Turkey, China, Ireland, etc., to be had in the peculiarly interesting "Midway Plaisance."

Unfortunately our space is well nigh exhausted for World's Fair topics this month, but for the benefit of Canadians who intend to visit us here this summer, we insert a map of the grounds and a bird's eye view of the same.

The Mining Building, 700 x 350 ft., will be a mine of wealth to the geologist, with its rich exhibits from all parts of the world. One little nickel from Sudbury mines weighs only six tons!

The Agricultural Building, which covers nine acres, is one of the most elaborate on the grounds. Its architecture is classic Renaissance, and is lavishly adorned with examples of the sculptor's art. Some of the corn decorations in it are very captivating. Ohio, Wisconsin and Iowa have

FIG. 533.

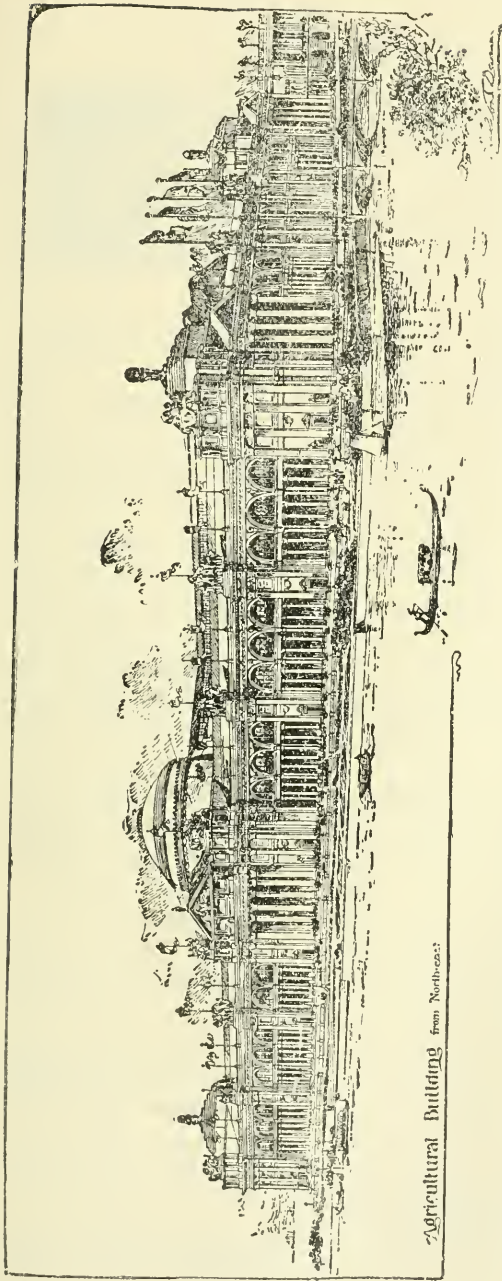


FIG. 534.

courts decorated beautifully with various colored corn, cut in various shapes, and set to form beautiful designs, along the cornice, on the ceilings, and up the columns. But in our opinion this is too artificial, and Canada's court trimmed with grains in a pretty but more natural style, is more sensible, and more instructive; indeed, with the trophies of the Experimental Farms, the Ontario Agricultural College, and the provincial exhibits, it will constitute a great triumph of skill.

“How much are your water-melons?”

“Two dollars each, sir.”

“Has Mr. Blank bought any of you at that price?”

“We send one to his house every day.”

“I just wanted to know. He is cashier on a salary of eight hundred dollars a year, and I'm on his bond for ten thousand dollars. Water-melons are very healthy, but if Blank can eat 'em at two dollars apiece, he must find another bondsman.”—*Wall Street News*.

Dilute Bordeaux mixture, copper-arsenic solution and ammoniacal solution of copper carbonate are the most useful for the treatment of the diseases herein mentioned, and the first has the widest range of usefulness of all.

HOT WATER HEATING.



THE reply to question 542, in the March number of CANADIAN HORTICULTURIST, coming as it does from such excellent authority, will relieve many persons of doubts which still exists respecting the merits of hot water heating as applied to dwelling houses and other buildings, as well as to green-houses. Mr. Beadle's words, "I unhesitatingly give the preference to hot water," will carry conviction to all who know anything of that gentleman's experience in such matters.

The subject of heating buildings by hot water, however, is in its infancy, and will not take its proper place in household economy until it is more generally understood and its practice greatly simplified.

I do not propose to write an essay on this subject at present, but have thought that a few pointers to intending builders, from one who has had nearly twenty-five years experience with this most economical method of heating dwelling houses, might be of service at present.

1. The boiler must be of sufficient capacity to heat the water sufficiently without forcing, during the *coldest nights*.
 2. The piping must be of sufficient capacity to hold an abundance of water for the *coldest weather*.
 3. The estimate for the length of the piping must be made on the *quantity of water required*, and due provision must be made to distribute the same to the necessary points with the least length of pipe, *i.e.*, pipe of the largest workable size.
 4. Pipes must be laid with sufficient fall only, to prevent "pockets" being formed. One inch in one hundred feet is sufficient for this purpose if of the proper size and of the best quality, provided they are put in place by a competent workman.
 5. No coils, or substitutes for such, should be permitted above the floors. Such furniture is utterly useless and very expensive.
 6. The circulation of the water depends upon the difference between the weight of the ascending and the descending columns.
 7. The difference in weight in the two columns is produced by the difference in the temperature of the air surrounding the pipes and the temperature of the water in the pipes. When the temperature is the same there will be no circulation.
 8. The same amount of heat will be given off from the same area whether the pipes are laid horizontally or perpendicularly.
 9. The cheapest work is that done by the most competent workmen.
- Other "pointers" may be given, as well as further explanation made of the foregoing, should circumstances require them.

Lindsay, March, 1893.

THOS. BEALL.

CURRANT GROWING FOR PROFIT.



FROM my experience of sixteen years work there is no fruit that gives such good returns for thorough care and cultivation, (and I may say considering last season's prices,) for neglect and poor cultivation, as the currant. At the same time no fruit shows such a marked result as the result of thorough care and cultivation. I have come to the conclusion that the following conditions are essential to the highest success:

SOIL.—Almost any kind with a clay subsoil, not more than two feet from surface, will produce good crops; and with clay at even greater depth, if the soil has any mixture of clay or alluvial deposits.

LAYING OUT GROUND AND ECONOMIC PLANTING.—Prepare the land by ploughing and surface working, and then roll or level smooth. Mark crosswise with marks, set at distance intended to set plants in rows, say 6 feet for strong-growing varieties such as Black Naples and Raby Castle, and 5 feet for small growers, such as Lee's Prolific, Fay and Cherry. Next, run furrows lengthwise, 6 feet apart, using stakes 6 feet long in measuring, and throwing the furrows all one way in order to get even distances. This can be done by striking out one half of field, driving one way, and the other half the other way, using two sets of stakes for measuring and striking out. Let a small boy carry the plants and a man deepen the furrow to nine inches at each cross mark, the boy holding the plant against the land side of the furrow at the cross mark, while the man fills in the furrow immediately around it, packing the soil firmly on the roots, and then filling up to surface loosely. The operation is thus done well and rapidly. A man and boy should plant 1,000 to 1,500 bushes in a day.

CULTIVATION.—With this system a crop of vegetables, potatoes or corn, can be planted in hills, and cultivated both ways during the first and second seasons, after which the plants will occupy the ground, and then cultivation should be continued from year to year. In the fall, plough shallow with one horse plough toward the plants, 4 or 6 inches deep, three rounds completing the work on each row. In the spring, plough back in the same manner and cultivate with one horse crosswise, one round to each row. Then, if necessary, hoe down the soil that remains around the bushes. Such a plan will not cost more than \$10 per acre per annum for cultivation.

MANURING.—Use two good forkfuls of stable manure to each plant until they are two years of age, and in proportion before that. This may be done either before or after ploughing in fall, and may either be worked into the soil in the spring or left on the surface as a mulch. This I prefer, as it keeps weeds down,

and also keeps the ground cool and loose, which is necessary to successful growth. Once hoeing after the crop is off, is usually enough to keep the grass and weeds away from the plants.

CARE.—This item might have been struck out of currant culture forty years ago, considering it aside from cultivation, pruning and manuring; but not so to-day, as every decade since then has more or less changed the application of the word, until now I take it to mean that the would-be successful grower must always be *taking care* that insects and diseases do not reduce his returns below the cost of production.

The only defense against the borer is by keeping up a strong, thrifty growth of young sound wood, as the destroyed canes are taken out at the annual pruning. The borer attacks all varieties, black, red or white, but the Raby Castle or Victoria seems best able to resist its attacks.

The currant worm only attacks red and white, the black being exempt. Two broods appear each season—the first soon after the leaves open in the spring, and the second just as the fruit is ripening. Paris green, diluted with water as per usual directions, and driven through the bushes with spray pump so as to wet all the foliage, will destroy the first brood, but as the second brood comes just at ripening time, fresh hellebore diluted in water, 2 lbs. to 40 gallons, and applied immediately will destroy them, or mixing the hellebore with sifted clay, road dust, lime or flour, one part to ten, and dusted thoroughly through the bushes, will destroy them. But I prefer the water and spraying pump, as the dusting is not so certain; for, if put on when the foliage is wet the dust clogs up and hinders the work, and, if put on when foliage is dry, the wind may blow it off before it has done its work. [Powdered hellebore without mixing with dust is very effective.—ED.] Hellebore should be applied always in the morning or forenoon, as the worms are most active in the warm part of the day, and it loses its strength by evaporation in three or four hours. I find it destroys them entirely if they get it soon after application, if not, they continue to eat and grow fat. Be sure your druggist gives you fresh hellebore, which has not lost its strength by exposure to air in the shop.

To dissolve in water, stir 2 lbs. into a pail of hot water and let it stand fifteen minutes, then pour off liquid into 40 gallons of cold water.

I tried the water can for applying the poison last year, and was not successful, as it did not wet the foliage below, where the worms usually hatch, but the spray makes a thorough job; and I find if the work is well done and in proper time on the first brood, there will not be enough of them left to produce the second brood. The latter is much more difficult to treat, on account of the hellebore losing its strength so soon after application. I would say just here that hellebore is not poisonous to man one day after application.

Many say the worms destroy their bushes in a day or two after hatching,

but this is not true. The eggs are laid along the ribs on the lower side of the leaf in batches of one to two dozen, and when hatched each little worm is not more than $\frac{1}{10}$ of an inch long, and begins eating a hole through the leaf, giving it the appearance of having been shot through with fine shot. If the grower keeps a lookout for them, they are very easily found by these perforated leaves here and there, near the base of the bushes; and, as the brood will not all be hatched in less than a week, it is as well to wait till they are nearly all out (especially when using hellebore), as none of the first hatched will be large enough to destroy enough foliage in that time to do any material damage. Let me say again here, *do the work thoroughly the first time*, in every respect, and you will save yourself a great deal of trouble later on.

I find also in wet seasons, like that of last June, a *leaf blight* on the Cherry, Fay, Red Dutch, and White currants, only the Raby Castle, or Victoria, escaping. It makes its appearance shortly before the fruit begins to ripen, and, by the time the fruit is fully ripe, nearly all the foliage has been destroyed and has fallen to the ground, leaving the fruit exposed to sun scald; in consequence it must be picked immediately or be lost.

Bordeaux mixture has been tried and recommended for this, and if it should be effectual the Paris green could be applied in it for the first brood of worms.

Defoliation, whether caused by the worm or by the blight will do more to stop the growth and vitality of the currant bush than any other cause and the effects are easily seen for two or three years after, as it seems almost impossible to get a currant to grow, or bear for two or three years after being once thoroughly defoliated; therefore we must, if possible, prevent it.

Another source of loss is *surface water*. *Take care* to keep it off, especially in hot weather, as I believe it tends to increase the effects of the blight, besides making the surface hard. A good plan, if the ground is not underdrained, is to run a furrow between each row and cross furrow in water courses, after each cultivation; at least on heavy soils. One great advantage of keeping the foliage on is the heavy crops of large currants, another is that the fruit will hang on for weeks after it is ripe; but if growth and foliage is weak and slim, the fruit will not keep, and must be picked all at once, forcing the crop on the markets and lowering the prices. Another loss will be found in the fruit being splashed with mud and sand when not protected by dense foliage, making it unsalable.

As to *varieties*, I would prefer the Black Naples for a medium to early black, and, if Black Champion holds good its claims, I would plant it with a view to lengthening the season of harvesting the crop, as it ripens later and very evenly. In all other points it is as good as the Naples, except not quite as good a grower. Lee's Prolific is rather a slow grower, with fruit smaller, and it is a very good bearer. Many are planting the Lee's in preference to the Naples, probably because they have been sold bogus plants of Naples which are being sold by careless or unprincipled nurserymen.

In my opinion, the genuine pure Black Naples will hold its own with any yet variety out. Victoria or Raby Castle is the best cropper and has the strongest foliage of any red variety, holding its fruit late in the season. With good cultivation, pruning, manuring, and *care*, it can be made to attain a size which will command a fair price in market, and thus it fills the bill for a medium sized red currant. It is also a much stronger and finer shaped grower, than the others. Of Cherry and Fay, I prefer the latter, as it produces fruit buds much more abundantly and consequently it is more prolific. It is a little subject to the same weakness as the Cherry, viz., that of producing blind eyes where there ought to be fruit buds. I have been told by a good authority that pinching the ends of the new growth of the Fay, about June 20th, will cause the fruit buds to develop nicely and produce a full crop; while the practice has failed to make any difference in the case of the Cherry. I saw a very fine crop of Fay on the ground of the person who thus informed me, while his Cherry currants were a poor crop. I will test this for myself this year and would like to see others try it and report.

As to *pruning*, I find fruiting bushes of Raby Castle or Victoria may be spurred to one bud on all side branches, and, if growth is long, the terminal shoot may be cut back one third its length. Fay and Cherry are better if thinned out and not cut back, as the cutting back seems to injure the remaining part of shoot.

For black currants a general thinning out and keeping out of suckers seems to be all that is necessary, always of course cutting out wood weakened by borers or lacking in thriftiness on account of age or other causes, leaving one or two new suckers to take the place of any that require to be cut out. With good strong growth of one or two feet of new wood, I would cut out one half annually, either by thinning or spurring. I never prune during the first or second year, except cutting off straggling, low or broken down branches; especially in the case of Fay and Cherry, which are subject to breaking down of the green wood when growing. However if they are not pruned until bearing age, they will grow slower and not break so easily. After they have grown to some size and made a good shaped bush, I commence pruning, as the crop will keep the growth somewhat in check.

In regard to *supply and demand*, I have never seen prices so high as last season, and I have no doubt they will remain high enough for a good profit for some years to come, as there is still a profit at half the present prices, under economical cultivation. With improved machinery for manufacture into commercial products there is no telling where the demand will end. A large quantity is being mixed with raspberries and canned or made into jams, jellies, etc., and the flavor seems to suit most palates better than either fruit alone, made up in the same way.

A machine has been lately invented for extracting the seeds from tomatoes

for the manufacture of catsup, which will do the work almost as fast as they can be shovelled into it, and does the work well. I have no doubt this machine can be used also for extracting seed from currants, grapes, etc. ; some of our canners are already experimenting with it on grapes, and, if they succeed, this will result in an increased demand for the raw product.

Last season red currants brought from four to six cents per pound for Raby Castle, and from six to nine cents for Cherry and Fay. The former at above prices brought the most money per acre last season, for the blight on the latter reduced the crop.

I would say to all who can, plant and grow more currants, at least, if prepared to stand by the above directions ; but if not, let them alone, or you will be like the man who bit off more than he could chew.

Stoney Creek, Ont.

JOSEPH TWEDDIE.

Poison for the Curculio—Many experimenters have tried spraying their plum trees with arsenites to destroy the curculio, with varying success. Some results of a definite character were given by G. C. Davis, of Michigan, in the Stockman. The stung fruit was first all picked off, and then some trees were sprayed and the rest left unsprayed. The trees were then tightly covered with cheese cloth, and curculios introduced under all. In a week it was found that nearly all the unsprayed fruit was stung. Only 37 per cent. of the sprayed fruit was stung. No dead insects were found under the unsprayed sacking ; but under the sprayed 28 per cent. were dead. It was found that the insect lived two or three days after eating the poison, and thus the remedy was not so prompt as desirable, as they might sting many plums in the interim. Spraying is therefore only a partial remedy. It should be applied three or four times—first, before blossoming ; and then at intervals afterward, but never while the trees are in bloom to poison bees and honey. Under favorable circumstances it may prove valuable, and sometimes a sufficient remedy for this insect.

Kerosene Emulsion.—At a recent meeting of the Western Iowa Horticultural Society, Capt. C. L. Watrous described a plan for applying kerosene emulsion, which he had seen used in Eastern nurseries. It is especially adapted for plant-lice on young trees, and would appear to be a most effective way of reaching these little pests. No pump is necessary, but the operator takes a large sponge in each hand, dips them into the dish of diluted emulsion, then presses them together on the opposite sides of the stem of the plant or trunk of the tree close to the ground. By a quick upward movement the whole plant is drawn between the sponges, wetting every part, and especially the under sides of the leaves, where the lice are most numerous.

In this way small trees in nursery rows and garden shrubs can probably be treated more quickly and effectually than by spraying. If care is taken in pressing out the excess of water when taking sponges from pail and avoiding drip from too much pressure when applying, waste of material will be less.

GOOSEBERRY MILDEW.

SIR.—Could you in the CANADIAN HORTICULTURIST say exactly what the mildew is, if it effects only the leaves, or the leaves and fruit of the gooseberry, and if there is any remedy for it?
A SUBSCRIBER, *Montreal, Que.*



THIS mildew, according to Scribner, belongs to the same general class of fungi as the powdery mildew of the grape. It has the specific name of *Sphaerotheca mors-uvæ*. It attacks its host only on the surface, giving the exterior a whitish, powdery appearance. The slender filaments of the fungus throw out growths which draw nourishment from its host, and finally send out upright growths which form oblong cells by means of a division wall across the top. See Fig. 535. These cells are summer spores, and each one is capable of immediate germination. They are produced as described, in large numbers, and this accounts for the rapid spread of the fungus in the summer time, the spores being very easily carried about in every direction by the wind, even to very distant places. In Fig. 535 the upright branches are shown as at *a*, and the summer spores in process of formation by division at *b*, one or two having fallen off. Each of these will quickly germinate if they lie in a moist place during the heat of the summer, the first movement being to throw out horizontal

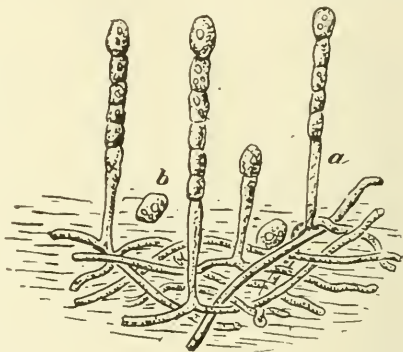


FIG. 535.

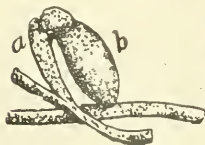


FIG. 536.



FIG. 537.

threads, to be succeeded by the upright ones, thus repeating the life history as above described.

This mildew first attacks the young half-grown leaves and ends of the young shoots, and very soon after, patches of the same may be found upon the fruit itself.

In order to enable this evil fungus to survive, there is another class of spores called winter spores. In the case of the powdery mildew of the grape, these are not mature until late in the season, but in the gooseberry mildew they are found in maturity as early as the month of June.

Fig. 536, *a* and *b* represents two filaments uniting, and soon after, the one at *b* becomes swollen, and then it assumes the form of Fig. 537, and is called the perithecium. This, when mature, contains sacs of winter spores, or asci, and on account of the pressure from within, it

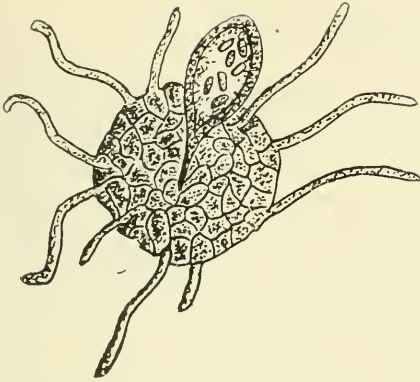


FIG. 538.

proportion of this insecticide required is one-half ounce dissolved in a gallon of hot water.

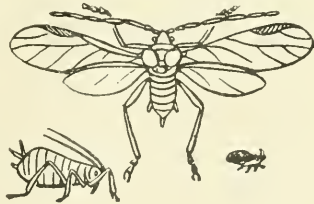
opens in the course of time and allows these spore sacs to escape. The spore sac protects the spores during the severe weather of winter; but, during the warm weather of the early spring, allows them to escape, and, being very light and very numerous, enough are easily blown about to continue the propagation of the fungus upon the young growth of the foliage. Fig. 538.

The best remedy is spraying with potassium sulphide. This work must be done early before the mildew appears on the bushes, for its action is rather preventive than remedial. The

THE APPLE TREE APHIS (*Aphis Mali*).



THE apple louse often appears in immense numbers on the young foliage of our apple trees, checking considerably the vigor of the tree. The eggs are deposited in autumn, and remain in crevices of the bark, and about the base of the buds; and though at first light yellow, soon change to black. The lice hatched from these eggs are all females, wingless, and greenish-yellow in color, with black eyes and tail; and each produce living young at the rate of about two a week which are also in turn equally prolific. Our illustration shows the wingless female, and the winged male which is not born till late in the season. The small one at the right shows the natural size.

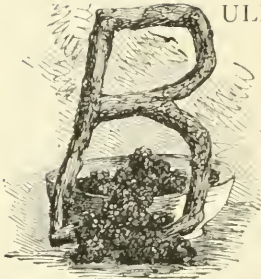


Spraying with kerosene emulsion is the most effective remedy.

FIG. 539.—The Apple Aphis. The perfect fly, with the louse enlarged on the left, and twice the natural size on the right.

The profit to be derived from spraying orchards often exceeds \$20 per acre, and for vineyards is much more. The fruit crop of any State would be enhanced in value by several million dollars annually if the practice were generally followed.

APPLE ROT.



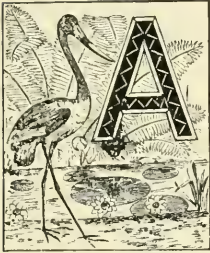
ULLETIN 44 of the Kentucky Experiment Station contains the following statement: "Probably no enemy of the orchardist destroys more fruit, and is the occasion of more loss in Kentucky, than the rot fungus, known to botanists as *Gloeosporium versicolor*." The trees selected for treatment were sprayed four times with Bordeaux mixture during the season, and an equal number were left untreated. In summing up the results of the experiments the following statement is made: "Throughout the summer the trees to which the mixture was applied were more thrifty in appearance, owing to the more healthy green and better general state of the foliage. In every case the leaves began to fall sooner from untreated than from the sprayed trees. The proportion of rotting to not rotting apples was in every case lessened by spraying, and we are in a position to say, as a result of these experiments, that spraying with Bordeaux mixture will save from rotting 7 per cent. to 31 per cent. of the whole number of apples."

The conclusion arrived at is that the average increase in crop, due to spraying, is 97 pounds of fruit per tree. This increase is due to several causes, among which may be mentioned the saving from rot, and the prevention of scab on both foliage and fruit, thus increasing the size of the fruit.

These results are quite in accord with those obtained at the Ohio Station, and one interesting additional fact may be noted. To test the relative keeping qualities of sprayed and unsprayed fruit, one hundred apple trees free from scab were selected from those that had been sprayed, and an equal number of scabby apples from those that were not sprayed. The apples were stored October 30th, and examined at frequent intervals, all of the rotten fruit being counted and removed each time. This experiment was tried with Baldwin, Smith's Cider, Bellflower, Newton Pippin and Northern Spy. It was found at the end of two weeks that there were nearly three times as many rotten apples among the unsprayed as among the sprayed. There was somewhat less difference between the two lots later in the season, but the sprayed kept better than the unsprayed, and kept longer. In every case some of the sprayed were sound when all of the unsprayed had rotted.

These experiments, conducted in different States, and without co-operation, give essentially the same results, and serve greatly to strengthen the conclusions arrived at independently. They show that spraying with the Bordeaux mixture pays in the prevention of rot, if in nothing else. As a matter of fact, however, it pays in many other ways.

ST. THOMAS NOTES AND COMMENTS.



T a meeting of the Western New York Horticultural Society Mr. Barry, the President, is reported as saying that the Experiment Stations had proved that spraying for the plum curculio was of no advantage. Is Mr. Barry correct? If so, we may as well lay away our spraying pumps and provide sheets and rubber mallets, and go for the curculio in the good old way. I had in some way formed the opinion that to spray plum trees was the proper thing to do, and had my plans all laid for the summer campaign.

Mr. Barry also said that it had been shown that seventy per cent. of the feed values could be saved and returned in manure. I would like to know how this is done. Perhaps, Mr. Editor, you can give me and others some light on these two points.

I see that Mr. Bunbury, of Oakville, would like to have the duty removed from spraying pumps; just like some people, they are never satisfied. Don't he know that raw sugar is free and water and air; the latter can come in from all quarters perfectly free while we might reasonably expect to have a duty placed on all but the north wind, that being the only wind produced on Canadian soil; and what right has he to want anything better than is made in Canada? I happened to want some digging spades this spring, that are not made in Canada, so I had to pay forty-one cents each duty on them. Serves me right, I should not crave improved tools.

SWEET PEAS.—I had the best success with sweet peas last year I ever had, and I'll tell you how I managed it: After I forked over my asparagus bed in March, I planted a row of sweet peas three inches deep between two rows of asparagus; the row was thirty feet long. After they were well up I stretched eighteen inch wire netting along the row, with a stake at each end and one in the middle. This served them to run on until the 20th of June, when we quit cutting asparagus. The asparagus grew up rapidly and carried the peas up with them until they were five feet high. We had flowers in abundance for ourselves and for the neighbors, and they continued to bloom until long after frost came. I want some others to try this plan and see if they are not successful.

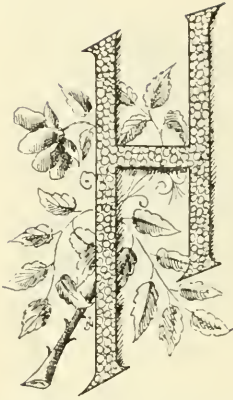
St. Thomas, Ont.

A. W. GRAHAM.

The treatment advised for the cherry consists in making two or three applications of Paris green, two ounces to fifty gallons of water.

Peach trees and American varieties of plums have very tender foliage, and must be treated with very weak mixtures, if at all.

HYBRIDISING.



AVING received some inquiries on this subject, the following remarks by Prof. Budd in Popular Gardening will be opportune :

POLLEN GATHERING.—This is first in order. If the dry pollen is at hand we can touch the stigmas at the nick of time when the nectar is secreted, even if the weather be quite unfavorable. Our plan of gathering pollen of apple, pear, plum, peach, etc., is rapid, and so far has been successful. When the blossoms are fully expanded, and before many of the anthers have matured and burst, the stamens are plucked with thumb and finger and dropped into a clean, bright tin cup. While not attempting to pluck the pistils, no special care is taken to avoid it, as they do no harm. In a dry, warm room the anthers in the cup soon ripen, and when stirred with a moistened pencil brush it will take on pollen enough to fertilize several blossoms.

REMOVING ANTHERS.—When the blossoms of the varieties to be fertilized are beginning to open, select one or two of the strong central ones of a cluster and pinch off the others. With small botanist's shears nip off the anthers of the selected blossoms, which an assistant at once covers with a small sack—widest at the lower end—made of light white muslin.

APPLYING THE POLLEN.—In from 20 to 36 hours after removing the anthers, if the weather is fairly warm, the stigmas have secreted the nectar which causes the pollen to adhere. With an assistant to take off and replace the sacks, the work of touching the stigmas with the pollen brush is quite rapid. In practice, we find the use of pins in fastening the sack to place is far more rapid and convenient than strings.

AFTER CARE.—A label should state the cross made, and a week after the sacks should be taken off, and in all cases where the fruit has formed it should be covered loosely with musquito bar, which is kept in place until fruits mature to show the successful crosses, to protect from birds, and to give boys a hint that it is valuable property.

MAILING OF POLLEN.—The pollen of our orchard fruit, and some of our small fruits, is not an evanescent and perishable as is usually supposed. Apple pollen, mingled with dried stamens and pistils in an open tin cup, was germinated last spring by Dr. Halsted fully two weeks after it was gathered, and we know it can safely be sent by mail long distances. In some cases this will specially aid us in our work. For instance, Mr. Peter M. Gideon can send south for his pollen of choice winter apples, instead of sending, as he proposes, his hardy seedlings south to be operated upon.

TOO THICK.



WE shall never again probably have too many trees in our country. There are too few now. Very many country homes are unsheltered, unshaded and unadorned by the beauties of nature. In some of the older districts, however, trees have been planted thickly in spots and allowed to grow up, crowding each other out of shape, so that we rarely see fine specimens of any kind of ornamental tree. I, as well as many others, have long advocated planting trees thickly, to be thinned out as growth necessitates; but proper thinning has been so much neglected,

I am led to believe such advice should not have been so general.

Not far from where I am writing, a large stone dwelling house is surrounded by a wide belt of trees consisting of almost every known kind, and which, I am sure the planter intended to have thinned in course of time; but they have been allowed to grow into a thicket of unsightly shrubs, without one well-formed tree among them. To the present proprietor, who is a widow, I some years ago suggested thinning, but was somewhat taken back, when told she wished they were thicker, which verified the old adage, "proffered advice is seldom thankfully received." The love of trees is an admirable sentiment, but for the judicious arrangement of trees, it needs to be accompanied with common sense. I could point to a number of instances of plantations ruined for want of thinning.

The number, distribution and care of trees and shrubs about a rural residence form an unerring indication of the taste of the owners or inhabitants. The wonderful diversity in the form and habit of trees affords wide scope for delightful study. Still, year after year, thousands of trees are being planted which will never reach maturity, because they are not given room enough.

In towns and villages the street trees are in many instances, crowding each other so that we have much more shade than beauty. In very hot weather, shade is desirable, and no doubt, is, to some extent, healthful, but there is a possibility of having too much shade. We often see dwelling houses so much shaded by trees that the sunshine is entirely excluded. We should not need to be reminded that sunshine is essential to the healthy development of the human race. It is clearly evidenced by the pale faces of the dwellers in over-shaded houses,—their children growing up slender and white like potato sprouts in a damp cellar, unable to withstand diseases, even in their slightest forms. Too much shade causes rot in roofs and windows. Planters of shade and ornamental trees, who make more judicious distribution, derive lasting benefits and gratification without risk of injurious effects.

THE PLUM CURCULIO.

The beetles hibernate under leaves or bark, in woods or other sheltered places near stone-fruit orchards. They issue from such winter quarters as soon as, or before, the buds put out in the spring. Both male and female feed on the tender foliage for some time before the females have a chance to oviposit in the young fruit. While the nights are cool they hide under any shelter within reach. Where the base of the tree is kept clean and the earth raked, chips laid around under the trees form a most satisfactory trap for them, and in the early morning they are somewhat torpid and easily killed. Later in the season the jarring process is one of the most satisfactory ways of securing an uninjured crop of fruit. The arsenical treatment is based on the habit of both sexes of feeding on the young foliage in the early season, and secondly, on the habit of the female gnawing with her jaws a crescent-shaped mark in order to form a deadened flap around the egg she has thrust under the skin of the fruit. One thing to be considered in the use of arsenites against this insect is the effect of these mineral poisons on the different stone-fruit trees. Spraying against the plum curculio is only partially successful, and the same may be said of other rhynchophorus or snout bearing beetles, which injuriously affect the fruit, viz.: the quince and the apple curculio, and plum gougers.—V. RILEY, *U. S. Entomologist, Washington, D. C.*

DIFFERENCES IN GRAPES.

The skin of the Niagara is a little firmer—more papery, so to speak—than that of the Concord. The seeds vary from one to six in the Niagara; from one to four in the Concord, the size being about the same. The pulp of the Concord is tougher than that of the Niagara: the seeds do not separate so readily, and there is more acidity in the pulp around them. The flesh—"fat," as it is often called—attached to the skin of the Concord, is rather sweeter than that attached to the skin of the Niagara. If, however, the seeds of each are rejected, the Niagara is the sweeter grape, because, as above stated, the acidity of the pulp next the seeds of the Concord is more pronounced than in the Niagara. If the seeds are not rejected, the Niagara is somewhat more sprightly than the Concord. The muskiness or foxiness of the Niagara is more emphatic than that of the Concord, both as to taste and odor. The berries of the Niagara are more liable to rot than those of the Concord. Both vines are strong growers; the Concord is the hardier.—Rural New Yorker.

Raspberries may be treated with Bordeaux mixture alone; grapes with the same until the fruit sets, after which use copper carbonate. Potatoes should be sprayed at least five times with Bordeaux mixture and Paris green.

PEACH GROWING.

The varieties selected must be largely determined by the locality in which they are to be grown, as some varieties thrive better in some localities than others. If convenient to market, in many cases the earlier varieties are the most profitable, provided, of course, they are of good quality, but with peaches, as with almost every other variety of fruit, if an extra fine quality is grown, there is no difficulty in selling at a good price. When grown more especially for home consumption, select of varieties that will give a supply through the longest season. Peaches are particularly a fresh fruit, and are best in season, and little or no effort is usually made to keep them any longer.

Peaches need a reasonably loose soil, and will not thrive if growing in sod for any considerable length of time. The soil should be prepared in a good tilth by plowing and harrowing. Peaches are so often injured by severe cold, freezing weather, that in a majority of cases spring planting is preferable to fall, but it is an item to make all the preparation possible in advance so that at the first favorable opportunity in the spring the planting can be done.

The holes for the trees can be dug after the soil is properly prepared. These should be at least three feet square, so as to give plenty of room to the roots. In setting out, as with all trees, it will be best to cut out all injured roots, and then in setting out see that they are spread out evenly and naturally—as much as in the same position as they originally grew as possible.

Have the soil fine and see that it is filled well in among the roots. This is very important in the spring setting. And one advantage in early setting is that a much better opportunity is afforded for the soil to get well settled around the roots before hot, dry weather sets in.

With peaches, nearly or quite all of the pruning should be done in the spring. There is so much risk of the new growth being killed, and, of course, will need to be cut out in the spring, that it is best to defer pruning until reasonably early in the spring. The peach needs severe pruning annually—from one-third to one-half of the new growth should be cut out. This will aid materially in securing a better quality of fruit.

Wood or coal ashes, old lines or old leather are good materials to use as fertilizers, and these can always be applied with benefit. The soap suds on wash days, too, are good; in fact, anything that contains potash and phosphoric acid are good to use with this fruit. In pruning, the trees should be headed low. Sufficient cultivation should be given to keep the soil reasonably clean and in good tilth.—Farm Life.

For the plum curculio and shot-hole fungus use Bordeaux mixture and Paris green combined, making three or four applications.



❖ The Garden and Lawn. ❖

HOW TO SUCCEED WITH ROSES IN CANADA.—II.

WINTER PROTECTION.



ALL roses may be said to be hardy, if the wood is well ripened; that is, a simple freezing, even if long continued, will not injure them, and very few roses succumb to the frosts of winter alone in this locality; but as the spring advances the sap responds to the call of a bright sun, and a sharp frost the following night may congeal it and the cane is irreparably injured. Thus it will be seen that it is of the greatest importance to protect the bushes from the sun's action till the danger from frost is past; rather protect a little longer and throw the bloom a trifle late than strive to start them early and have them injured. We know of no better protection than earth, and when the plants are far enough apart to afford sufficient earth it should be drawn or mounded up about the canes to a height of at least twelve inches. We use this mode of protection exclusively; should they be too close together, leaves will be found an excellent covering; long, strawy manure will answer, but it must not be used in sufficient quantity to heat. Where pine or spruce branches can be had, they will answer admirably.

ROSES IN POTS.—For this purpose, nice, healthy plants should be procured not later than May, and carefully planted in three-inch pots, well drained. After the first watering, which should be a thorough one, water should be used sparingly until growth begins. It is well to plunge the pots in the garden in a spot where they will not be overlooked. As the pots fill with roots, transplant into larger pots and be careful to pick off all buds as soon as they appear, up till October. The plants should be encouraged by careful attention to make a free growth, as it is only on strong, healthy canes that good roses can be expected. An occasional watering with liquid manure will be found to improve the growth. The plants should be taken indoors before any hard frosts occur. We grow large numbers of plants for this purpose annually, which we can supply in the fall, by express or freight.

Budded ROSES—THEIR ADVANTAGES AND DISADVANTAGES.—The advantage of a rose budded on the Manetti root is that it is a vigorous grower. The

roots throw out an abundance of fibres ; thus weakly growing varieties of the rose can be made to attain a size more quickly than if upon their own roots. The Manetti root adapts itself to a variety of soils more readily than that of the Hybrid roses, and if planted in good season the strong budded plants always produce some bloom the same season. We know of but one objection to the budded, or, as they are frequently called, grafted, roses, and that is their tendency to throw up canes or suckers from below the union, which being of a stronger habit will eventually divert the sap from the desired course and kill all that is valuable of the rose if not removed. But when a shoot is observed coming from the root, it is only needful to compare the foliage with that of the rose from which it shoots. While nearly all hybrid perpetual roses have five leaflets to each petiole or leaf stalk, the Manetti has seven. If the shoot is found, upon examination, to be a sucker from the root, it must be at once detached, either cut or broken off, close to the root from which it starts. The rose grower has but to once recognize its peculiar appearance and it can never again play the imposter. The old saying, "Forewarned is forearmed," holds good in this case. Budded roses should be planted deep. Four or five inches below the surface is a proper depth to place the bud or point of union.

MULCHING is done by covering the surface of the ground with manure. The sun having great power in the months of June and July, it is often hard to keep the roots of the rose moist and cool ; and this can only be done by covering the ground around the plants with manure, or else with straw, moss, grass clippings, or anything that will serve the desired end. The improved quality and prolonged duration of the bloom will repay the trouble.

INSECT PESTS—THRIP.—The rose thrip appears upon the under surface of the leaves, almost as soon as the leaves are developed. Though small, they are often very numerous and very active, and, if left undisturbed, will quickly destroy the appearance of the plant. To remove them, syringe with soap-suds, mixed with strong tobacco tea, or, if refuse tobacco cannot be had, use sufficient carbolic acid in the soap suds to make it smell. An emulsion of coal oil is also effective.

THE GREEN WORM OR CATERPILLAR appears just in time to feed upon the tender points of buds. Hellebore powder will, if unadulterated, quickly destroy this troublesome pest. It usually happens that, if the thrip is well guarded against, the green worm makes but little, if any, headway ; still, it is well to be on the outlook for him. A few plants can be kept free from this insect by simply catching and crushing it.

THE ROSE APHIS sometimes appears in great numbers, first upon the tips of the young canes, becoming, if unmolested, more numerous and more difficult to destroy. The same remedy that subdues the thrip will destroy the aphid. We

know of some who have but a few plants, that destroy this insect with Persian insect powder.

ROSE BUG.—Fortunately this terrible scourge does not flourish on soils of a heavy nature, where roses succeed the best. The bug loves a light, warm, sandy soil. The coal oil emulsion is the best remedy that we know of, with the addition of carbolic acid. No insect can relish the flavor that pervades the plant after a mixture containing ever so little of the acid has been applied. As rain removes all traces of the insecticides, they must be applied more frequently during rainy weather.

ROSE SLUG.—This insect is about half an inch long; they are semi-transparent and have a slimy appearance. They are easily destroyed with hellebore powder, finely sifted coal ashes, or even road dust, if dusted over the foliage often.

MILDEW.—This fungous disease is often caused by sudden changes in the temperature. It is most troublesome where the roses have not sufficient exposure to the light and air. We use, with success, soot and sulphur mixed, frequently dusted over the foliage from a muslin bag, until the disease disappears.

COAL OIL EMULSION.—Soft soap, one quart, add two quarts of water and bring to a boil. While boiling, add gradually one pint of coal oil, stirring vigorously for several minutes. To use, add fourteen parts water to one of the emulsion. Mix thoroughly and apply with hand syringe or hand whisk.

A WORD FOR THE EVER BLOOMING ROSES.—For planting out for summer bloom, we consider these roses to be indispensable. They bloom without ceasing from June till frost. They can be had in so many colors and shades not attainable in the hybrid perpetual class. They possess a fragrance peculiar to themselves. We find them less liable to insect pests than the hybrid perpetuals, and lastly, they can now be had as cheaply as ordinary bedding plants. Two-year-old plants, while costing more than younger ones, are sure to grow and bloom at once, and are preferred by many.

Hamilton.

WEBSTER BROS.

ERRATA—On page 119, in place of "We have wintered them (tender roses) without protection," read *with* protection, and the rest the same.

Never use big rough grasses like timothy on the lawn; stick to the fine varieties as Kentucky blue-grass, red top, and Rhode Island bent grass. These fine grasses form a large proportion of the mixed lawn grasses you buy at the seed stores, and any one of them, especially the Kentucky blue or red top, used alone will make a capital lawn. You may also include, or sow separately all over, a little white clover; never, though, sow either yellow or red clover on the lawn.

THE WATER LILY IN A TUB.



IN Volume XIII, Mr. L. B. Rice, of Michigan, gave directions for growing this beautiful aquatic in tubs. His plan was to cut a kerosene barrel in two, place six inches of clay in the bottom, and two or three inches of lighter muck on the top of this. The tub was set with top three or four inches below the level of the lawn. The roots of the water lily are planted firmly in the bottom, and the tub filled with water. The whole is protected for the winter with leaves and straw. Mr. Rice usually plants six or eight buds in each tub in the fall, which if they grow well, will produce flowers in the following June.

Mr. Barrett, of New Jersey, has discovered a small flowered form of the sweet-scented water lily, about half the size of the common form, and more fragrant. He considers it the most satisfactory variety for planting in tubs. It is known as *Nymphaea odorata*, var. *minor*. The illustration, taken from *American Gardening*, is a representation of this variety planted in an old butter tub on Mr. Rice's plan.



FIG. 540. — *NYMPHAEA ODORATA* VAR. *MINOR*.

✱ The Apiary. ✱

ITALIAN BEES.



UST as the horticulturist is constantly looking for the best varieties to plant and cultivate, and just as much of his success depends upon the proper selection of these varieties, so the bee-keeper should consider carefully the best bees to purchase when engaging in his business. Unfortunately because we have only indirect control of the selection of the male, the drone, we are liable to fold our hands and say there is no use in attempting to secure the best stock, they will *run out* anyway. I say only indirectly have we control of the selection of the drone. Almost every one knows a queen bee is the mother of the colony, and she is impregnated once in a lifetime only, and that on the wing. The reason why the queen is fertilized on the wing is, first to prevent impregnation with her own blood which she would do if impregnated in the hive. Next, the swiftest and most active drone becomes the parent of the future worker bees. We can indirectly select drones by keeping down undesirable ones in the neighborhood. But the fact that we cannot control entirely the selection of drones, is only a reason for re-doubling our efforts in carefully selecting where we can. Much as we may have the theory of selection by heart, I am afraid there are but few who follow it properly. Queen breeders know that a customer will be pleased when he gets a queen which pleases the eye. If she pleases the eye and produces workers which prove good honey gatherers, so much the better, but she must please the eye first. I have never felt justified in stocking our apiary of 95 colonies for beauty alone. True, the two can be combined very often but if anything has to be sacrificed it should be beauty. We have in bee-keeping, common black or German bees, Italian, Carmolian, Cyprian and Syrian, also Tunisian, or, as they have been wrongfully called, Punic bees. There are others with which we are not so well acquainted, which do not require to be mentioned here. Punic bees are very undesirable, and any one would be foolish to purchase such. They started with a great flourish of trumpets and were advertised at a high price. Cyprian and Syrian bees were, about ten years ago, quite common amongst advanced bee-keepers, but to-day a pure queen can probably not be purchased upon the American continent. The queens are extremely prolific; when angered the bees can scarcely be subdued; for building queen cells they are good. The black bees are troubled with the moth, are easily robbed, when handled, instead of adhering to the combs they incline to run over the combs and cluster in bunches, they are cross, cap comb honey well. The Carmolian bees are very prolific, gentle, cap honey well, liable to swarm often. It may be that confining the queen to certain combs the prolific tendency

can be kept under control. I intend to try these bees again this season, but I feel satisfied that, except in the hands of the specialist, these bees will not be likely to prove a success. The Italian bees have stood the test for many years; they are gentle, free from moth, robber proof to a large extent, and an all round good bee. I think we should aim at having such bees. Now a fancy price need not be paid for such bees: sometimes they can be bought at the same price as hybrids, at any rate for \$1 more per colony. If they cannot be got for that, the hybrid colony can be re-queened for \$1 in the honey season. Now I admit that many a hybrid colony may do as well as an Italian. I have no objections to a dash of black blood unless to breed from, and no fancy price need be paid for a good queen. Bees reproduce themselves very rapidly, and, correspondingly rapidly, stock will *run out*. New blood should be infused to keep and improve vitality.

Brantford, Ont

R. F. HOLTERMAN, A. O. A. C.

WHEN FRUIT TREES NEED BEES.

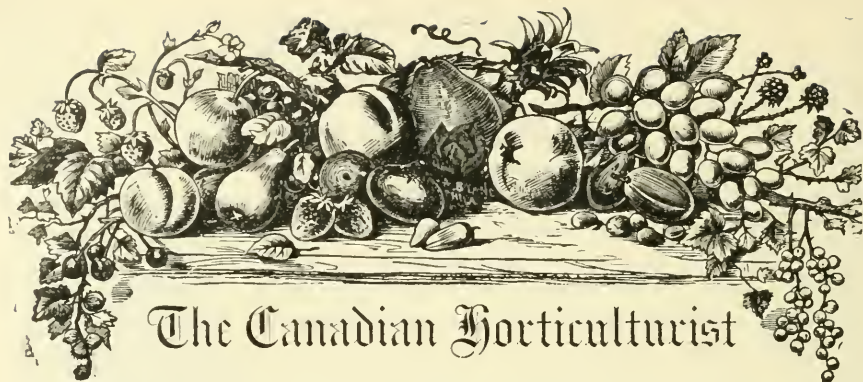


IN very fine seasons when the springs are bright, fine and mild, fruit will doubtless set very well without the intervention of bees—the wind, assisted by the sunshine, being a sufficient agent for the distribution of the pollen; but in cold, wet seasons, says the author of *Guide to Bees*, the aid of bees is unquestionably essential to the fertilization of the bloom by carrying the pollen, not anywhere at haphazard, as the wind does, but from blossom to blossom and nowhere else.

In wet and cold weather the pollen is more inclined to adhere to the blossom than in fine, warm weather, and thus it is that the wind fails in unfavorable seasons to secure that which can then be obtained only by the help of bees—viz., the proper fertilization of the fruit blossom, with the result of a proportionately abundant crop of fruit.

I would invite any persons who may be incredulous on this point, to visit in a professedly bad fruit year—say during August or the early part of September—the localities in which our great apiaries are situated. Let them carefully view the country lying in a radius of two miles from the apiary itself, and they will find that in almost every case the fruit trees are laden with heavy crops, while they will observe as they get farther from the vicinity of the apiary (supposing that not many bees are kept in the country around) that the fruit crops steadily deteriorate.

I am convinced that so soon as bee-keepers and fruit-farmers begin to recognize the importance of the one industry in relation to the other, more prosperous times will be in store for both, and we shall not only hear of better fruit harvests, but of larger returns of honey also.



SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE BAR SECKEL is a new pear which originated with Jacob Moore. It combines the size of the Bartlett with very nearly the Seckel flavor.

THE BRILLIANT, one of Prof. Munson's hybrid grapes, is said to be one of the best red varieties. The vine is a good grower, perfectly healthy, and bears well. The bunches are of good size, fruit red, nearly as large as Concord, and of the very best quality, ripening July 20, with very little rot.

THE VERMONT BEAUTY is spoken of as the most desirable of all dessert pears; it is hardy in Vermont, its native State, and is a good shipper. The Rural New Yorker says: "The fruit ripens a little later than the Seckel and much excels that variety in size and beauty. In form the fruit is of full medium size, obovate, yellow, and covered on the sunny side with a bright carmine-red, making it indeed a beauty. The flesh is rich, juicy, aromatic. It cannot do otherwise than stand at the head of our fall pears." Dr. Hoskins says that it is "the most piquant in flavor of any pear known."

NATIVE hazelnuts, according to the same journal, are too small to have any market value, and until they are increased in size by seedling cultivation we must look to the English filbert if we would engage in profitable work. A. S. Fuller, who owns a small farm near the Rural Grounds, details his disastrous experience in the New York Tribune, in the matter of cultivating in quantity the English filbert. His trees grew finely for a few years, but, before they bore many nuts, were killed by blight. This has been the experience of others.

ENGLISH CHILDREN should be taught at school, according to the Gardener's Chronicle, that it is a patriotic virtue to buy and eat home-grown apples, instead of those imported from Canada and the United States! Surely this could not be generally approved of as a plan for the advancement of English fruit interests. The final appeal is always that of real merit, and other things being equal, the best apples will be in most demand.

The editor of that journal cites the Baldwin and King as samples of our apples, and says that it is their color, not their quality, that sells them. This is true perhaps of the former, but in our opinion it is a happy union of both in the case of the King that makes it advance every year a little beyond its price the year preceding.

HARRIS' STEP LADDER.—It will be remembered that Mr. Thomas Harris, of Meaford, has invented a very strong and serviceable ladder to be used in gathering fruit, grafting, and other garden work. A cut of it appeared in our journal about a year ago. He writes: "I have lately invented two other horticultural tools, chiefly designed to be used in connection with my patent ladder. When they are ready I will advise you concerning them. I have several letters speaking highly of my ladder. I can make them perfectly safe in various lengths up to fifteen feet. I think they will be particularly useful in top-grafting, because they are so firm that one can work from the top step as safely and comfortably as if on the ground; the basket holder can be used for the tool-basket, for knife, hammer, scions, etc., you can hang your saw on one hook and a basket on the other, and stock your coat and hat on the top. It only needs a looking-glass to make it a complete wardrobe."



❖ Question Drawer. ❖

Best and Most Profitable Market Plum.

561. SIR,—In answer to Mr. Hickling, I would say, for sandy soil, Washington, Improved Gage, Lombard, McLaughlin, Reine Claude. For clay, which is far the best soil for plums, Bradshaw, Niagara, Washington, Imperial Gage, Lombard, Glass Seedling, Yellow Egg, Pond's Seedling, Reine Claude, and Coe's Golden Drop, and a great many more varieties about as good; but different soils and localities make so much difference in growth and hardiness, that it is hard to give a list that will always suit.

Yours etc.,

G. W. CLINE, *Winona.*

Earliest and Latest Plum for Profit.

565. SIR,—In reply to Mr. Switzer's question, the earliest with me is Bradshaw, Niagara, Washington, Duane's Purple, all ripening in the same week. Mr. Holton, of Hamilton, has a green plum which is very much earlier and when put on the market will be a great acquisition for early market. For late, German Prune, Reine Claude, and Coe's Golden Drop, all ripening about the same date. There is a late plum that I have not fruited yet, Grand Duke, a Bradshaw in size and color and later than all; recommended by gentlemen of reputation, and I believe it will be our best yet for latest.

G. W. CLINE, *Winona.*

Rocky Mountain Blue Spruce (*Picea Pungens*).

566. SIR,—Kindly say by return mail what the premium, *Picea pungens*, is like. Has it a good color? It is in the color that its value as an ornamental tree would consist.

C. W.

Reply by Mr. John Craig.

As grown from seed, of course there is always more or less variation in color of the young plants, some of them do not surpass in beauty good specimens of our native white spruce, but the majority exhibit the characteristic bluish green shade so much admired. The finest specimens are multiplied by grafting or by means of cuttings. The plants furnished the Association are grown from selected Rocky Mountain seed, but may be expected to vary considerably.

Yellow (or Golden) Willow.

567. SIR,—Can you give me the name of the yellow barked willow that grows in the vicinity of Hamilton?

C. W.

Reply by Mr. John Craig.

The willow referred to by your correspondent is probably variety *vitellina* of *Salix alba*. This, with the common crack willow (*S. fragilis*), was introduced at an early date from Europe, and large specimens of both are found in Ontario, Quebec, and the Maritime Provinces. In the Annapolis Valley, Nova Scotia,

these large willows are striking figures in the landscape. The common white willow, *Salix alba*, were used to a considerable extent throughout the States of Iowa and Illinois, in stockyard windbreaks, and boundary shelter belts. More valuable trees are now planted.

Squash Bug and Striped Beetle.

568. SIR.—Please tell me through the journal the best way to keep off squash bugs, and also the little striped beetle from the cucumber and melon vines? They destroyed the first plants last summer, and the second lot did not ripen well before the frost.

SUBSCRIBER.

For young squash bugs, sprinkle or spray with kerosene emulsion, but it will be necessary to hand pick the largest ones. If pieces of board are placed among the plants, the bugs will collect on it at night, and may be easily caught. The best way to keep the striped beetle from cucumber vines is to cover the plants with a netting during the time when they are abundant.

Pruning the Grape.

569. SIR.—Please give further directions in the CANADIAN HORTICULTURIST on grape pruning. I followed your directions so far with good success, but want to know if any of the young growth has to be removed in blooming time, after the second spring pruning?

MRS. B. KIRKMAN, *Seaforth.*

Most of our fruit growers neglect any farther attention after spring pruning; but the proper method is to pinch off the ends of all useless growth, in order to stop it, and throw back the strength into the fruit. It is not considered wise to remove much wood or foliage in the summer.

Spraying among Raspberries.

570. SIR.—Would spraying apple trees with Paris green injure raspberry plants under them? I have two acres so planted.

W. H. CHAPLIN, *Newcastle.*

No, not the slightest. The spraying is over a month before raspberries are ripe, by which time all traces of poison would be washed off.

Currant Leaf Blight.

571. SIR.—The leaves on my currant bushes for the past two years have dropped considerably. How can it be prevented?

WM. HARRIS, *Rockwood.*

Try spraying with the Bordeaux mixture when leaves first appear, and repeat two weeks after.

An Improved Baldwin.

572. SIR.—I send you an apple which we call Baldwin, but it is very superior in flavor to the ordinary Baldwin. I also send you a seedling apple, the longest keeper I have, but of poor exterior.

W. HICK, *Goderich.*

The seedling is not worth propagating; the other is probably the well-known Baldwin grown under favorable conditions, but if its better flavor is constant it should be noted.

Greenfields' Seedling Apple.

573. SIR.—At the last meeting of the Ottawa Horticultural Society, Mr. S. Greenfield exhibited two seedling apples, one of which I enclose for your opinion. It is not only iron but steel clad.

G. H. FAWCETT, *Ottawa.*

Note on the apple by Mr. John Craig, Central Experimental Farm.

DESCRIPTION.—Large, roundish, conic; color, deep yellow splashed with light and dark carmine; stalk, long, slender; cavity, slightly russeted, round, of medium depth; basin, broad, moderately deep, corrugated; calyx, partially open; flesh, white, rather coarse, sharply sub-acid, moderately juicy; fair quality. Mr. Greenfield cannot give the parentage of this seedling, as in the process of selecting from a large number, the record became confused. Being a decided winter variety, and raised on heavy clay soil in a very exposed position, it would seem to warrant propagation for the purpose of testing it on other soils and under varying conditions. The efforts of Mr Greenfield towards the production of desirable and hardy varieties of fruits have been unremitting, and are deserving of the highest commendation.

❖ Open Letters. ❖

The Gideon Apple.

This is a variety originated by the veteran Peter Gideon of Minnesota, and is not as well known as it ought to be. It is a beautiful apple, from medium to large in size. Color, a pale yellow, with a beautiful pale pink blush on each side. It is not, strictly speaking, a dessert apple, but is a splendid cooker, cannot be excelled for sauce, pies, etc., and has a rich flavor particularly its own. Season, late fall. The tree is an upright grower, of good shape, and needs very little pruning. Foliage, dark green, and healthy looking, perfectly hardy and prolific. The writer sent a basket of this fruit along with other varieties to Mr. A. H. Pettit, Superintendent of the Ontario Exhibit for the World's Fair, and in acknowledging the receipt of the collection, Mr. Pettit said: the Wealthy was beautiful, but it had to take a second place looking at the blushes of the Gideon. For a late fall cooking apple, it cannot be excelled, and should be more extensively planted.

W. S. T., *Cornwall.*

The Williams Strawberry.

SIR:—May I correct what I said in our last report concerning the Williams. I do not mean to say it would yield two baskets to one of *any* other variety; but that, side by side with Bubach, I found it yielded twice as much as the latter. I further said that if I were confined to growing Wilson and Crescent, while others might grow Williams, I would give up strawberry growing altogether.

W. H. LEE, *Virgil, Ont.*

Pears on Apples.

SIR,—I noticed a question about grafting pears on apples. I have seen Duchess growing and bearing very well on apple stock. The Tolman Sweet is the best apple for this purpose.

HUGH JONES, *Walkerton.*

Abundance and Prince of Wales Plums.

SIR,—With respect to the Japan plums, I have grown the Abundance for three years. It appears to be perfectly hardy at Owen Sound. There has not been a terminal bud injured. It has shown no signs of black knot as yet; a very rapid grower—made shoots last year five feet long. It has not fruited yet; blossomed last year but did not set any fruit. From present appearance it will make a good record this year.

As the time for planting is at hand, I wish to say a few words in favor of the Prince of Wales plum. It is not a new variety, for I have grown it for many years. It has not been brought before the public, as I am aware of, as it should have been. The tree is a rapid grower while young, and, like many of the English varieties, it adapts itself readily to Canadian soil. It is an abundant bearer, almost to a fault, of large, even-sized plums, very handsome in the basket; good for preserving, and a good shipper, as it colors well before it gets soft. It is not quite so highly flavored as the Lawrence, Favorite or the Green Gage, but tolerable for table use.

Owen Sound, April 10th, 1893.

R. TROTTER.

❖ Our Book Table. ❖

THE ROSE.—A treatise on the cultivation, history, family characteristics, etc., of the various groups of roses, with accurate descriptions of the varieties now generally grown. By H. B. Ellwanger. Revised edition. Dodd, Mead & Co., New York, 1892.

This new edition of our excellent work on the rose, comes out in beautiful style of binding, and with considerable additional matter. It is so practical, and withal so entertaining, that every rose-grower, whether amateur or professional, needs to have it at hand after reading, as a book of reference. The excellent descriptive catalogue of over one thousand of the finest varieties at the end, is constant value; and the chapters on soil, planting, pruning, manures, insects and diseases, propagation, exhibiting, etc., are up to the latest methods.

FACTS ON FOSTITE.—C. H. Jooster, 3 Cocuties Slip, New York, sends us a pamphlet on this subject, in which he claims to be the cheaper and more easily applied than Bordeaux mixture, and as effectual.

ILLUSTRATED CATALOGUE of Spray Pumps and Nozzles, Knapsack Sprayers, Spraying Appliances, Barrel Carts, etc., manufactured by the Gould, Shapely & Muir Co., Ltd., Brantford. Contains information concerning some of the more valuable insecticides; and special formulas for fungicides and insecticides.





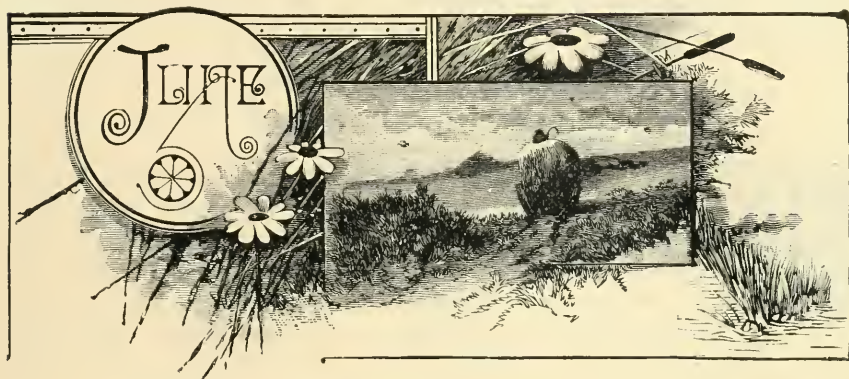
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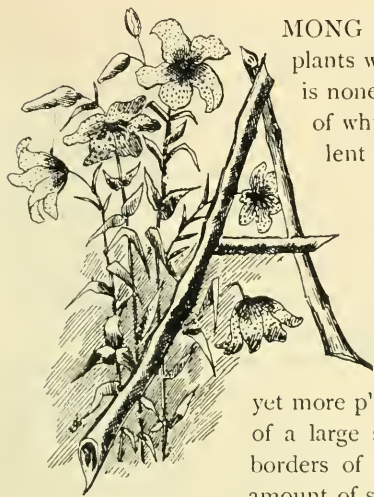
VOL XVI.

1893.

No. 6.



HERBACEOUS PAEONIA.



AMONG all the long list of herbaceous perennial plants with which we may decorate our lawns, there is none more desirable than the herbaceous paeonia, of which our colored plate this month is an excellent representation. Some varieties are delicately scented, almost equal in perfume to the rose; and their huge blossoms, with their wide range of colors, as white, salmon, pink, purple, and even scarlet and crimson, make them very showy, and very suitable for planting in beds a little distance from the house, while if set off by a dark green background, they will be yet more pleasing. Another suitable position is in front of a large shrubbery, and with perennials in the wide borders of the lawn; for it is able to endure a certain amount of shade.

The arrangements of shrubs and perennial flowering plants is too little considered in planting, and we too often see them dotted about over a lawn in the regularity of a corn field. Such a mistake spoils the effect. The most pleasing arrangement is secured by grouping varieties together, with the taller growing ones in the centre and the whole perhaps edged with spring flowering bulbs.

One essential to success is a deep rich soil with plenty of manure. If thus treated, they will well repay the outlay by most magnificent blooms.

The paeonia is widely distributed by nature, being found in Europe, temperate Asia, China and North America. There are two principal genuses, the shrubby or tree paeonia, and the herbaceous paeonia; of these there are some seventy-five named varieties, two-thirds of which belong to the latter class. They are called after an ancient Greek physician, Paeon, who used the plant in his medical practice.

TUBEROUS BEGONIAS.



HAVE written this paper on the tuberous begonia because I believe there is the greatest future before it of any plant of recent introduction, whether for the conservatory, the window garden or the open garden. I think one reason why it is not better known is that we have been too apt to think it would not flourish except under glass, and therefore it has not been given a fair trial as a bedder. We have grown it moderately at Forest Hills until last year; then quite extensively, having planted out some thousands of them in different parts of the grounds, in large and small beds and on graves. In all cases they were the best beds of flowering plants in the cemetery, affording a remarkable variety of color, white, yellow, orange, rose, scarlet and crimson, in numerous shades. Then their comparison with other flowers show greatly in their favor. The geraniums thus far have taken the lead as the best bedders; but how a rainstorm destroys geranium flowers, especially of the single varieties! But with the begonias it is not so; they are bright again in twenty-four hours, flowers and foliage standing up in bright array. At Forest Hills we must have large quantities of bedding plants and of the best. The introduction of the Crozy cannas and the tuberous begonia forms a great advance. It is to be hoped they will soon take the place of the faded coleus, and perhaps others may as well be spared, as they reflect no credit on a well-managed place. I think there is very little character to the so-called "foliage bed." One can get material at a dry good store, with which to produce as good an effect. I do not include in this remark the sub-tropical beds, but those filled with so-called foliage plants. Flowering plants are decidedly better. What "foliage" bed can compare with a solid mass of tuberous begonias, or a large bed with Crozy cannas in the center, surrounded by a broad belt of heliotrope and tuberous begonias as a border? Such a bed is not only an object of beauty, and a delight to all observers, but, if some cut flowers are desired, here they can be had. If one wishes a good bed of flowers, a bright vase, a cheerful window, or some choice cut flowers for decoration, the tuberous begonias will not disappoint either desire.—Ex.

The same treatment is recommended for the pear as for the apple, before blooming, but the copper-arsenic solution is advised after blooming.

LETTERS FROM RUSSIA—XIV.

Double Plum.

In the garden of Chernigov, there grows a very novel plum called the Double plum. It is made up of two halves, joined firmly together when the fruit is green, but, when ripe, easily separated. Two stones grow on one stalk; they are small, oblong, and cling to the flesh, which is orange colored, sweet and juicy, but not very excellent in flavor. The color of the plum is red, with a blue shade, and sometimes a yellow one is found. The plum ripens in September, but will hang on the tree until frost.

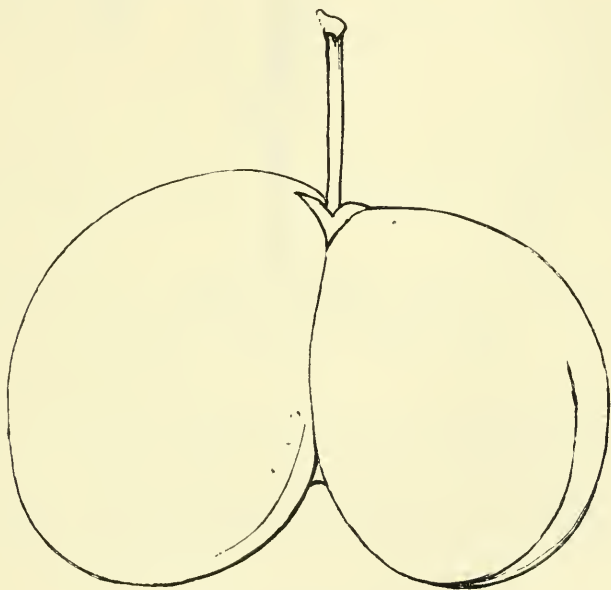


FIG. 541—DOUBLE PLUM.

The tree grows well and yields yearly crops, but is very tender and freezes north of Chernigov. The plums are not all double, some are single, but about seventy per cent. are double. The fruit is good both for table and cooking, and commands a good price in the markets on account of its peculiar shape. Fig. 541 represents its usual appearance, though sometimes it is larger.

New Crabs.

Prof. Shroeder, of Moscow, secured two very valuable hybrids by crossing several Russian garden apples with Siberian crabs. The first one he called Avenarius Hybrid. It is a little yellow apple with a red blush, long stalk,

excellent, tender and sweet. The second one, Scroeder's Muscat Hybrid, (Fig. 542), is in size from medium to large, with yellow skin and fine red stripes, closed calyx and yellowish, juicy flesh, sub-acid taste, ripens in January. This apple is destined to have a great future in very cold countries, as in hardiness it is not excelled by the wild Siberians.

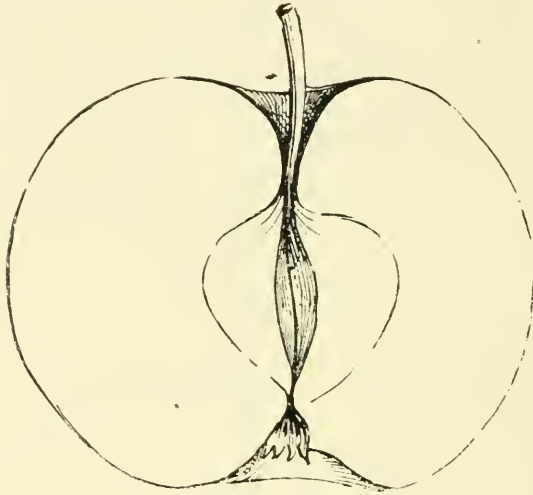


FIG. 542—SCROEDER'S MUSCAT HYBRID.

I received from south-western Siberia a species of wild apple, of which the leaves only are greenish red, and the rest, as bloom, bark, fruit and flesh, is all red. This native species has no botanical name, and it certainly will become a very ornamental tree in our public parks. It will also have some value as a fruit tree, because it bears a small apple of good quality, which ripens in winter. When my tree has made some growth I will send you some scions.

RAKE the lawn, removing sticks, stones and other rubbish you may find upon it, repair the bare patches, and roll it over to leave all clean and even for the mower. The best tool to use on a fairly good lawn is a close-toothed wooden rake, it takes off all the rubbish without ruffling the earth. But where the grass has been left quite long and it has died and matted on the ground, a large steel-toothed rake removes it best. In the event of bare spots where the lawn grasses had been killed out by last summer's drought, or smothered by crab grass, with the steel-toothed rake scratch off the dead grass, at the same time ruffling the surface of the ground a little, then sow some grass seed on it, and roll it.

NOTES FROM THE WORLD'S FAIR.—II.

April 26th.



THE Opening Day is very near, but President Cleveland will see little of the exhibits unless he comes again. The buildings are a mass of packing cases and unfinished courts, and only here and there one is so far completed as to receive its display. Prodigious efforts are being made to prepare for opening, and, notwithstanding the most extravagant prices demanded, it is estimated that there are over fifty thousand men employed in various ways on the grounds. Then, two weeks of the worst April weather ever known to the writer has delayed all outside work. The little steam

launches that take the tired visitors about in the pretty lagoons from one building to another, are a great accession, and the easy rolling chairs, in which the visitor is easily pushed along by fine, nobby young men, will all help wonderfully in giving a restful mode of transfer from one part of the grounds to another.

The boom for high prices of accommodation has run very high and must surely break. \$1.50 to \$2 per day for a room, without board, is absurd, in a city of nearly a million and a half which is so easily able to accommodate 200,000 or more visitors per day.

The Customs regulations are giving the writer heaps of trouble getting hold of our goods. A special permit must be got to move our several car-loads of fruit and vegetables from the City Cold Storage into the grounds, or for moving about from one building to another; and no box can be opened without a Customs inspector to check off the contents, the same to be returned to the box at the close of the exhibition, or duty paid.

The Administration Building, where most of the business offices of the World's Fair are situated, is quite unique, and of peculiar interest. By many it is considered the gem of the Exposition buildings from an architectural standpoint. The grand dome, which is open to the floor in the centre, is two hundred feet in height, gilded without and within, and richly decorated. It has four pavilions, eighty-four feet square, and the general style is that of the French renaissance, with the first story Doric and the second Ionic. This building, with an heroic statue of Columbus before the main entrance, will be the first to attract the attention of visitors after their arrival at the immense railway terminal station, and will give a very favorable "first impression."

The attention of the visitor is naturally directed next to the largest building upon the grounds, the *Manufactures and Liberal Arts*. Leaving Administration,

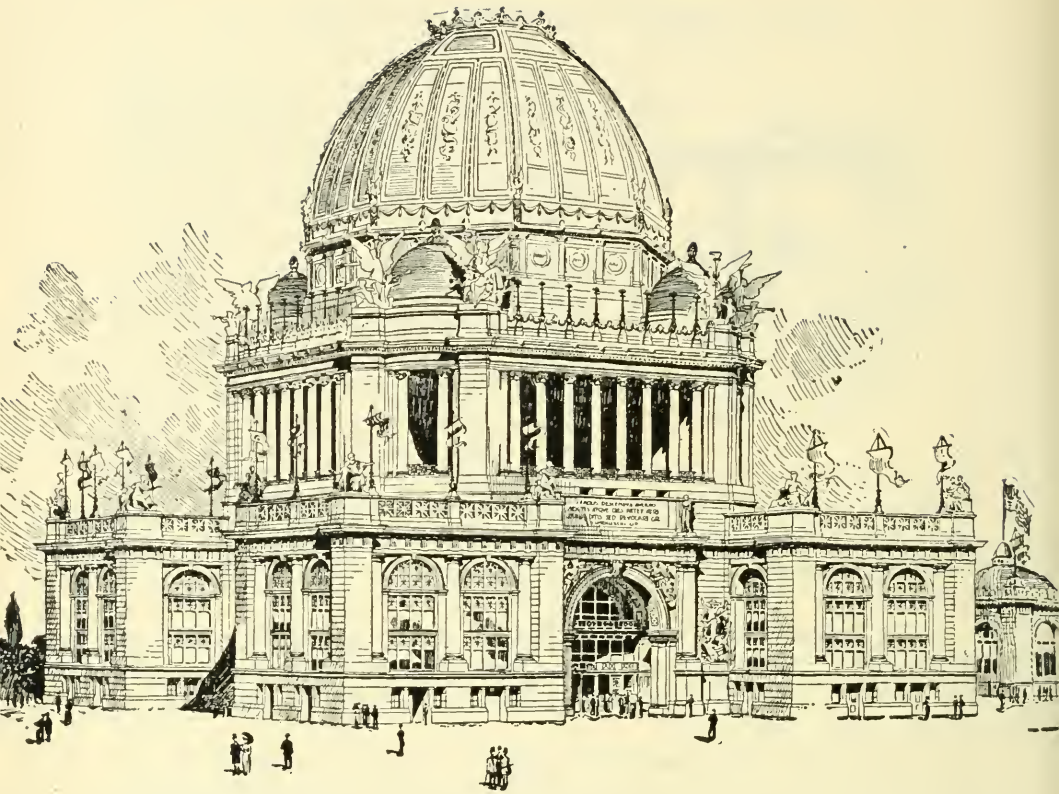
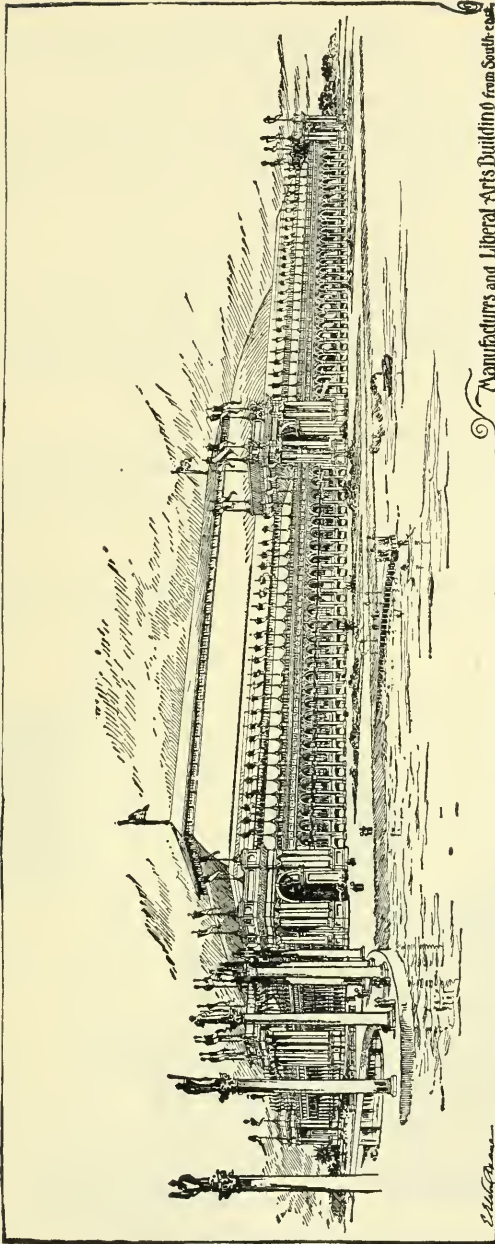


FIG. 543.—ADMINISTRATION BUILDING.

he walks down towards Lake Michigan in the most attractive and wonderful of places—where electric fountains play, and countless pieces of elegant statuary and massive architecture attract the attention, while electric launches in the beautiful harbor offer delightful sails.

Along the lake front, an excellent stone cement walk has been constructed, and going along it southward, the Liberal Arts Building is on the left. Inside, the innumerable list of packing cases and the elaborate courts promise wonderful displays, which as yet it is safer to view from outside.

Our engraving of this building of Corinthian style, gives one a very poor idea of its immense proportions. The ridge of its roof is one hundred and fifty feet high, and is covered with heavy, fluted glass, supported by gigantic iron trusses. The whole encloses an area of 385 by 1,400 feet, so that, with its side



Manufactures and Liberal-Arts Building from South-east

galleries, this building has about forty acres of floor space.

May 1st.—The great and imposing ceremonies of the opening of the World's Fair by the President are over; but, owing to the continuous rains, the roads were sloppy, and the pleasure of the occasion was more imaginary than the disgust which arose from the splattered condition of boots and clothing of those who were not favored with reserved seats. The scene in front of the Administration Building was almost indescribable; a black sea of several hundred thousand heads, with necks upstretched to catch the least sight of "Grover," as they call him; the beautiful bridge, and large lagoons studded with numerous launches, and crossed by picturesque bridges, and, above and beyond all, the elegant architecture of the buildings, worked out as the result of many ages of study and experiment.

Many of the exhibits are far from complete. Our own horticultural exhibit, concerning which I intend to write in the June number, is as far advanced as any, but owing to uncontrollable delays, very much work yet remains to prepare it for a presentable display. The greatest disappointment comes from the poor management of the fresh fruit at Cold Storage. The paper wraps were removed, allowing rot to spread from one apple to another; the varieties were not put back in the same boxes from which they were taken, thus confusing

the key of numbers ; and much that went in was entirely missing or removed.

The bottled fruit shows in good condition, so that, notwithstanding all, our display is very creditable to Canada. Indeed the Canadian fruit occupies about one-sixth of the entire space devoted to Pomology ! It attracts the attention of every passer-by, and causes many curious remarks. One says, "I did not know they could grow fruit in Canada." Another, "Why, this is the most attractive part of this building," and another, "Why, I can see apples at home, without coming all the way to Chicago."

May 17. An important day for Canadians at Jackson Park. Lord Aberdeen, who has been named by England's prime minister, the next Governor General of Canada, in company with Lady Aberdeen, Miss Sullivan, Sir Henry Drummond and several other notables, visited us at the Canadian Pavilion at 4. p.m.

The reception room was well decorated with flags, and through the kindness of Mr. Houston of the Ontario Horticultural Exhibit, the writer was able to arrange for some fine groups of thujas, palms calceolarias, etc, on each side of the chair reserved for His Excellency.

There was very little formality, and many introductions. Mr. Larke's address was extempore, but wonderful impressive of the kindly feeling which



FIG. 545.—THE CANADIAN PAVILION, JACKSON PARK.

Canadians bear toward Lord and Lady Aberdeen ; and the respondent address was equally sincere and appreciative.

Our Canadian Pavilion is not a showy building, such as the German, the Illinois, the Brazilian, etc.; but it is a plain substantial one, of a style of architecture characteristic of English buildings, where little is made of exterior appearance, and much of interior finish. The rooms are all finished, both walls and ceilings with native woods, many of which are of superior beauty. There are no exhibits here, but each province has a suite of rooms for her officials, and the reception room in the middle is spacious enough to seat a large gathering of Canadians.

As superintendents of the various departments, we were quite disappointed that Lord and Lady Aberdeen could not visit our courts ; but as there are seven or eight of these in as many different buildings, we have to be content with a shake of his hand and a promise to call round in the month of October.

June 1st.—At last we may announce to our Canadian friends that the exhibits are about ready for visitors, and that no one who can afford it should miss this grand opportunity.

QUEBEC APPLES AT THE WORLD'S FAIR.



THE Quebec fruit display occupies the centre aisle of the Canadian Court, and is worthy of notice on account of the great number of varieties of apples it contains, which are little known outside of that Province, as for instance, Reinette verte, St. Hilaire, Selwoods Reinette, Buzzell's Seedling, Barre Rouge, Pomme de fer, Reinette barre, Auclair, St. Antoine, Argenteuil, la Tuque, etc. Hardiness of course, is a prime consideration there, and this leads to quite a different selection of varieties from that which is made in more southerly districts.

The large and interesting collection that has been made is very creditable, there being about eighty varieties of fresh apples of 1893 on the tables on the 10th of May. Nearly twice this number had been collected, but many varieties were fall apples which could not be kept through so long, in a condition fit for exhibition.

Some of the choicer varieties shown, with which we are all more or less familiar, are the Wolf River, of Minnesota, that excellent seedling of the Alexander, which in some cases can scarcely be distinguished from its parent ; the La Rue, of Brockville, Ont., Scott's Winter, Haas, and the Russians, Antonyka, Longfield, Arabka, and Switzer.

PROMINENT CANADIAN HORTICULTURISTS—XXI.

MR. JOHN CRAIG, OTTAWA, ONT.



NY person who has heard Mr. Craig address a meeting of farmers or fruit-growers, on subjects connected with his department of study, must be impressed with a sense of the practical knowledge and scholarly manner of the Horticulturist of the Central Experimental Farm; and the more one becomes acquainted with him, the more one becomes satisfied with the propriety of his appointment. Nor is it only his natural fitness for this work that justifies his appointment, for this is also backed up by previous training exactly suited to his present requirements.

John Craig is a native of the Province of Quebec, and was born in 1864, at Lakefield, Argenteuil County. When he was eight years old his father moved to Abbotsford, to take charge of that well-known experimental farm belonging to the late Charles Gibb, where so many hardy Russian and other apples were under test; a property which has since come into the possession of Mr. Craig's people. It was on this farm at Abbotsford, and associated with so learned a horticulturist as Mr. Gibb, that Mr. Craig received his first impressions in horticulture. After completing his public school course at Abbotsford, he was sent to the high school at Montreal. This course completed, he returned to Abbotsford and spent two years as the private secretary and assistant of Mr. Charles Gibb. It was at the suggestion of the latter that he entered the Iowa Agricultural College, as a special student of horticulture and allied sciences; he thus came into contact with Prof. J. L. Budd, whose visit to Russia in company with Mr. Gibb, to gather hardy fruits for testing in North America, has been frequently referred to in our reports. Mr. Craig remained at this college for three years, completing his course of study there, and receiving a diploma in the class of 1887.

During the period of his college work, he employed his summer and winter holidays in practical nursery and greenhouse work, and his last year, as assistant of Prof. Budd, in the important branches of hybridizing, propagating and testing varieties.

On the organization of the Iowa Experiment Station, he was elected assistant director, and was given the special charge of the Department of Horticulture. During his stay at this Station, he was sent out by the Board of Control on a botanical expedition, with the especial object of making as complete a collection as possible of the wild and cultivated grasses. In the pursuit of this work he made an extended tour through Dakota, Montana, Washington, Oregon, Utah and Colorado.



MR. JOHN CRAIG, OTTAWA, ONT.

In January, 1890, he was appointed Horticulturist of the Central Experimental Farm for the Dominion of Canada, a position which he still fills in a most creditable manner. Of his work since that time, it is scarcely necessary to speak, as our readers are kept well posted concerning it, by means of his annual reports, bulletins, evidence before the Horticultural Committee of the House of Commons, addresses at meetings, newspaper correspondence, etc.

At the annual meeting of our Association, held in the City of Hamilton, in December, 1890, Mr. Craig was elected the director to represent Ottawa and the Counties of Lanark, Renfrew, Carleton and Russell, which constitute agricultural division No. 2. Since that time his contributions to our journal and report have been frequent and valuable.

Some of the more important lines of work which he is pursuing at Ottawa are indicated under the following heads: (*a*) testing fruits for the north, (*b*) crossing and developing new varieties, (*c*) systematic study of the methods of propagation, (*d*) fungus diseases and the best way to destroy them. As Mr. Craig's labors are directly in the interests of the fruit growers of the Dominion, it is only right that he should receive from them every possible assistance they can render him for the prosecution of his work. This they may do by keeping him well posted concerning new fruits, trees or plants which are discovered in their various localities; by distributing freely the bulletins issued by the Farm; by testing the varieties sent out, in order to know their adaptation to the various parts of our country; by experimenting with the various fungicides; giving full reports to him, and in various other ways.

Mr. Craig is a member of the principal horticultural and pomological societies of the United States and Canada, of the American Forestry Association, and of the American Association for the Advancement of Science; and thus, by frequent contact with the leading students of horticulture and allied studies in America, he is enabled to keep the fruit-growers of the Dominion posted as to the very latest discoveries which promise to help them to the greater success in their chosen industry.

The Crosby Peach.—There seems to be plenty of evidence in favor of the Crosby peach. There is little doubt as to its hardiness, but it is excellent in other respects. Mr. Charles Wright, a successful peach raiser of Delaware, pronounces it of delicious flavor and while not so large as Crawford or Old-mixon, it will bear a crop when they fail. Another life-long peach grower of Delaware says that the Crosby has a beautiful color and is a perfect freestone.—R. N. Y.

Scabby apples rot much earlier than those free from scab, and spraying with fungicides will save at least 50 per cent. of this loss.

APPLE GROWING IN QUEBEC.



IN a paper on this subject, read before the Farmers' Congress at Quebec, Mr. R. W. Shepherd, Jr., of Montreal says: As compared with our sister province of Ontario, the area devoted to the cultivation of the apple in this province is insignificant. The exportation of apples from Ontario to Great Britain has assumed large dimensions; probably three-fourths of this trade passes through our port of Montreal, and not a small proportion of it is handled by Montreal fruit merchants.

There does not seem to be any means of ascertaining the extent of the annual crop of apples in this province, nor yet the quantity of apples exported from the province to Great Britain, but from personal observation and from information obtained from exporters, probably not more than 10 per cent. is exported, and probably another 5 to 10 per cent. sent to our great North-West. Since the McKinley tariff, the exportation of apples to the New England cities of the United States, which a few years ago, from our border counties in the Townships, was considerable, has altogether ceased. We may, therefore, conclude that fully 80 per cent. of our provincial grown apples are consumed at home.

The question naturally arises, "Shall we keep on planting, for the purpose of growing more apples for home consumption?" No! we cannot recommend it. The profits of apple growing are smaller than they were a few years ago, owing to over-production, the McKinley bill,—and also because Quebec is now the slaughter market for a large portion of the Ontario fruit which is not exportable. But should we increase the area of our orchards with a view of exporting to the North-West? Possibly here we have an outlet for a large proportion of our fruit, but Ontario would be our great competitor here, having the advantage of cheaper freights in consequence of proximity to that market in the west. You will ask why so small a proportion of our provincial apples is exported? In answering this question one has to consider the varieties of apples grown here, and we find they are principally soft fruit, fall and early winter varieties, unsuitable for exportation to Great Britain in barrels. The cultivation of the "Fameuse" for exportation in barrels cannot be recommended. Dealers look upon that variety as extremely "risky;" yet the Fameuse is our leading commercial apple. It is being followed closely by "Wealthy," however, which, for its adaptation to most soils and its greater hardiness of tree, surpasses the Fameuse. That dealers will take to the "Wealthy" for export is doubtful. Its delicacy of skin and flesh too closely approximates the Fameuse. To give you an idea how cheap apples of this class were sold in England last fall one of our largest exporters informed me, the other day, that he bought five fine Fameuse on the streets of Liverpool for one penny. No wonder the exportation of fall and early winter apples was so

disastrous to Canadian exporters last season. Such fine fruit as our best Fameuse, Wealthy, Winter St. Lawrence and McIntosh Red cannot be exported in barrels profitably, because it is not the proper package for fruit of such delicate texture. No matter how carefully selected and packed in barrels, bruising of each specimen must naturally occur, and bruising means premature decay, hence fruit of this description is sacrificed at "five a penny." But if we cannot ship our best apples in barrels they may be shipped in compartment boxes with complete certainty of arriving in good condition, to be put on the Londoner's dinner tables unbruised. I have tested this mode of packing our best table apples for export, the last ten years, with great success. At first the boxes were made with open spaces on sides and top for ventilation (that was the Cochrane case), but experience has led me to adopt a close box, the only ventilation being the small hole at each end; but really the object is not ventilation, but for convenience in handling the package. We find that the boxes are never turned upside down when the freight handler can insert his fingers into these holes, and lift the box so easily. Last season I exported several hundred boxes of apples and not one complaint as to packing, but many letters of recommendation. The Fameuse and Wealthy boxes hold 16 dozen and four apples (196 apples) or nearly half a barrel. The package, complete, including $3\frac{1}{2}$ inch wire nails with which we nail the cover, bottom and sides, in addition to the nails that the box manufacturer supplies, costs 45 cents, or thereabout. Of course only the very best and most perfect fruit can be packed in these boxes. That a large trade can be worked up in shipping to Great Britain table apples, packed in this manner, is rather doubtful, as the fruit by the time it reaches the other side becomes pretty costly,—but I must confess that from a small beginning I have found the demand to increase every year, so that last year I shipped nearly double the number of boxes that I did the year previously. But we can scarcely expect that apples in boxes, in a wholesale way, can compete with the trade in barrels,—therefore I cannot recommend a large increase in the area of our orchards for the purpose or shipping fruit in boxes.

What is to be done? You will ask if you do not recommend increasing the acreage of orchards by the planting of such varieties as succeed well, viz.: Fall and early winter varieties. What is to be done? My answer is, plant late keeping varieties, hard apples for exportation. But the cultivation of winter apples for export has never been undertaken on a large scale in this province, as it is in Ontario, because of the uncertainty of knowing what variety of tree is hardy enough, and suitable to cultivate for the trade. Our old time favorites "Pomme Grise," "Bourrassa" and "Calvilles," etc., are no longer cultivated, having become unprofitable. No, doubt, the apple growers of this province have been bravely trying and testing the growing of winter apples for many years. We have only to look at the large number of varieties of winter apples that we have collected for the World's Fair, Chicago, which are now in cold storage there, such

varieties as :—Flushing Spitzenburg Ribston, Canada Baldwin, Wagener, Argen-teuil, Greening, Seek no Further, Yellow Bellefleur, King of Tomkins, Perry Russet, Mann, Northern Spy, Ben Davis, Jonathan, Golden Russet, Hubbardson, Nonsuch, Fallawater, Tolman Sweet, American Baldwin, Pomme Grise, Longfield, English Golden Russet, Scott's Winter, Kellog Russet, Pomme de Fer, Red Spitzenburg, Pewaukee, Iron Apple, Blue Pearmain, Canada Red, W. W. Calville, Hibernial Magog Red Streak, Bourassa, Utter's Red, Rochester (so called), Bethel, Caville Blanc, Rox Russet, Swaar, Reinette de Canada.

This is proof positive that most of our orchardists are experimenting and trying to discover an apple, or a number of apples, suitable to cultivate for the export trade ; but that they have not quite succeeded is proved by the small proportion of our provincial grown fruit being exported. No one yet, that I have heard of, has had the temerity to plant out a thousand trees of any one variety of a late winter apple, expecting to succeed. Scarcely any of the Western winter apples are hardy enough to succeed in this province. Baldwin, Northern Spy, Greening, King, which are the standard winter apples sent to the English market to day from Ontario, will not succeed in our apple-growing sections, if planted on a large scale, although I believe Northern Spy is grown in Huntingdon County in a small way.

We have turned our eyes to Russia, too, to discover a winter apple suitable for our needs ; but really, so far, although we have found many nice apples, decidedly handsome apples, yet no late-keeping ones that can compete with the standard Ontario apples just mentioned, in the English market. Bogdanoff will not do ; Longfield is not worth cultivating except in extreme northern sections, and then is only fit for home use—a pretty apple, but undersized—the quality, however, is passable. What can we do, then, in the way of growing winter apples on a large scale for export ? Can we compete with our brothers in Ontario ? I think that in the more favorable parts of the province something may be done. We have, by practical test and observation, after many years, found out two or three varieties which, I think, may safely be recommended until something better is discovered.

First on the list is “Scott's Winter,” a native of Vermont, tree quite hardy and productive. The apple is of fairly good quality and handsome appearance. The only objection that has ever been raised against Scott's Winter is, “that it is rather small.” I am better pleased with Scott's Winter every year ; the fruit does not spot and is a late keeper. I can recommend its cultivation in the Ottawa Valley and district of Montreal. Dr. Hoskins, that grand old pomologist of Newport, Vermont, says it cannot be surpassed for hardiness of tree and productiveness, and endorses my report of it. He says : “And this Scott's Winter, Professor Budd, of Iowa, declares to have the microscopic characteristics, as regards wood and foliage, of the Russians, and believes it to be a chance Russian seedling. For myself, I am inclined to look upon it as a proof of the

gradual acclimation of the seedlings of West European stock to American conditions." Although Scott's Winter may not quite meet the views of exporters as to size, yet I would not hesitate to plant out one thousand trees of that variety, and expect to make money, too.

2nd. A second apple is the "Canada Red." It is only within the last three weeks or so that we have found out that Canada Red is, undoubtedly, a very hardy tree. For upwards of thirty-three years, to my certain knowledge, this variety has been cultivated at Hudson on the Ottawa, forty miles west of Montreal, and within two miles of my own orchard at Como. Canada Red is not a new variety, in fact, it is an old variety, which is at the present day largely cultivated in Ontario and New York State. Yet, strange to say, no one ever supposed Canada Red capable of withstanding the rigorous winter climate of the Province of Quebec. The trees are over thirty-three years old, and out of an orchard of 1,200 trees, of mixed varieties, planted so long ago, Canada Red is the most healthy, hardy and productive of all, surpassing Fameuse and St. Lawrence. "They are the survivals of the fittest," therefore, I think Canada Red may safely be recommended for planting in more favorable sections of the province with success.

3rd. The "English Golden Russet," at least, so-called by the late Chas. Gibb (but to distinguish it from the American Golden Russet, I have catalogued it for my nursery as the "Fisk Russet") is a very hardy tree. Mr. John Fisk, of Abbotsford, from whom I obtained my trees at first, says it is the only late winter apple that they can safely grow at Abbotsford. The fruit is a favorite with exporters for shipping in mid-winter, and is worthy, therefore, of cultivation for that purpose.

4th. "North-West Greening," from Wisconsin, an ironclad, which we might grow to compete with Rhode Island Greening, is worthy of mention.

Reports 1892, from Wisconsin, regarding North-West Greening, has been thoroughly tested and proved equal to the "Wealthy" in every respect as a tree, while in quality of fruit and keeping it is superior to that variety. The fruit is medium to large, greenish-yellow, often fine blush; flesh, fine grained, firm, juicy, sub-acid, good; season, January to June. This variety has had twenty-five years' trial in Wisconsin.

Here we have, then, three or four varieties, hard winter apples of known hardiness of tree, that may be grown on a large scale (until something better is discovered) for this export business. Three or four varieties are enough. There is no advantage in growing too many varieties; on the contrary, it is a great disadvantage. From the exporter's point of view, he would much prefer to buy 2,000 barrels of two varieties, than the same number composed of eight or ten varieties. With a large number of barrels of one or two varieties only, your sales will be made quicker and more profitably. Therefore, the conclusion I arrive at is this: If your orchard is well situated, near the city market, possibly the

growing of fall and early winter apples in the future will pay, but you must bear in mind that after the experience of last season, and the dreadfully heavy losses made by exporters in shipping the early winter apples of Ontario, they will be "wary," and our chief market centers are likely to be more than ever invaded by fruit from Ontario—but it is a risk we must all run.

The orchardist, at some distance from market, however, would do better to plant late winter varieties. He is sure of a market in any case. He may either sell to the exporters or he may export the fruit himself. Moreover, the fruit being of a hard kind, not easily bruised, nor decaying on his hands, he can afford to keep his apples until such time as the prices in winter advance.

APPLES AS MEDICINE.

Chemically, the apple is composed of vegetable fibre, albumen, sugar, gum, chlorophyl, mallic acid, gallic acid, lime and much water. Furthermore, says the Southern Clinic, the German analysts say that the apple contains a larger percentage of phosphorous than any other fruit or vegetable. The phosphorous is admirably adapted for renewing the essential nervous matter, licithin, of the brain and spinal cord. It is perhaps for the same reason, rudely understood, that the old Scandinavain traditions represent the apples as the food of the gods, who, when they felt themselves growing feeble and infirm, resort to this fruit for renewing their powers of mind and body. The acids of the apple are also of signal use for men of sedentary habits, whose livers are sluggish in action, these acids serving to eliminate from the body noxious matter, which, if retained, would make the brain heavy, dull, or bring about jaundice or skin eruptions and other allied troubles.

Some such an experience must have led to our custom of taking apple sauce with roast pork, rich goose, and like dishes. The mallic acid of ripe apples, either raw or cooked, will neutralize any excess of chalky matter engendered by eating too much meat. It is also the fact that such fresh fruits as the apple, the pear, and the plum, when taken ripe and without sugar, diminish acidity in the stomach, rather than provoke it. Their vegetable sauces are juices, and converted into alkaline carbonates which tends to con-tract acidity.

It is not known that this treatment will prevent the black knot, but cutting away and burning the diseased branches will accomplish the result.

An Effective Weeder.—A steel rake, with long and sharp teeth, is one of the most effective of weeding implements, and if used "early and often" will keep land clean, with little labor.

COCCOTHAUSTES VESPUTINA.—(EVENING GROSBEEK.)



VERY little is known here about these birds. We hear about their having been seen in different parts of Ontario, but only once, that I am aware of, have they visited this district in a period of forty years. That was in February, 1889, when a flock of a dozen or so delighted the dwellers in this locality with their golden-shaded, black and white plumage, flute-like notes, easy and graceful movements. Their home is said to be North-West Canada and some of the Western States. I have not met any one who is acquainted with them or who has ever seen them in their summer residences. I believe the HORTICULTURIST is now read in almost every town and village in the Dominion, and, doubtless, some of its readers can give us some information regarding these interesting visitors; that is the reason I write this letter.

These birds are remarkably social, seldom parting company more than a short distance, nearly free from timidity, and happy as the "Blue Jay." While sojourning here, their food was chiefly the buds of evergreen trees, for the clipping off of which their ponderous beaks are peculiarly adapted. When I found they had cut off nearly every bud from some of my Norway spruce trees, I felt thankful their visit was not prolonged. I hope they have other food than buds when in their native *habitat*. When the Pine Grosbeaks visit us they eat

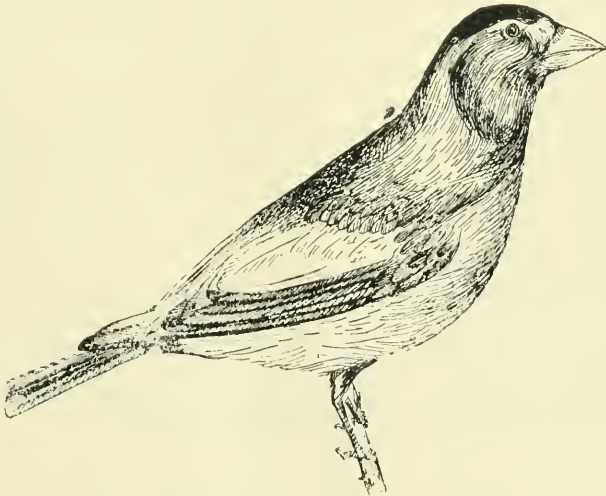


FIG. 546.—EVENING GROSBEEK.

tree seeds and Mountain Ash berries, and have not been noticed eating buds ; yet, a close look at their great beaks, leads one to suspect them.

The Rose-breasted Grosbeaks, who make this a halting-place on their journey northward every spring, eat insects, seeds and berries. They are also said to eat buds. They do not come in flocks, however, and any damage they may have done has hardly been perceptible.

Our attention was first attracted to the work of the Evening Grosbeaks by great quantities of bud covers, or skins, lying on the snow, with which the ground was covered. On examining the trees which had been attacked, we found that even the top bud had been taken off, and that, of course, caused a crookedness in the future growth ; but should these birds ever visit us again, I will spare them on account of the love I have for birds.

Cataraqui, Ont.

D. NICOL.

UTILIZING FRUITS.

A Method for Making use of Surplus Fruits.



THE recent discussion on profitable ways of marketing fruit by the New Jersey Horticultural Society touched a subject worthy of greater consideration. Mr. Parry stated that English jams were offered for sale in Philadelphia, put up in quart jars and marked with prices between 65 to 85 cents. The large profits made by the vendors may be well understood, when it is learned that the preparation consists of about $3\frac{1}{2}$ cents worth of sugar, besides the small quantity of fruit. If managed properly, we could undersell the world on these products, and make a large margin on fruit. It does not require the expensive machinery needed for canning. Every farmer can do it on his own place.

Mr. Rogers said the foreign preparation of jam is superior to most American jams on the market. This makes the market for it : but there is no reason why American jams cannot be produced in great quantities, and of a quality superior to any produced in England. In this form and manner vast quantities of all kinds of fruits can be marketed in this country, as needed, and prices for "green fruits" kept at higher figures.

Jams can be made of all kinds of fruits and berries, including grapes, and all that is required in order to have them of fine quality, is good and ripe fruits, and how to do it—and any good cook-book, like Marion Harland's, will give all the needful information on this point. Grape jams, properly made, ought to become immensely popular, and sell everywhere, at all seasons of the year, and especially in winter and spring.—Vineyardist.

The Bordeaux mixture, if used too late, causes a russet appearance on both pears and apples.

INCENTIVES TO AGRICULTURAL LIFE UNDER A THREE-FOLD ASPECT.

A Word for Farmers' Sons.



THE great tendency for farmers' sons to seek a life of ease in the towns and cities, and to cultivate a dislike for the so-called "drudgery" of the farm or garden, calls forth earnest effort to try to convince the boys of the mistake they make in exchanging the free, happy, healthy life of the country for the bondage and uncertainties of city life. The ambition to become *great*, and able to lead a life of ease and luxury, is often the snare that is laid to lure many a youth from the quiet steady life of the farm to embark in the feverish existence of a business career that, after it is fretted to the bitter end, closes with bankruptcy, and financial ruin. True this is not the case with every one, but when we consider that it is estimated that only three out of every hundred of those who embark in business in New York city, ultimately succeed in a permanent business prosperity, it seems to show that the general rule is *failure* and defeat in the battle of life, instead of success and victory. Let us view this exodus from the country to the city, by the farmer boys in a three fold aspect. First, as a *financial*, secondly, as a *physical*, and thirdly, as a *moral* argument for remaining on the farm. As a financial success, every one who applies himself to the work of tilling the soil with a fair share of intelligence added to his efforts, and with a practice of economy and perseverance, is sure to have a reasonable degree of prosperity resulting from those efforts, though he may not acquire riches in a short period. But suddenly acquired wealth, often begets luxury and extravagant living, which eat like canker worms into the fancied easy life of its possessor. "Slow and steady gains give competence with tranquility of mind," and let every farmer boy who reads this paper, repeat the above maxim, until it is indelibly imprinted on his very soul and he will find it a profitable item to serve as a balance wheel to his financial desires as long as he is permitted to exist on this mundane sphere. And we say without reserve, that no occupation offers the same prospects for a comfortable competence an ultimate financial success that the cultivation of the soil offers, providing that intelligence and economy are accompaniments of that cultivation. Look carefully over the experiences of the farming and gardening community, and if you find an isolated case of failure you will be able to trace it to some prominent lack of effort in the right direction, perhaps some extravagant habits either by the man out of doors, or the woman within doors, or some want of energy or right application of the principles of success. On the other hand, in the trades and professions, often the most assiduous efforts and careful management result

in lamentable failure, while in the great variety of influences of city life, the temptations to drift into habits of luxurious living, maintainance of style, and other social capker-worms, are far more prominent than in the quiet influences of the country, where the handiwork of a Divine Creator constantly appeals to our administration, and call out our reverence and love.

Tried under the health aspect, surely every one who practices a habit of obstruction will see the decided advantage the country has over the city in that respect. Pure air, wholesome food, and out-of-door exercise in the development of muscular energy, are sure promoters of health, while the calmness of mind and spirit of contentment which generally characterizes the tiller of the soil, presents a strong contrast to the care-worn anxious mein of the business or professional man, who has to cater to the patronage of a capricious public, in order to make ends meet and maintain his prestige in the particular line in which he is engaged. If health and long life, and an easy contented mind are desirable through life, surely the country takes the preference, as all will admit.

Now as to the moral argument of our theme, a simple reference to it would seem to be enough without presenting contrasts, but for the better illustration of our claim we quote a line fraught with deep meaning, thus "God made the country, but man made the town." Surely aimed the entrancing attractions of nature, evidences of the work of a Divine Architect and proofs of His wisdom and love to man, the soul that is at all delivered from self, and that runs out in unison with what it is surrounded, cannot but be impressed with a spirit of adoration and praise, while high and lofty aims and desires for a pure life will be begotten and encouraged, in contrast with the sordid love of gain, and the cunning craft which is ever found in the thoroughfares of business and professional life, to say nothing of the spirit of priestcraft and soul-slavery which so largely abounds in city life.

Think over these things, boys, count well the costs in all its aspects, before you consent to change the life of the farm or garden for the busy mart of the city. Apply yourselves to the study of enlightened agriculture, horticulture and floriculture, and you will have an unceasing range of interest to occupy your time and attention and the so-called "drudgery," of the farm will have no place in your estimate.

L. FOOTE.

Apple better than Orange Culture.—A neighbor who has gone to Florida to raise oranges recently called on us while visiting his old home. Seeing our apple trees with their load of highly-colored fruit he said: "I tell you, say what they may of the beauties of the orange groves, the truth is the orange tree at its best is never more beautiful than the apple tree of New England. The apple in bloom is far ahead of the orange, and when bending to the ground with its load of ruby fruit it is ahead again.—New England Farmer.

A DEVICE FOR UTILISING RAIN WATER WITH MANURE.



Y plan is to take three posts six feet long, six inches square, sink them three feet in ground and place a 100 gallon barrel on them. 1 is a false bottom with small holes in it to allow the liquid to the tap. Nail this three inches from the bottom of barrel. 2 is the manure and water in barrel. 3 is a round floater two inches thick and as wide across as the inside of barrel will permit it

to work up and down freely; this floater cannot rise high enough to raise the funnel end of pipe 5, so add the bridge 4 in centre of floater under funnel cross-ways. 4 is made of a stiff wire (bridge shape) and fastened on centre of floater by boring two holes one and one-half inches deep, the size of wire, and fasten the two ends of bridge in them firmly; make this bridge about twelve inches long and high enough to lift the funnel end of pipe 5, when the barrel will be full. 5 is a tin pipe the same length as the width of the top (head) of barrel, so by fastening it with a hinge at centre it will about balance; if not, add anything at either end to balance it. I solder one end of a hinge under the centre of pipe 5, and the other end of hinge I screw on end of barrel. The water falling in funnel makes it sink if the barrel is empty, so the water falls in the barrel. When the barrel is full the bridge on the floater will raise the funnel end of pipe 5, so the water flows in the waste pipe 8, instead of washing the strength from the manure and coloring the outside of barrel, etc. 6 6. are made of stiff wire to keep the floater from turning around, for the bridge should be cross-ways, with

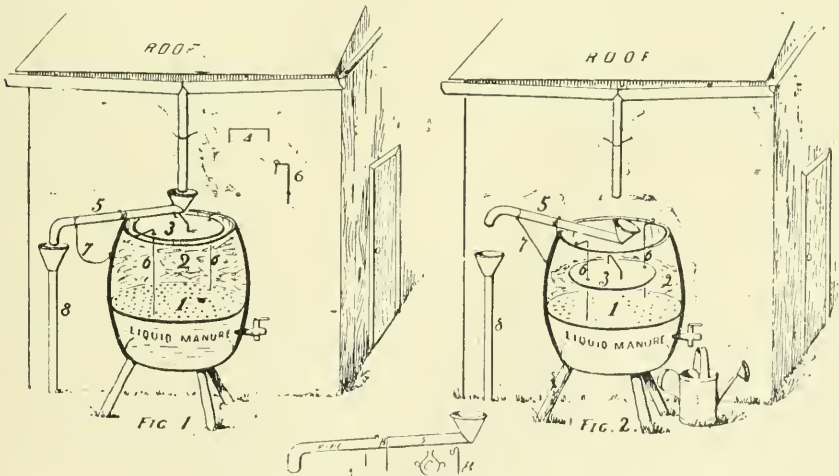


FIG. 547.

pipe 5 under the funnel, so bore two holes in edge of floater twice the size of wire to allow the floater to float up and down freely. I push these two wires one in each hole of floater and through the manure, the upper end of wire having been bent to receive a screw. I fasten one screw in each eye like (6 at right hand of Fig. 1), and in the top of stave of the barrel which is firm enough. 7 is a cord or light chain fastened on end of pipe 5, near elbow and the other on centre (bilge) of barrel to keep the funnel end of pipe from lowering too much in barrel when empty. Before placing the manure in barrel I put two inches thick of oyster-shells on the false bottom in such a manner as to not block the holes.

Fig. 3. represents pipe 5 balanced without a hinge. Take a stiff wire, bend it like a ϵ with two eyes for the two support wires b , the ends of which are "huck" shape. bore two holes the size of wire b , on end of stave of barrel to fit these hucks b upright; place your pipe 5 on a balance and tie the two ends of wire ϵ tight over pipe 5 at centre.

I use this liquid manure twice a week, sprinkling only the ground, for it colors the leaves. In the fall, before the frost has come, I empty all the liquid into small kegs and put them in the cellar and tap them according as I want some liquid to water my plants in the house twice a week, which I think does them much good.

This device may not answer for a very large and high roof where the water would fall too heavily in the funnel and splatter over the edge of barrel, although it works very nicely with a small or low roof.

Montreal, P. Q.

O. GAGNON.

The Culture of Raspberries.—It is not generally known that the raspberry cane is hardy just in proportion to the amount of healthy leaves which will continue healthful to the last. If the leaves fall before the natural time for leaf ripening, the wood has but a very low vital power, and is very easily killed by the first frost. Every effort, therefore, should be made to keep the leaves of raspberry canes healthy. Small and weak canes, should be kept down, and good manure, or other enriching food applied to the plants. The raspberry is especially fond of cool earth to grow in. It is indifferent to the temperature of the atmosphere, but does not like extra heat at the roots. To this end a mulching of any half-rotten material is an excellent practice in cultivating this fruit. Sometimes, in spite of all precautions, rust will attack raspberry leaves, or some other kind of fungus will make a home on the foliage—the leaves then die early, and the canes are not very strong. Under these circumstances, much profit ensues from bending the canes down and covering them with earth during winter. This prevents great evaporation from the canes, which is the chief source of injury. Early in the season, as soon as the frost is gone, the earth must be taken from the canes, otherwise the buds will push early and rot. With a little care in cultivation, with some such treatment as that described, the raspberry is one of the the most successful of amateur grown fruits.—Meehan's Monthly.

GOOSEBERRIES.



HE gooseberry itself is fond of a cool, moist soil, and does best in a climate like that of England, where it has reached the greatest perfection, both in size and flavor. The hot, dry climate here ripens it too rapidly to allow it to acquire this flavor. The English varieties are larger and finer than the American, but have not succeeded here on account of the mildew. Fortunately, we now have a sure remedy for this disease, and when it becomes generally known, it may be that a new era of gooseberry culture will dawn upon us.

SOIL AND CULTIVATION.—A cool, moist, rich soil, full of vegetable matter, with northern aspect, if possible, well manured with compost, is necessary to the best results. But, although the soil should be moist, it should be well drained. The plant will not tolerate stagnant water about its roots, nor in a stagnant soil. It will soon become hidebound and the stems covered with moss. But to secure the necessary coolness and moisture, the ground should be well mulched with well-rotted compost. In making this statement it is intended to aim for the highest results, as I believe more profit will result from this course.

The famous growers of Lancashire, England, outdo the world in producing berries of quality and size. The *Encyclopedia of Gardening*, says :

“To effect this increased size, every stimulant is applied that their ingenuity can suggest ; they not only annually manure the soil richly, but also surround the plant with trenches of manure for the extremities of the roots to strike into, and form around the stems of each plant a basin to be mulched, manured or watered as may become necessary. When a root has extended too far from the stem, it is uncovered, and all the strongest leaders are shortened back nearly one-half of their length and covered with fresh marl loam, well manured. The effect of this pruning is to increase the number of fibres and spongioles, which form rapidly on the shortened roots, and strike out in all directions among the fresh newly-stirred loam in search of nutriment.”

PRUNING.—The gooseberry produces fruit buds and spurs on wood two years old and over. Patrick Barry says : “The bush should have a stem of three or four inches in height and a head composed of five or six main branches, placed at equal distances, and inclined outwards to prevent denseness and confusion in the centre. These main branches should be furnished with bearing wood in all their length. The production of such a bush may be accomplished by the following means :

Supposing the young plant as it comes from the nursery to be either a two-year old cutting or a one-year bedded layer, in either case it will have a stem of

two or three inches at least, and a few branches at the top. Before planting, all the buds on the part of the stem to be under ground should be cut out to prevent them from producing suckers. Among the branches, three of those most favorably situated are selected for the formation of the head, and the others are cut out entirely. The reserved branches are then cut back to two or three buds; from these one shoot is taken on each branch and the others are pinched to favor this. By this method we shall have three stout shoots in the fall; if the plant had been well rooted instead of being newly transplanted, we might have taken two shoots instead of one from each shortened branch. These three branches are cut back at the next pruning to three or four buds, and from each two new shoots are taken, giving at the end of that season six stout shoots situated at equal distances. At the next, or third, pruning, these branches are cut back about one-half in order to produce lateral branches and fruit spurs. At the fourth pruning, the leading shoot is shortened one third or one-half; any lateral branches not required to fill up spaces, or such as are improperly placed, are cut back to three or four buds, so as to convert them into fruit branches.

In this way the pruning is conducted from year to year. When the plants become feeble from overbearing, the fruit branches may be headed down and replaced by vigorous shoots. The better way, however, to provide for the difficulty is to raise young plants from layers, to be at once substituted for those that fall victims to mildew.

FROM statistics gathered by the American Cranberry Grower's Association it is learned that in 1883 Wisconsin produced 135,507 bushels; in 1884, 24,873; in 1885, 264,432 bushels; and in 1886, 70,686 bushels of fruit. By these figures it will be seen that the yield is very irregular. This is owing, principally, to the fact that many of the marshes are not yet provided with the means of flooding, and, of course, suffer from worms, drouths, late spring or early autumn frosts, and extensive fires started by sparks from the engines on railroads running through the marshes. These and other evils are averted on the more improved farms. So that while handsome fortunes have in many cases been made in cranberry growing, many thousands of dollars, have on the other hand, been sunk in the same industry. Only the wealthier owners, who have expended vast sums of money in improving and equipping their property, can calculate with any degree of certainty on a paying crop of fruit every year.—American Magazine.

Spraying with fungicides in the season of 1892 prevented much of the early dropping of apples, which is usually attributed to wet weather.

For apples, two applications of Bordeaux mixture before blooming are advised, and two of the same mixture after blooming, with Paris green added.

Early spraying is the key to success in the use of fungicides.

PRUNING TREES.



ANY trees suffer from excessive pruning ; while as many probably fail to meet the results anticipated by cultivators, through a want of pruning. No one can be taught how to prune properly, unless the object to be attained by such pruning is clearly kept in view. The student of this practical horticulture, coming into Philadelphia by the Pa. R. R. may see an admirable lesson in this line from the large forest trees in the vicinity of the Zoological gardens. These have evidently suffered at some time or another from starvation. In natural woods, trees receive a great deal of food from the decay of fallen leaves which accumulate beneath them ; this collects sand and other mineral matters, and forms an excellent opportunity of giving food to the roots. When the surface is kept clear, as it ought to be kept clear for popular enjoyment, the trees have no opportunity of getting the nutrition necessary to sustain a vigorous hold on life. When a dry season comes of extra severity, or an extra severe winter is experienced, the vital power being low, large branches get weak, or in many cases, nearly die. In the illustration we have above referred to, these trees simply had the heads cut off. The trees were, in common language, pollarded ; but the branches shot out with little more vigor than before, because the trouble was not this excess of branches, but the deficiency of food. As a consequence, the stumps are rotting away at the centre, and it will not be many years before these fine specimens of the ancient forests of Pennsylvania will disappear. If a large amount of surface manuring had been applied instead of heading off the trees, it would have been a life-saving, instead of a life-destroying, operation. It will be seen then, that the object for which we prune must be first considered before pruning is resorted to.

In connection with orchard trees, the same thoughtfulness before commencing to prune is required. It is essential that a tree should have a large amount of healthy foliage rather than the same quantity of half starved leaves, Branches in the interior of the tree, bearing only half shaded or weak leaves, are of little use. If these are taken out, the vital energies are directed into the healthier branches, which are made still more healthy, and give good results. But it may be that the trees have been allowed to overbear and the larger branches have had their life-principle somewhat exhausted. In such a case, instead of pruning out the younger branches in the interior, it is better to cut away the larger and somewhat exhausted ones and leave a younger race of shoots to take their place. These illustrations are given to show that the whole question of whether pruning is or is not an advantage, is wholly dependent on the object which it is attempted to gain, and this can only be answered by the facts in each individual case.—Meehan's Monthly.

“SPRAYING VS. JARRING” IN PREVENTING THE ATTACKS OF THE CURCULIO.



OPINIONS in regard to the relative merits of “spraying” or “jarring,” in preventing the attacks of curculio, are exceedingly varied, and, I think, always will be. This is owing to the fact that some growers have the apparatus for spraying advantageously and quickly, and have become accustomed to this method of fighting the “little Turk,” and so do not care to change their appliances and ideas to suit any other method. The same is true in regard to those who claim that the cheapest and best method of fighting the curculio is by the older system of jarring.

I am not in a position, from personal experience, to speak more in favor of one than the other. I notice, however, in a recent symposium in the *Rural New Yorker* that while opinions seem to be pretty well divided, yet the majority, including Professor Cook, an eminent entomologist, of Michigan, inclines to the belief that better results can be obtained by jarring.

Those who decide to jar should not forget, however, that their trees must be first headed high enough to allow of easy approach by the operator of the umbrella-like device arranged to catch the falling curculio.

A system of close pruning or heading-in must also be practised in order to keep the top of the tree within moderate bounds.

Some interesting facts on the subject came into my hands last season as the result of careful experiments conducted by Mr. R. B. Blake, of Cedar Springs, Ontario, which I deem of sufficient value to give to the public through the medium of the *CANADIAN HORTICULTURIST*. Now that growers not only can, but should, spray to prevent the peach and plum rot, and owing to the fact that Paris green may be safely added to the Bordeaux mixture, which may be considered a partial remedy for the peach and plum rot, it would seem that spraying would be the more easily applied and prove the cheaper remedy of the two.

Mr. Blake, writing me last August, says: “I have one row of 36 Early Canada’s: I started to jar them as soon as the little white peach got free from the blossom. The following are the results for 12 mornings:—Off the 36 trees first morning I collected on sheets, 198. This seemed to be too long a job to continue, so I dropped 26 and kept on with 10 trees only, for the next eleven days. Second morning, collected and destroyed 49; 3rd morning, 69; 4th morning, 75; 5th morning, 82; 6th morning, 36; 7th morning, 53; 8th morning, 47; 9th morning, 89; 10th morning, 68; 11th morning, 84. At first not a peach had been stung, but as I went on I found they had been attacked, and

began to see the uselessness of this method. I then sprayed the 10 trees with Paris green, with the astonishing result, that not one peach ripened on the whole lot of 36 trees; at one time it looked a bushel a tree. I looked at the clock each time I went to jar, and on returning found the 36 trees took two and one-half hours, and the 10 ran from 45 minutes to an hour each time, so that you may see that for a large orchard this method is quite impracticable.

I sprayed the whole of my other peach trees with Paris green at the rate of one pound to 300 gallons of water, with the addition of four pounds of lime to each coal oil barrel of water (say about 44 to 45 gallons.)

The first spraying did not effect the foliage in the least, as rain came soon after. I gave them all another spraying, and this did not seem to hurt them. I gave a third spraying to a portion, and this time the leaves were scorched badly, the peaches of some trees tumbled off, but at this time nearly all seem to have fully recovered. But the spraying did not save them, as I lost all my early Canadas, Amsden June, Early Alexander, Early Louise, and I only marketed three twelve quart baskets, and this off trees which at first gave promise of an enormous crop.

I have nine trees of Early Rivers, six of which I sprayed the same strength three times, with no injury on the six. I have twelve baskets nearly ripe, and at present sound, on the unsprayed ones *not a peach*.

The early peaches nearly ripened a great many, but then rotted. On examination nearly, if not quite, all had been stung with curculio.

On the 21st and 22nd July, I caught several curculio at work on nearly full-grown peaches."

The loss of our Blake's early peaches which had been sprayed, was probably due in a larger measure to the effect of plum rot (*monilia*), than to the attacks of curculio, so that a judicious use of Bordeaux mixture and Paris green might have saved the crop. No doubt there is danger of injuring the foliage by repeated applications of Paris green, as there seems to be a slight residue left on the leaf after each application, which is not washed off, and this accumulating with repeated sprayings, finally affects the foliage injuriously. Care should therefore be exercised when making the last application, to see that it is slightly weaker than those made previously.

JOHN CRAIG.

Central Experimental Farm, Ottawa.

WITH peaches, nearly or quite all of the pruning should be done in the spring. There is so much risk of the new growth being killed, and, of course, it will need to be cut out in the spring, that it is best to defer pruning until reasonably early in the spring. The peach needs severe pruning annually—from one-third to one-half of the new growth should be cut out. This will aid materially in securing a better quality of fruit. Farm Life.

❖ The Kitchen Garden. ❖

THE NEW CELERY CULTURE.

The R. N. Y. says: For the benefit of newer readers, we will briefly restate the main features of what is called the "New Celery Culture." The soil is well enriched and prepared with great care, being made as fine and open as tools can make it. It is then marked off in rows seven inches apart each way. The plants, started as usual from seed, are set out in the cross marks seven inches apart all over the field. They are cultivated with the wheel hoe and hand tools as long as possible, and irrigated or watered so that the soil never becomes very dry.



Mr. Beckwith of the Delaware Agricultural Experimental Station, has tried the new plan and says: We are so well pleased with this method that we shall try it again the coming season, and shall set the plants seven inches apart each way, and make the bed very much wider, as we think by so doing the plants will blanch better.

The above is from a photograph of the celery taken while growing in the garden. The five rows to the right show that planted after the Niven method, while at the left is a row of White Plume blanching by means of boards on each side instead of soil.

Summer Pruning of Gooseberries and Currants.—Of these there are two kinds requiring notice, viz., Gooseberries and Currants, of the latter only red and white varieties, and of the first-named only those trained to walls. Any one who has not hitherto practised summer pruning as here advocated for Currants and Gooseberries would, I feel sure, after a first trial adopt the plan. The young shoots are cut back about the second or third week in June to within four or five leaves of their base, and it only remains to be said that you will be rewarded by larger fruit and more of it than would be the case if they were treated only to the customary winter pruning.—H. G. H. in Garden Work.

✿ The Apiary ✿

THE HONEY BEE IN RELATION TO PLANT LIFE.



IT seems almost remarkable that we appear to strive after that which is not within reach, and that which is ours, if we but nod our head, is spurned as unworthy of our notice and of our attention.

What more interesting study can those of us, who live in rural districts, desire than the study of plant and animal life. How many years did I and many others pass in the country, and the things about us were a closed book. And how the first glance astonishes, dazzles and yet delights. Youth can have no greater safeguard except the divine, be it in the country or city, than to become interested in the study of the habits of plants and insects, and the relation the one bears to the other. One so interested would, without doubt, appreciate to a greater extent the advantages, yes, with all its drudgery, the beauties of rural occupations.

And youth need not be interested alone; those of us who have reached a mature age will find this a study well worthy of our attention during our hours of comparative leisure, and, withal, we can derive from this study solid financial benefits. I propose to just lightly touch upon the honey bee and its relation to plant life.

To many of us the characteristic of the bee essentially valuable is, that we can, in a manner, domesticate it and turn it to the gathering of surplus honey. But is this the reason we have the honey bee creation, or is the storing of honey only a secondary matter. There is every evidence to show that as in our own lives working for our daily bread is only a secondary matter, and the object of our existence is far above and beyond that, so the object of the existence of the honey bee is primarily not to store honey, but to assist plant life in reproduction. Darwin and a host of others have shown that the honey bee plays no mean part in the reproduction of plant life. Some plants are only partially dependent on insect life for fertilization, others are entirely so. A peep as it were into the plan of nature will be of interest, and perhaps lead to further research.

The parts of a flower are calyx, corolla, stamens and pistils. The calyx is the cup or outer covering of the blossom, and is usually green and leaf-like. The corolla is the inner set of leaves of the flower. It is very seldom green as the calyx commonly is, but is "colored" other than green, and of a delicate texture. It is the most showy part of the blossom. The stamens constitute the male portion of the flower, and are divided into filament and anther. The filament is the stalk, the anther is a little case, or hollow body, borne on the top of the filament. It is filled with a powdery matter called pollen. The pistils



FIG. 548.

are the bodies in which the seeds are found. They belong to the centre of the flower. A pistil has three parts, at the bottom is the ovary which becomes the seed vessel. This is prolonged upward into a slender body called the style. And this bears a moist, generally somewhat enlarged portion, with a naked roughish surface (called the stigma) Upon this stigma some of the pollen, or powder from the anthers, falls and sticks fast, and thus somehow enables the pistils to ripen seeds that will grow. A perfect grower contains both stamens and pistils, but we find some plants with stamens only and others with pistils only, and then two may be borne by the same plant and blossom. Sometimes a blossom bearing both stamens and pistils cannot fertilize itself, as the two mature at different times preventing self fertilization.

Sometimes the stamens and pistils are arranged in different positions in the flower. The stamens and pistils always being different lengths in each flower, the honey bee, when taking the nectar, gets dusted with pollen on the head, thorax or abdomen, according to the height of the stamens, and when the bee visits other flowers, in which the relative position of the pistil is similar, the pollen comes in contact with the stigma, thus bringing about cross-fertilization. The same effect is brought about by many other devices. This is an excellent provision of nature, just as the queen is not fertilized in the hive, but flies out on the wing to prevent the likelihood of impregnation with a drone of her own blood. Again we know in the reproduction of stock on the farm, in and in



FIG. 549.

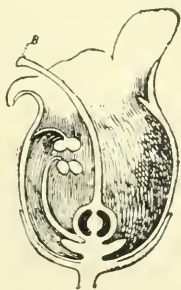


FIG. 550.

breeding can not be followed to a great extent or the progeny lacks in vigor and is otherwise defective; this rule applies equally well to plant life. It is desirable that the pollen from one flower be taken to the stigma of another, instead of the pollen and stigma from the same flower coming in contact. There are very many varieties in which we find the anthers and pistils maturing at different times. The garden nasturtium (Fig. 548 and Fig. 549) is an excellent example.

Here the nectar is contained in a long spur. When the flower first opens, the style is short and the stigma immature and unreceptive, the anthers also are quite unripe, but soon

one or two, as seen in Fig. 549, begin to rise from their first position beneath the flower until they stand just over the stigma, so that a bee entering could not fail to get dusted in the breast with pollen (now beginning to be shed), as the tongue is stretched out, and the head pushed forward to reach the sweet secretion in the spur.

The anthers, continuing to reach maturity, follow their leaders, one by one, and during the time that their pollen is being liberated by gaping of the pollen pouches, they stand in front of or close to the stigma. This process occupies from three to seven days, after which the anthers begin to drop off, and the filaments to shrivel and droop.



FIG. 551.



FIG. 552.

But the style meanwhile has grown longer, and the pistil, now adhesive and receptive, assumes the position in relation to the rest of the blossom, which the anthers before occupied (see Fig. 551). A bee flitting from flower to flower, loading her legs with pollen and her honey sac with nectar, passes, with a well powdered breast, from the younger condition (Fig. 549) to the older (Fig. 550), and of necessity presses the pollen grains she carries on to the stigma, and cross fertilization is accomplished, the only possible fertilization since the two genders do not co-exist, the blossom during the latter period being only female.

It is well deserving of notice that the three lower petals (one of which has been removed in the figure) have their edges cut into a number of narrow slits which are turned so as to stand nearly upright. These refuse contact with water, and perfectly protect the nectar from dilution by rain, as may be easily seen by sprinkling water heavily upon one of the flowers; they also compel the visiting insect to keep the thorax sufficiently up to rub off its load pollen upon the stigma.

Looking at the blossom now in the front, we see the lines on the several petals according to a beautiful and general law in the floral world, point to the cavity in which the nectar lies, so that these beautiful lines are guides to the insect visitor.

The order of development noticed in the blossom just passed is sometimes, though far less commonly, reversed, as in figwort (Figs. 550, 551 and 553), which is a great honey plant. The flower is both male and female, but as before, the two genders are never actually co-existent. In this case the stigma is first mature. When the corolla opens, the stigma

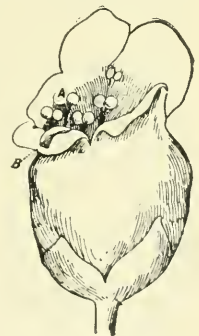


FIG. 553.

already adherent and receptive, presents itself immediately over the front lip (Fig. 550), and bees—having been dusted by pollen in their visits to older flowers, and in a manner we shall presently see—as they reach in after the abundant nectar, transfer this pollen from their hairy breasts to the sticky surface of the stigma. Cross fertilization having been secured, the stigma shrinks and dries, and the style droops, while the anthers, which previously had been hiding in the pouch like form given to the front of the corolla cup for their accommodation (see Fig. 550), now rise in view (Figs. 551 and 553), take the place whence the stigma has retired, and begin to shed their pollen.

The anthers completely occupy the space over the lip, arranging themselves in two parts, so that, in getting the nectar, the bees must reach across if the flower is approached in front, whilst the height of the back lip is such that it is impracticable for them to steal the honey from behind.

As the fertilizing dust is carried off for the benefit of the younger blossom, the yield of nectar diminishes, and the corolla cup at last drops. There are other blossoms in which male and female parts mature at the same time, but the female are so arranged that an insect visiting them would come in contact with the female part first, thus securing cross fertilization if the bee carries the pollen from another flower, which is extremely probable. We have another set of flowers in which the male and female organs are in one blossom, but in some the anther is most exposed, in others the stigma. In these the blossom is able to fertilize itself, but experiment has shown that, to secure the best results, cross fertilization is desirable, and also that pollen, placed on the stigma of the flower from whence it has been derived, would be rendered powerless by subsequently adding pollen from the complementary blossom.

In clovers the stigma first touches the bee's body, so that crossing is brought about. In the leguminosæ, this arrangement prevails; the pollen from the last flower visited fertilizing the next. Since Darwin many scientists have made abundant tests and experiments confirming this conclusions. Practical men have by observation confirmed the same. They notice a scarcity of insect visits to the blossoms of the first crop of red clover and its failure to bear seed. Alsike clover is freely visited in June by the honey bee, and bears a crop of seeds.

In New Zealand the red clover failed to seed at all seasons, and there was a marked absence of insects upon the blossoms. This led to the importation of bumble bees, our honey bee not having a tongue long enough to reach the honey in red clover; and now in New Zealand farmers produce clover seed. I have had gardeners purchase a colony of bees that their vegetables might fruit more liberally, and one gave an order for a colony to put right in his green house for cucumbers, finding that to be the easiest and cheapest method of securing perfect fertilization. We have all noticed if there is rain and cold all through fruit bloom, the trees are almost sure to bear sparingly.

Prof. Cook conducted a series of experiments bearing upon the importance

of insects in the pollenisation of plants, he states : To determine this point I tried many experiments last spring. I counted the blossoms on each of two branches or plants, of apple, cherry, pear, strawberry, raspberry and clover. One of these in care of each fruit or each experiment, was surrounded by cheese cloth, just before the blossoms opened and kept covered till the blossoms fell off. The number of blossoms considerably varied from 32 the smallest, to 300 the largest. The trees were examined June 11th to see what number had set. The per centage of blossoms which developed on the covered trees was a little over two, whilst almost twenty per cent of the uncovered blossoms had developed. Of the pears not one of the covered developed, while five per cent. of the uncovered developed fruit. Of the cherries three per cent. only of the covered developed, while forty per cent. of the uncovered blossoms set their fruit. In the strawberries eleven per cent. of the covered, and seventeen per cent. of the uncovered had developed.

In clover, white and alsike, the uncovered were full of seeds, the covered had none at all. The apple carries five stigmas (Fig. 562). To each stigma belongs a division of the compound ovary constituting the core of the fruit. The stigma comes to maturity before the anthers. Bees seeking nectar get dusted completely, and then transfer the granules to the stigmas of neighboring blossoms.

The apple is strictly a fusion of five fruits into one, and demands for its production in perfection, no less than five independent fertilizations. If none are effected the calyx, which forms the flesh of the fruit, instead of swelling, dies and drops. An apple often develops, however, though imperfectly, if four only of the stigmas have been pollen dusted; it rarely hangs long enough to ripen, the wind storms shaking them off. Their fruit may be generally known by a deformity, one part has failed to grow because there has been no diversion of nutrition towards it. Cutting it across with a knife, we find the hollow cheek lies opposite the unfertilized division, containing only shrivelled pips. Gooseberries are absolutely dependent on insect life for fertilization.

R. A. Grimshaw, in the *British Bee Journal*, says cross fertilized cabbage plants produced seeds, the plants from which flowered earlier than those from uncultured seeds; they were five per cent. taller; cabbage plants from crossed seeds were three times as heavy as those from uncrossed seeds. All round, heights, weights and fertility of crossed common cabbage were five times those from uncrossed seeds; common pear as one hundred to seventy-five. With our vast orchards and amount of bloom, we have really an artificial condition in plant life; and with the busy bee we secure an artificial condition in insect life. The honey bee is not a native of our country. In the honey bee we have an insect which does not injure fruit as so many others do; her visits are to bless. Much more could be said, but I feel sure enough has been said to show that bee-keeping and horticulture has much of common interest, and that the honey bee, although she produces one of the most wholesome of foods, has a great value to the horticulturist. Many bees may survive the winter, but few other insects do. The spring of the year is the time when these insect visits are mostly required.

Brantford, Ont.

R. F. HOLTERMAN.

THE TINY INSECTS INDISPENSABLE TO FRUIT GROWERS.



R. FRANK BENTON, in *Insect Life*, takes up the question that bees are indispensable to fruit growers as follows: Bee keepers have never complained but that the growing of fruit in the vicinity of their apiaries was a great benefit to their interests, hence their position has been merely a defensive one, the battle waxing warm only when poisonous substances were set out to kill off the bees, or when fruit growers sprayed their orchards with poisonous insecticides during the time the trees were in blossom, or again when efforts were made to secure, by legislation, the removal of bees from a certain locality as nuisances.

Fruit growers first relented when close observation and experiment showed that wasps bit open tender fruits, birds pecked them, they cracked under the action of the rains, and hail sometimes cut them, bees only coming in to save the wasting juices of the injured fruit. The wide publicity given to the results of the experiments made under the direction of the United States entomologist, and published in the report of the Commissioner of Agriculture for 1885, have no doubt contributed much to secure this change among fruit growers. But now it would appear that the bees have not only been vindicated, but that in the future fruit growers are likely to be generally regarded as more indebted to bee keepers than the latter are to fruit growers, for the amount of honey the bees secure from fruit blossoms comes far short of equaling in value that part of the fruit crop which many accurate observations and experiments indicate is due to the complete cross-fertilization of these blossoms by bees. The observations and researches of Hildebrand, Muller, Delpino, Darwin and others, as well as the excellent explanation of the subject in Cheshire's recent work have gone far to prove how greatly blossoms depend upon the agency of bees for their fertilization and hence for the production of seeds and fruits. The facts they have brought forward are gradually becoming more widely known among fruit growers and bee-keepers, and additional evidence accumulates. A case illustrating very clearly the value of bees in an orchard has recently come to the notice of the writer, and its authenticity is confirmed



FIG. 554.—DRONE.



FIG. 555.—QUEEN.

by correspondence with the parties named, who are gentlemen of long and extensive experience in fruit growing, recognized in their locality as being authorities, particularly in regard to cherry culture. The facts are these.

For several years the cherry crop of Vaca Valley, in Solano County, Cal., has not been good, although it was formerly quite sure. The partial or complete failures have been attributed to north winds, chilling rains and similar climatic conditions, but in the minds of Messrs. Bassford, of Cherry Glen, these causes did not sufficiently account for all the cases of failure.

These gentlemen recollected that formerly when the cherry crops were good wild bees were very plentiful in the valley, and hence thought perhaps the lack of fruit since most of the bees had disappeared might be due to imperfect distribution of the pollen of the blossoms. To test the matter they placed therefore several hives of bees in their orchard in 1890. The result was striking, for the Bassford orchard bore a good crop of cherries while other growers, in the valley, who had no bees found their crops entire or partial failures. This year, (1891) Messrs. Bassford had some 65 hives of bees in their orchard, and Mr. H. A. Bassford writes to the Entomologist: "Our crop was good this season, and we attribute it to the bees." And he adds further: "Since we have been keeping bees our cherry crop has been much larger than formerly, while those orchards nearest us, five miles from here, where no bees were kept, have produced but light crops."



FIG. 556.—WORKER.

In conclusion we may say, that in the cuts we give, the worker bee alone causes the fertilization of bloom. The queen is the mother bee, the drone, the male and the workers are the neuters who gather from honey flowers.

It often happens that alongside the edges of shrubbery and plant border, and by the margins of flower beds the grass gets killed out by over-spreading plants from the beds; the best way to mend these is by resodding. If you rooted out any tree stumps or rocks in your lawn a year or two ago, there will likely be a hollow there now; if there is, skin off the sod, and fill up the basin enough to make it even with the rest of the lawn, and relay the sod again. If there are any big weeds in your lawn like mulleins, docks, chicory, dandelions, pull them out by the root some wet day. If mouse-ear chickweed, common chickweed, creeping spenwell or the like fill patches of your lawn, scratch them out with a steel rake, and at once sow some grass seed there. Wild onions are always in a hurry up in spring, in wet weather you can pull them up by the roots in bunches; at any rate, take a sharp scythe and go over your lawns and fields mowing down these onions before you turn your cows out to pasture, else they will have onion-tasted milk.

In pruning peach trees they should be headed low. Sufficient cultivation should be given to keep the soil reasonably clean and in good tilth.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

MOTH DESTRUCTION is the subject of a paper read before a New Zealand Society, an extract from which is sent us by Mr. A. Gaviller, of Hamilton. The plan recommended was burning a lamp, which had movable wings covered with castor oil. Underneath was a pan of kerosene, into which the moths fall in large numbers. The whole concern is so made that it may hang up in any tree, and the writer thinks that two such lamps would clear a whole orchard of moths. He caught 2,000 or 3,000 various sized moths in a single night with this apparatus, each of which he supposes would have laid about 500 eggs. He, therefore, calculated he had been the means of destroying 1,250,000 worms in a single night.

BANANAS FOR THE TABLE.—There are many varieties of bananas, and the biggest and handsomest are not always the best for eating; indeed the smallest size are usually the sweetest and juiciest, the tiny Fig banana being the best of all. Large ridges indicate coarse fruit. The Plantain, which is the coarsest variety, has enormous ridges, and is not fit to eat without being cooked. Boiled till soft, the banana is a fine vegetable. When roasted or fried, they should be eaten hot, but when used in this way they should not be too ripe.



❖ Question Drawer. ❖

Ink for Zinc Labels.

574. SIR,—May I ask what kind of a pencil you use on the zinc labels attached to the trees you send out; or do you dip the zinc in some chemical that makes the writing show so plainly?

BENJAMIN BUCHANAN, *Farmingdale, Ill.*

Answer by Mr. John Craig, Horticulturist, Ottawa.

The names were written with zinc label ink, made according to the following recipe :

Sulphate of copper,	1 OZ.
Sal ammoniac,	10 OZ.
Lamp black,	$\frac{1}{2}$ OZ.
Water,	$\frac{1}{2}$ pint.

This writing fluid I have used for several years and find it an exceedingly satisfactory means of preserving the names of the different varieties of fruits in an orchard.

Diseased Rose and Violet Leaves.

575. SIR,—I enclose a leaf, please tell me what the insect is on it. I said red spider, but was told it was not.

F. TOBIN, *Fergus.*

Reply by Mr. John Craig, Horticulturist, Central Experimental Farm, Ottawa.

The rose leaves seem to be affected by an attack of the red spider. This insect flourishes in a dry atmosphere, and, therefore, one of the best remedies is to frequently syringe the plants with water. Sulphur fumes are also effective. Pyrethrum mixed with water may also be used with good results. The violet leaf seems to be affected with some sort of mildew, which I do not recognize. The best advice that can be given is to pick off and destroy the diseased leaves.

❖ Question Budget ❖

(For our readers to answer.)

27. BLENHEIM ORANGE.—What is the value of the Blenheim Orange apple, commercially? How does it compare with the Northern Spy for productiveness?—A. S. D., *Seaforth.*

28. PLUM KNOT.—In the vicinity of Collingwood, thousands of plum trees are dying of black knot. Could you say any thing concerning its ravages in other sections?—J. D., *Clarksburgh.*



NIGHT BLOOMING CERUS.

THE above cut of the Night Blooming Cerus has been kindly loaned us by Mr. T. W. Elliot, of the Elliot Engraving Company, Toronto. It represents this beautiful flower as taken from a flash-light photo at eleven o'clock in the evening.



WRAGG.

THE
Canadian Horticulturist

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No. 7.



THE WRAGG CHERRY.



THE WRAGG CHERRY, a colored plate of which we present to our readers this month, comes to us from the State of Iowa. It was at first supposed to be of Russian origin, but this is uncertain. President Lyon, of Michigan, has had it under test there and says he thinks it is probably an unrecognized old variety.

Mr. L. Watrous, of Iowa, says of it, that it is so nearly identical with the English Morello that it is hardly distinguishable from it; but that it exceeds that variety in hardiness, as tested in that State. This cherry has its name from J. Wragg, of Waukee, Iowa, who accidentally met with the cherry in the western part of the State, where it was locally known to be a very productive variety. At first Mr. Wragg took it for the English Morello, growing on its own roots; but, on further examination, he became satisfied that it was not that variety. Procuring some young trees he sent them to the Iowa Experiment Station for trial, and they were reported as very hardy, and a valuable acquisition.

Description: Tree vigorous with an open spreading top, like the Early Richmond, but with dark colored bark like the English Morello; leaf large and thick, late bloomer. Fruit medium to large in size, liver color and with colored juice; seeds small; stem long; unsurpassed for cooking, but too acid for eating fresh.

NOTES FROM THE WORLD'S FAIR—III.



IN this immense Horticultural Building, 1,000 feet long and 250 feet broad, is the headquarters of the fruit growers and florists of this enormous Fair. Underneath the great dome, and stretching each way in the two front curtains, is to be seen a wealth of valuable plants, tree ferns, etc., so numerous as to give one the impression of a tropical climate.

One of the two great wings is devoted to viticulture, the other to vegetables, canned goods, seeds, etc., and the rear curtains connecting them contain our pomological exhibit. It is creditable to Canada that she is able to show by a far larger collection of fruit than any one State. One-sixth of the whole space, devoted to pomology is taken by us and creditably filled.

Passing through the centre of the building and then turning to the right, the visitor cannot be mistaken when he reaches the Canadian Court, for the word **CANADA**, in immense gilt letters, is very prominent, while arches with gilt letters of smaller size, indicate the various provincial exhibits. Our whole space is about 100 feet long and 52 feet wide, and has four tables throughout the full length, on which are erected several fine pyramids for holding jars of fruit.

Ontario, Canada's leading province, occupies nearly one-half of this court. Richer and more independent than the others, she has come forward liberally with her money, and relieved the Dominion by building her own tables, arch and office, and by furnishing three good men to care for same, viz., Mr. A. H. Pettit, the Provincial Superintendent; Mr. Orr, Assistant; and Mr. Brodie. Her exhibit is a most creditable one, thanks to Mr. Pettit's earnest and persevering efforts. Of fresh apples of 1892, Ontario shows 38 varieties—the leading ones for the commercial orchard—and a display of 555 plates kept in cold storage at a temperature of 33° above zero.

Her bottled fruits show up more varieties than any other exhibit. Oregon and Washington are more showy with jars of larger apples and pears, but their exhibit does not compare with the extent of Ontario's collection of varieties of all kinds of fruits. A list will be of sufficient interest to insert here, just as it was furnished us by Mr. Pettit:

Fruits.	No. of Varieties.	No. of Jars.
Strawberries	64	129
Cherries	16	85
Currants	6	70
Gooseberries	20	75

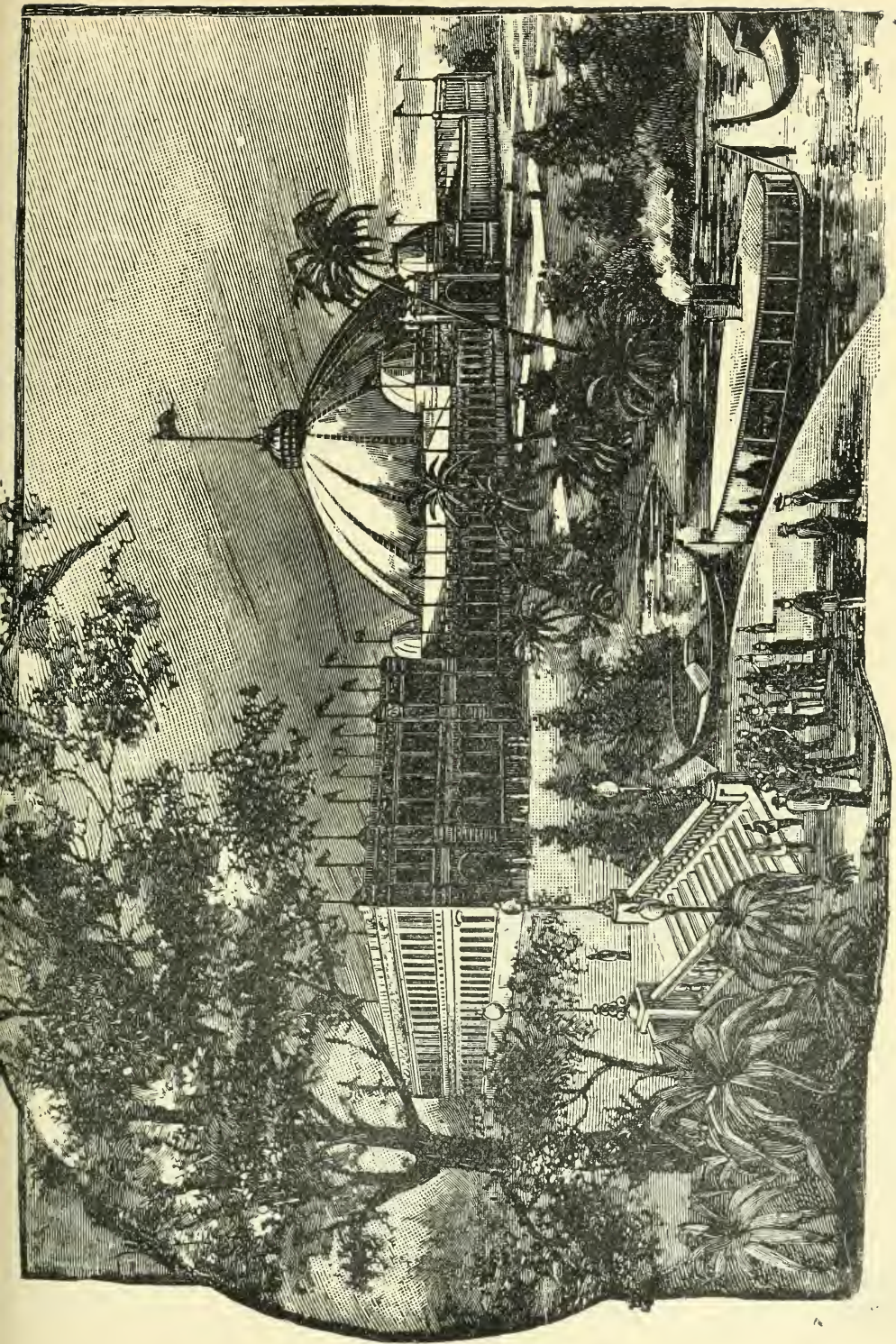


FIG. 557.—HORTICULTURAL BUILDING.

Fruits.	No. of Varieties.	No. of Jars.
Raspberries	13	50
Blackberries	4	27
Apricots	1	4
Wild fruits and nuts.....	8	24
Apples in jars.....	111	273
Crab apples.....	4	14
Peaches.....	20	83
Plums	56	137
Pears.....	75	188
Grapes.....	70	110
Quinces.....	2	10

Passing Ontario in the centre aisle, the visitors walk through the fine exhibit of bottled grapes, plums, gooseberries, Russian cherries, etc., by the Central Experimental Farm, prepared by Mr. John Craig, the Horticulturist; and then through a large show of 400 or more bottles of fine apples, plums, grapes, small fruits, etc., sent by the Province of Quebec. This province also shows some three hundred plates of apples, of the crop of 1892, and about seventy-five varieties; many of them smaller than the average of Ontario apples, but valuable for their hardiness. Noticeable among them were Scott's Winter, Arabka, Flushing Spitzenburg, Wealthy, McIntosh Red, Walbridge, Pewaukee, McMahon, Canada Red, Canada Baldwin, Fameuse, etc.

Mr. Blachford, B.A., of McGill University, has recently been sent on to assist us in the care of the Quebec exhibit, a young man of excellent ability: while Mr. Robert Starr, of the Fruit Growers' Association of Nova Scotia, who so ably superintended the setting up of the fruit, has now been succeeded by Mr. John Starr of the same province, who comes as the representative of the Nova Scotia Government. This latter exhibit is also creditable, though a large part of the apples of 1892 were injured by frost in transit and by care'less re-packing in cold storage. The intention was to have shown one hundred and fifty varieties of apples, and these have now been reduced to eighty. Nova Scotia has one side aisle, excepting a portion occupied by Prince Edward Island's exhibit of fresh and bottled fruit, while the other side aisle is devoted to British Columbia and the North-West, of which a fuller account will be given later.

On the wall at the end of the Court, in large letters, is the words "The Fruits of Canada," a list follows, and the motto "The Apple Belt of North America."

It may seem conceited for us to speak of Canada as surpassing the world in any particular, but we feel justified in paying the fair young lady one more compliment. Passing through a wealth of magnificent apples bottled and fresh, from Washington, Missouri, Idaho, Colorado and Oregon, we reach the north

wing, and find Canada again prominent and surpassing the world, with the finest display of vegetables of 1892 to be found anywhere in the great Fair. British Columbia, the North-West, Ontario, Quebec, Nova Scotia and Prince Edward Island, have all vied with each other in sending the finest and largest collection of potatoes, turnips, carrots, mangolds, etc., on exhibition, and much honor is being paid to such success by the thousands of daily visitors from far and near. To superintend such an exhibit is enough to make one justly proud.

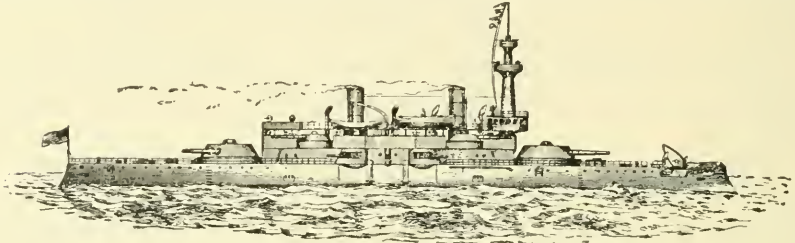
Our engraving (Fig. 558) shows a section of Canada's fruit display and more particularly a portion of the Nova Scotia exhibit, with Mr. John Starr in the foreground.

Now, lest we tire even of our delicious fruits and excellent vegetables, let us take another stroll about the grounds. Crossing the wooded island in front of the Horticultural Building we soon reach the Model Battle Ship, moored by the wharf in the waters of Lake Michigan. To all appearances a reality, few can persuade themselves that it is a sham, built on piles, helpless and unmovable. Accompanied by a relative, who is an ex-surgeon of the U.S. Navy, it was a heightened pleasure to have every detail of equipment, of medical service, of the 13 inch breech loading cannons, the torpedo, the gatling guns, the methods of taking latitude and longitude, deep sea sounding, etc., fully explained.



FIG. 558.—FRUIT EXHIBIT, NOVA SCOTIA SECTION.

Returning let us walk through the Fisheries (Fig. 560), which is on the way back to our own Horticultural Court before passing through Wooded Island. Plenty of interest centres here, for who has not at some time baited the hook and sat waiting for hours for the wary nibbles of perch, trout or catfish. In the central portion is the general exhibit, showing the means employed in fishing, and



U. S. COAST LINE BATTLE SHIP

FIG. 559.

the products, while one of the polygonal buildings contains the angling exhibit, and the other the aquaria. The latter consist of great glass tanks through the sides of which fish of various sizes and kinds, duly separated and classified, may be seen, almost as free from restraint as in nature. The total water capacity of these aquaria is 140,000 gallons. It is exceedingly interesting to walk among these and to see all kinds of fish, living and moving about in their native element, within a few inches of one's face and not in the least afraid of that terrible foe the human animal, who delights to torture them with cruel hook and afterwards devour them without mercy.

We Canadians do not forget the Queen's Birthday, even in a foreign land: but, on invitation of the British and Colonial Commissioners, we attended an official dinner at the Virginia, where loyal speeches were made in honor of Her Majesty, and where every preparation was on a magnificent scale.

THE FRUIT GROWERS of the World's Fair have organized and intend to look after their interests here. One object of the organization is to have some

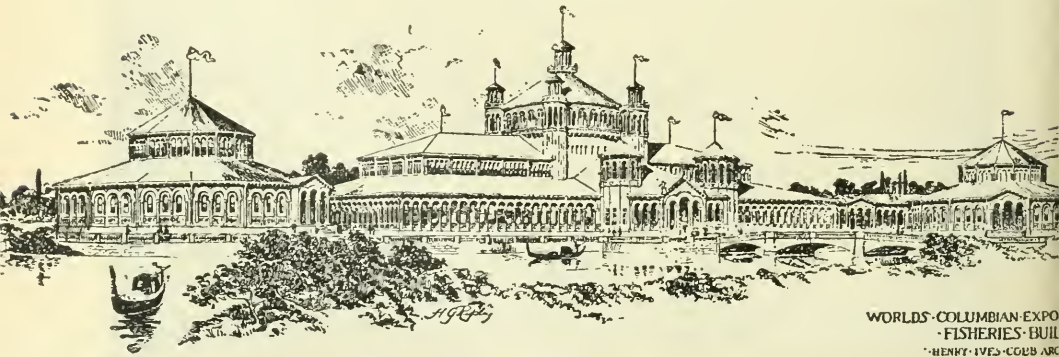
WORLD'S-COLUMBIAN-EXPO-
FISHERIES-BUILDING
HENRY IVES COBB ARCHT.

FIG. 560.

obnoxious regulations changed, which prevent the delivery of even perishable goods except between the hours of eleven at night and eight the next morning. The consequent delays will seriously hinder the project of making a good exhibit of small fruits.

THE PRINCESS EULALIA has received a great ovation in Chicago. From the Women's Building she walked through the Horticultural, passing through Canada's Court, leaning upon the arm of Director Général Davis. She is quite fine looking, and seemed much interested in our fruit exhibit.

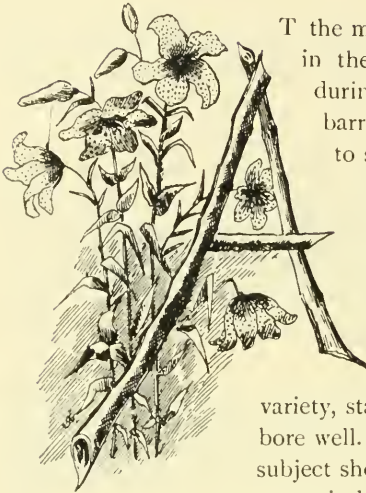
Later.—The Nurserymen's Association meeting here on the 11th inst., have co-operated in seeking a redress of the Fruit Growers' rights, and now we have every privilege granted us, so that fruits may be delivered to us at all times, without hindrance. It is therefore determined to continue a successive exhibit of fresh fruits and vegetables, as they ripen, right through the season. Some should come from each province and render the display as representative in character as possible.

The other day a Russian representative passed through our fruit display and asked many questions. His name is Ivan Tanschul, and he is a Professor of Political Economy in the University of Moscow. He seemed much interested in our Horticultural progress, and solicited copies of our Fruit Growers' reports, and those of the Central Experimental Farm.

Another day Francesco Ingegnoli, of Milano, Italy, called. He is the Secretary of the Italian Horticultural Society, and took careful lists of our more valuable fruits, for trial in Italy.

The Theory of Thinning.—We have become familiar with the statement that thinning the fruit on over-loaded trees, while it is young, does not materially diminish the number of bushels of fruit, the lessening number of specimens growing large enough to compensate for the difference. The superficial observer sees apples on a tree two inches in diameter, and on another four inches, and at once pronounces the larger ones twice the size of the smaller, four being twice the number two; but he decides hastily, for the cube of the two is only eight, while the cube of four is sixty-four, or eight times that of two. The large fruit is no less than eight times the size of the smaller, and it would require eight times as many specimens of the smaller to fill a barrel. This is of course an extreme case with extreme measures; but similar results will be obtained on a smaller scale. For convenience in multiplying and dividing, reduce the inches to quarters, and it will be found that a globular fruit eight quarters in diameter, will be more than twice the size in cubic measure of one six quarters in diameter. Any number of similar calculations may be made with like results. No wonder then that an orchardist found that his thinned fruit produced more bushels than that from the crowded trees.

THE REASON WHY SOME FRUIT TREES DO NOT SET THEIR FRUIT.



At the meeting of the Fruit Growers' Association held in the City of Hamilton, December 16th, 1891, during the discussion of the question "How may barren trees be made fruitful?" the writer ventured to suggest that it is well known to botanists that there are some plants the blossoms of which cannot be fertilized by their own pollen, and that possibly this might be the trouble with the orchard of four hundred Northern Spy trees planted in a block by Mr. Geo. Fisher, now eighteen years old, and which had never borne much fruit, while other trees of that

variety, standing in another orchard of many varieties, bore well. He further stated that he believed that this subject should be investigated by our experimenters, to ascertain how far it may be true that our apple orchards

need to be planted with different varieties.

In answer to this, the esteemed Director, who represents the 8th Division, thought that this could not be the case with the Northern Spy, because that variety bloomed so late that there would not be sufficient apple pollen of other varieties to fertilize its blossoms.

An experience similar to that of Mr. Geo. Fisher befel a fruit grower in the State of Virginia. Some years ago he planted a number of pear trees of different sorts; when they came into bearing he was convinced that the Bartlett, on account of its many good qualities, and especially its early and abundant bearing, would be a profitable market variety. Accordingly he purchased several hundred trees of the Bartlett and planted them in a block by themselves; but, to his great surprise and disappointment, the trees, while blooming abundantly, set very little fruit. Unable to account for the sterility of his Bartlett orchard, he applied to the Agricultural Department at Washington for information.

In consequence of this application, Mr. M. B. Waite, of that Department, instituted an expensive series of experiments for the purpose of ascertaining, not only whether the sterility of this Bartlett orchard was due to the impotency of the Bartlett pollen to fertilize Bartlett flowers, but also what other varieties of pear, and what varieties of apple, were self-sterile. The results of his experiments as published are as follows:

Varieties of Apple Self-sterile.—Chenango Strawberry, Gravenstein, King, Norton's Melon, Northern Spy, Primate, Rambo, Red Astrachan, Roxbury Russet, Spitzenburg, Tolman Sweet, and Yellow Bellefleur.

Varieties of Apple Self-fertile.—Baldwin, Codlin partially, R. I. Greening.

Varieties of Pear Self-sterile.—Anjou, Bartlett, Bosc, Clapp's Favorite, Clairgeau, Columbia, Doyennè Boussock and D. Grey, Easter Beurre, Gansell's Bergamot, Howell, Jones, Lawrence, Louise Bonne, Mount Vernon, Pound, Sheldon, Superfine, Souvenir du Congrès and Winter Nelis.

Varieties of Pear Self-fertile.—Buffam, Duchess d' Angouleme, Flemish Beauty, Kieffer, Le Conte, Manning's Elizabeth, Seckel, Tyson, and White Doyennè.

If these results can be accepted as correct, and, from the extreme care taken to attain correctness, the details of which need not be here given, there is every reason to believe that they are correct, then it follows that notwithstanding the late blooming of the Northern Spy, the flowers are fertilized by pollen from other apple trees whenever the fruit is well set.

In the Report of the Illinois Horticultural Society for 1886, it is recorded that a hundred plants of dewberry in an isolated position were perfectly barren, but after a row of blackberry, planted alongside of them, came into bearing, the dewberry plants bore abundantly.

There is abundant room for further investigation in this direction, until we have a complete list of both self-sterile and self-fertile varieties of all of our fruits, especially those planted in large quantities.

D. W. BEADLE.

Training Tomatoes.—I believe in training tomatoes. The little trouble one will take training and pruning will be more than repaid by clean handsome fruit. First among my ten varieties stands Mikado, being the first to ripen, a heavy cropper of very large, solid fruit; but it ripens unevenly. Livingstone's Perfection is very prolific, second to ripen; a beautiful fruit, but subject to black rot. Ignatum ripens with Perfection, has very large handsome fruit, but badly affected with black rot. Henderson's Shaw or Yellow Mikado bears very large handsome fruit. Dwarf Champion is a small tomato both in fruit and plant, of good quality. The old standard Paragon is of excellent quality and prolific. With it ripens Henderson's Table Queen, a new variety. This tomato is all the originators claim for it. It is large and handsome, of fine flavor, a heavy cropper. The Peach is of little value except to amuse the children; very luxuriant in growth, and very prolific; The old Trophy is very late; Station Tree Tomato is a dwarf but useless variety; it ripens with the Champion, but has very small fruit. My tomatoes are all trellised, and are ripening in large numbers daily, while the same plants of my neighbors left to grow on the ground ripen very slowly and unsatisfactory. My advice to all who would grow good tomatoes is to trellis them. Some posts set about eight feet apart, a few strands of wire, a little care in training and pruning—this will be as bread cast upon the waters, that you shall find after many days.—HENRY C. TOWNSEND, *Dutchess Co., N. Y.*

AN AMERICAN PROFESSIONAL IN THE FLOWER GARDENS OF SOUTHERN FRANCE.



IN the Grasse County, acres of regions are laid out for the growing of the hosts of different flowers which go to make the numerous perfumes for which the town is noted. Violets and the narcissus are especially cultivated and brought in by tons. As a rule, only the unequalled Parma violets are sent into the still; all others are considered too weak odoriferously, to merit the steaming process. These pale blue, fragrant "Parma" violets do not come from Italy, but are grown in the immediate neighborhood. According to the supply and demand, or according to whether it is a good or bad season for their growth, these choicest of flowers modest, are bought wholesale at from $2\frac{1}{2}$ to 10 francs the kilogram. Sometimes even 16 francs is paid—(so the retailers, who are not particular as to truism, will say). But at, say 3 francs the kilo of $2\frac{1}{5}$ pounds, a private person on the spot might, if so favored by the grower (who may hesitate to sell to single particular individuals)—have enough violets to form 40 or 50 of the small bunches, for which he pays from 30 to 75 centimes for bouquets to the sidewalk vendor. These retailers, big and little, make money while the flowers last. Of course, when they buy them of the producers at 3, 4, or 5 francs per kilo, the violets are in a confused, entangled heap. They have to make them into neat and pretty groups to make them salable, and manage to dispose of them for at least an advance, in all, of 25 to 30 francs. If they sell all, they have a profit of from 20 to 23 or 26 francs. Their risk in having any over, which may wither and become unsalable as fresh flowers, is now reduced to a minimum, for all the old and stale violets are disposed of cheap to sweet manufacturers, who steam them in, and coat them pretty thickly with flaked sugar, and then sell such at a high price as "confitures of violets."

Recently, a visit was paid by the writer to Grasse, the celebrated flower-producing land of the Riviera. Thrice previously the neighborhood had been visited, but not the town itself, nor its blossoming uplands. The train is taken from Cannes, and in about forty-five minutes the district of perfumery-makers is reached. The railroad is a climb nearly all the way, so that the dozen or so miles to be covered takes time for the train to rumble over.

Grasse gained, an inspection was made of some of the principal flower-distilleries. Among the more important is the concern of Roure-Bertrand fils (son), noted as a house for the pureness of its extracts of flowers and essences. Mons. Roure, junior, acted as guide over the extensive establishment, explaining

the multiplied mechanism used in the factory, and revealing part of the vast stores of matters already made. In the production of rose essence, he said 10,000 to 12,000 kilos of roses were needed to make 1 kilo ($2\frac{1}{2}$ pounds) of extract. This was sold at the high price of 2,000 francs (£80 or \$400) per kilo. It is the dearest of all the "first matters," or *matières premières*, used by manufacturers of perfumery. In fact, it is such a costly article to handle, that but a few firms can afford to manipulate it. Generally, it is only made on order given a long time in advance of the month of manufacture, which is May. The attar of roses of, and made in, Turkey, is, the cicerone went on, stronger than that made in Grasse, but not so fine. Probably because in the dwindling ottoman state they have not the perfected machinery which prevails in the Alpes-Maritimes department—machinery which (to their further credit, be it noted) is locally made.

The principal houses in and about Grasse interested in the raising of flowers of every species, from which suitable essences are extractable, are the following (all on the Avenue des Capucins): Robertet; A. Pilar; Lautier fils; Hugues-Guéret; J. Hugues; A Chiris (introducing, so far as he dare go, all the tricks of the trade into the known products of this big house); Widow, or Veune, Cavalier; and B Roure. There are nearly a score of other firms, all of more or



FIG. 561.—IN THE FLOWER-LAND OF THE RIVIERA—VIEW OF THE COUNTRY ABOUT GRASSE.

less extent, but in the foregoing list, it will be found the leading concerns have been fairly accurately summarized.

The best time to visit Grasse is, of course, in advanced spring, as the May month. Then all is an undulating forest of flowers, the air is filled with thousands of fragrant odors. A three weeks' sojourn, spent during the spring time, in this country, will never be forgotten. While there, one should get out and about so much as possible; take evening walks along the well-kept lanes crossing the flower reserves, when the sweet perfumes are most sensitive to and appreciated by the sense. The visitor should never make the ignorant mistake of sleeping with closed windows: leave them wide open all night and half open during wet or damp nights. Take no notice of those silly know-nothings who say the nocturnal air is "dangerous."

Being situated on a gentle slope of an offshoot of the Maritime-Alps, the view of Grasse and vicinity is of the most picturesque. It offers the, apparently, most changing, and charming prospects. With every hundred meters the tourist gets higher up on the hills above the town, a magnificent view is had of the ville, with its numerous important and busy perfumery manufactories, surrounded on all sides by flower-clad lands, a smiling valley at foot, and another range of hills closing the view to the sea.

It is a very pretty sight, that of seeing the harvesting (so to write) of the flowers for the distiller. The flowers are brought into sheds, heaped on long tables, and every grade of poor woman-kind set to work sorting them. They are so scantily paid that they can barely exist. Their employers verily exploit and sweat them. Old and young women, little boys and girls—all are at it earning a miserable pittance. On following the car-loads of flowers into the distilleries, one will be pleased with the first sense of the all-pervading perfumes. But getting right inside and into the deposits, it becomes too much of a good thing; the odor becomes so strong and rank as to lose its fineness to the sensitive nasal nerve, and becomes nothing more than a strong, almost nauseous smell, permeating everything damp—even your moistened handkerchief, although you may not have taken it from your pocket.

Many beautiful private gardens will be found in the Grasse district. The natives being naturally skilful horticulturists, they make their gardens models of good culture and work. Some excellent photos of these and other views were obtained of the photographer on the route de Vence, F. Busin.

For the verification of a few forgotten names of Grasse flower-people and makers of perfumery, the writer acknowledges his indebtedness to the yearly publication of rue Clotilde 1, Nice, known as "l'Annuaire des Alpes-Maritimes."

Some of the persons spoken with, and whose names have been herein mentioned, on learning that the details being inquired after were possibly for publication in a foreign professional periodical, expressed the pleasure they would have in receiving direct a copy of the journal containing this account, and

gave thanks in anticipation of being favored. It was promised to transmit their wish to headquarters. Many of these could also fill up an enclosed subscription form.

Believing that the road across country from Grasse to Vence-Caynes afforded some of the best scenery on the Riviera, I determined to cut across on foot. There is no railway at present direct from Grasse to Nice, although one is now building. To go by rail, means a long detour *via* Cannes, Antilles, etc. I was not disappointed as to the scenery; it is, indeed, a most beautiful route that by the highway. Stepping out sharp—for time was now very limited—Grasse was soon left behind, but, looking back, one has many delightful peeps through the wooded and flowered country at the old ville. Before the windings of the road oust it completely out of sight, you have learned to appreciate Grasse and its surroundings so blessed by nature. Numerous coquette and artistic villa-residences are passed, fronted by gardens full of luxurious growths. Some of the cottages look intensely snug, covered as they are by an avalanche of eternal-spring greenness. Romantic waterfalls and warbling rivulets are rife among the mountain hills running off from the roads. The fragrance of violets is particularly noticeable in the air, although no violets may be seen about. It was in the month of February when I thus passed over the road, yet everything



FIG. 562.—ALONG THE ROAD IN GRASSE VICINITY, ONE OF THE BEAUTY SCENES.

was as advanced as spring in Albion or America. The place, however, should be seen during April and May. In summer the heat is not oppressive, being tempered by the breezes from sea and mountain.

But I had not allowed myself enough time to do the walk comfortably from Grasse to Vence-Caynes. The distance is about sixteen miles. I started from Grasse at a quarter to 12, to catch the train leaving Vence Caynes for Nice at 3 p.m. As the next train did not depart till 6 p.m.—a serious delay—I had to go at a jog-trot half the way, and arrived just in time, after $3\frac{1}{4}$ hours on foot. Hoped to meet a diligence *en route*, but in vain. Fortunately, the moiety of the distance is a gentle decline.

Grasse is an ancient town of some 20,000 inhabitants. The deputy whom it sends to the Communal Chamber at Paris is the notorious pseudo-republican trade-politician, Rouvier, Minister of Finances, alleged to be a "clever" financier, which may be true—for his own pocket. This horsey-looking and self-esteeming negociant in politics is of the "republican" taint, which is always purchasable. Thus, if a clique of imposters—be they Bourbons or Bonapartes—were to start the vile "royauté" *régime* next month, the ill-physiognomied Rouvier would be the first to sell his "principles" and collaborate with them.

Not alone does Grasse produce the most fragrant flowers of the world. It also produces—but they grow wild, never being cultivated—some of the most fetid. One is particularly odious, and will be found in abundance on some parts of the hill sides, not under the gardener's hands. It is of the shape of the blue-bell, but about six times larger, and is of a rather glossy brown color. It has a strong, nauseous "doggy" smell, that is to say, like the disagreeable smell emanating from the skin and hair of an unkept, mangy dog. Only once before has the writer come across a similar fetid flower, which was many years ago, while in England, and (if memory serves right) this was on Hamstead Heath, London.

Before going to Grasse, I had been all over the Town of Cannes; visited the Casino des Fleurs; but this "casino of the flowers" has not much that is floral about it as yet. It has only been opened during the present season. It is a great and creditable imitation of Monte-Carlo casino, but minus the vicious tables. There is a fine large public international reading-room, with a cosmopolitan supply of periodicals. I also went to the now open Exposition Internationale de Cannes, of passing interest locally, but of no interest internationally.

W. L'A.

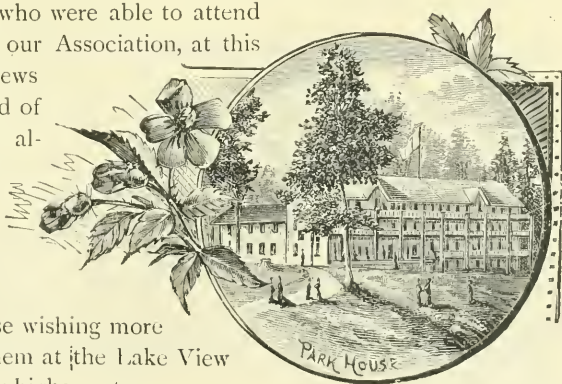
Packing Pears.—A good plan in packing pears is to wrap each one in soft paper, packing closely enough to prevent all motion, in bushel boxes. The French, who export more pears than any other nation, cover the inside of the boxes with spongy paper or dry moss, which absorbs the moisture. Each pear is then wrapped in soft paper and placed in layers in the boxes, the largest and least mature in the bottom, filling all interstices with the dry moss. Thus they will keep a month or more. They are so closely packed that though they can not touch each other, all motion is prevented. If one decays the others are not harmed.—Rural New Yorker.

GRIMSBY PARK.



Is a name sometimes given to Grimsby Park, of late such a favorite resting place for the citizens of Toronto and Hamilton who wish to spend a few days or weeks by the pebbly beach of our beautiful Ontario. How the children revel in the sand with tin pail and shovel, and what a pleasure our young people from the city, who have been housed up among brick walls, can find in such a lakeside resort with plenty of boats and fishing tackle. Bathing is also a popular amusement, and opportunities are afforded for both ladies and gentlemen to learn the art of swimming.

Those of our readers who were able to attend the last summer meeting of our Association, at this Park, will recognize the views here given, of the beach and of the Park House, where, although accommodations were somewhat ordinary, yet they were not out of keeping with what might be expected in a hotel, for summer use only. Those wishing more elegant quarters will find them at the Lake View House, with correspondingly higher rates.



The most peculiar building at the Park is the so-called Temple, a grand auditorium, capable of seating seven or eight thousand people. It was here that we gathered to hear an address on apple orchards, by Mr. J. S. Woodward, which appeared in our annual report for 1892. The building is unique in construction, and is about one hundred feet in height. The observatory on the top commands a fine view of Grimsby Village, The Point, and Niagara on the Lake.

Situated as it is, right in the heart of the fruit district, it does not seem inappropriate to give our readers this brief notice of Grimsby Park.

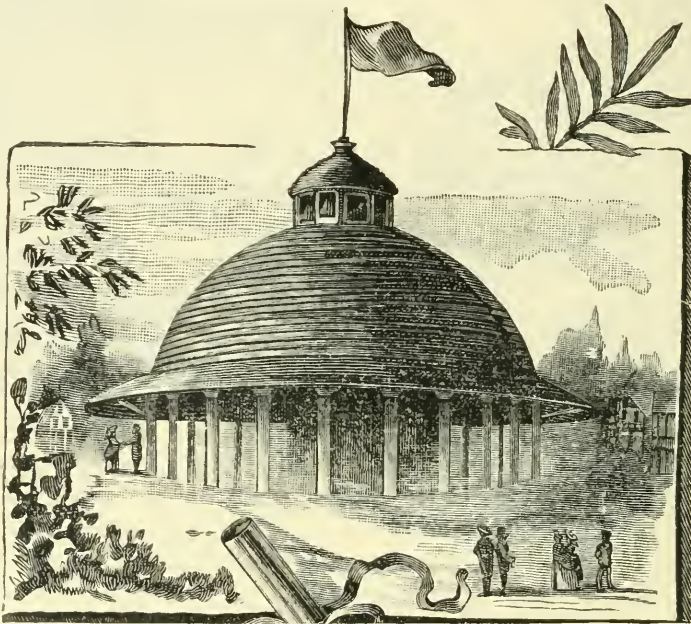


FIG. 563.—THE TEMPLE.

THAT IMPROVED BALDWIN.

SIR,—In regard to that improved Baldwin apple I sent you, I have had it in bearing for some years past. I first had one tree of it that I grafted myself, and the fruit was of such fine flavor that I have quite a number of trees now. Some four or five years ago I took it in town and showed it to Mr. A. McD. Allan; he pronounced it of fine flavor; he thought it was a Baldwin, but said it was of superior quality. It has kept up its fine quality, I have had it nearly as large as the 20 oz. Pippin, and in appearance very like the King. It is one that bears very regularly every year. I had, only a few days ago, some specimens that measured nearly 10 in. in circumference, and still good. I consider it the best apple I have.

Goderich.

WALTER HICK.

SUCCESSFUL CHERRY CULTURE.

Soil for Cherries.



It is generally accepted that the cherry tree requires a porous, well underdrained soil. As my farm is nearly all a slaty gravel, and the surface hilly, I have cherry trees growing on nearly all parts of it. I incline to the opinion that the Morellos and Dukes, or sour cherries, require somewhat different soil and treatment from those suitable for the Hearts and Bigarreaus. For an experiment, I set a few of each on low heavy ground, where water could be found three feet from the surface. The sweet cherry trees are healthy and vigorous and bear heavily, but the fruit is inclined to rot more than on higher ground. The sour kinds soon died out.

About Culture.—The sour cherry trees should receive continuous clean culture. They then mature heavy crops, even when young. My sweet cherry trees I have set along fences and at the ends of the rows in my vineyard. For the first four or five years, the earth is kept mellow around them, and they are mulched with strawy manure each spring, until they have obtained a diameter of six or eight inches, the trunk of each near the ground is wrapped with tar paper every fall to protect it from mice. A few days' neglect of this after the first snow-fall caused the loss of several trees. After four or five years, the sod is allowed to form around them; but the fall wrapping is continued till the bark becomes thick and rough. When forced by high culture, the sweet cherries are prone to crack the bark and prematurely decay.

Shall we Manure?—So long as the sweet cherry trees appear thrifty, I apply no manure. If the tree seems to fail for want of nourishment, stable manure, wood ashes or potash salts are applied. The sour cherry trees are treated precisely like peach trees, with light dressings of stable manure and kainit or muriate of potash every year.

Pruning to Shape.—The shape of the sweet cherry should be left almost entirely to nature. Necessary pruning should be done while the tree is young, during the first two or three years after setting. Unless made necessary by injury, no large limbs should be cut, as doing so is apt to produce a rotten spot. Most varieties of the Morello class require annual thinning as much as peach trees.

What Varieties?—I know of no locality where any variety of the sweet cherry can be relied on as a sure cropper. Perhaps Downer's Late Red comes the nearest to it, as it seldom rots on the tree, and is of good quality. White Ox-heart or Yellow Spanish, Napoleon Bigarreau, Black Tartarian, and Elkhorn or Tradescant's Black Heart are good market varieties. The Windsor is highly

recommended, and I have a good many trees of that variety set, but they have not fruited yet. Among the sour cherries none have been more profitable than the Montmorency Ordinaire, and English Morello. The Early Richmond bore heavily when young, but now trees that are twelve or fifteen years old, healthy and thrifty, blossom full and bear but little fruit. For five or six years after they came in bearing, the Elkhorns were my most profitable cherry, but lately they are dying out without any apparent cause. The May Duke seems a short-lived tree. The fruit is better for family use than for market, because the crop ripens so unevenly, thus necessitating several pickings.

Packages.—Until recently I used five and ten pound baskets, now I use a crate containing shallow boxes which are filled from the bottom, thus expediting packing so that the stems are covered when the package is opened for inspection.

General Remarks.—Sweet cherries here are not so sure a crop as the sour, but the fruit usually sells for a higher price. The main causes of loss of crop are cold storms or frost while in bloom, and rot. Moist, hot weather will sometimes destroy an entire crop three days before it is fit for market. I have known cherries to be perfectly sound when picked in the morning, appear streaked when shipped at evening, and nearly all rotten the next morning in market. The English Morello, and perhaps some other sour cherry trees, are subject to black knot. It appears to be identical with that on the plum tree. The free use of the pruning-knife has been my only treatment. So far it has been successful, as I have lost no trees, and the disease has been nearly eradicated.—W. D. BARNES, in Rural New Yorker.

Plum Culture is beginning to receive more attention in Nova Scotia, and a few venturesome ones are going to try it on quite a large scale. For plums, as well as for peaches, I cannot quote a higher authority than Mr. Willard, who from a young plum orchard of sixty acres shipped 16,000 boxes the last season. He says, "I have found that successful plum growing demands a succession through the season, beginning with the first that ripen in July or August, through to October, by this means holding the market and doing the business with ease without a glut on hand at any one time. The Czar or English plum is the earliest, then follows the Field, Bradshaw, Geuii, Prince of Wales, Peters' Yellow Gage, Hudson River Purple Egg, Union Purple, and last to ripen Grand Duke. These are all tried and tested sorts." The Lombard also, is widely known and well liked. In addition to these the following are highly recommended by large and practical fruit growers, Niagara, Shippers' Pride, Burbank, German Prune, Wild Goose, McLaughlin, and Coe's Golden Drop.—*Nova Scotia F. G. A. Report for 1893.*

CHERRY CANNING.



HERE is probably no fruit which submits so well to the canning and preserving processes as the cherry, which does not lose its delicious flavor by cooking. The strawberry, of course, is best $\frac{7}{8}$ raw, and is in its greatest perfection when freshly picked and eaten at once. Still there are many ways in which it can be cooked and preserved, and if the result gives us something different from the fresh fruit in flavor, it is yet very delicious. If you have never tried sun-preserving of strawberries and cherries, it will pay you to experiment with it this year ; and, if properly done, you will find it one of the most delicious ways of putting up these fruits. It preserves them quite as effectually as cooking over the fire, and much more delicately, for it gives none of the rankness which is apt to follow cooking in a heavy syrup. The manner of preserving in the sun, is as follows :

Stone the cherries and put them on platters or in flat dishes. To each pint of cherries put a scant pint of granulated sugar. Mix them well by putting in first the pint of cherries and then sprinkling the sugar over. Let them stand over night, and by morning the sugar will have extracted much of the juice. If they seem not to be very juicy in the morning set each platter in the oven, for a few minutes only, or on a warm place about the stove until the juice has come out freely. Then set the platters in the sun—in the hottest place you can find—and put either glass or some sort of very thin netting over them. In from a day and a half to two days the syrup will thicken and the fruit will become semi-transparent. Put cold into jars and close them, and the cherries are ready for winter use. No heating is necessary ; but it is a little better to put into self-sealing jars than into open ones, merely to keep the fruit from drying. Sun-preserved strawberries are done in exactly the same manner, and is by far the best way to preserve the flavor of the berry.

For canning cherries the best way is to sweeten them but slightly, cook for a few minutes, and then put them in air-tight jars. They are very easily kept, and the flavor is retained better if only a little sugar is put in. When the cans are opened in the winter they can be sweetened to taste.

GRASS AROUND CHERRY TREES.—The American Cultivator says that the cherry tree needs a dry soil, and if in grass the crop is none the worse, though the grass should be kept low by pasturing or with the scythe, for convenience in getting around among the trees to harvest the fruit. We have seen some places where the cherry crop seemed to be injured by removal of the sod from under the trees. The fruit was wormy and poor. It was not loss of fertility that caused this difference, for a thin skimming of sod could not make the soil much, if any, poorer. But it did make the soil around the trees much wetter in early spring, and this probably is what injured the fruit.—O. Farmer.

FRUIT-GROWING IN NOVA SCOTIA.



TRAVELLING directly from Western Ontario to the Annapolis Valley of Nova Scotia, one is impressed with many features which seem peculiar to the district—the equable climate, fertile soil, artificial dykes, great stores of natural fertilizers, rich in organic matter, supplied by every rise of the Bay of Fundy tides; and lastly, the longevity of the apple trees, as evidenced by the number of hale old veterans now standing, which were no doubt large trees at the time of the expulsion of the Arcadians in 1755. That the trees have attained this great age and continue to bear annual crops, substantiates the assertion that this region of Nova Scotia is perfectly adapted to the apple, and is in many respects its natural home. In the older fruit-growing sections of Quebec and Ontario—the Island of Montreal and Grimsby, Ontario, for instance—apple trees over 100 years of age are exceedingly rare, and when such are found they are invariably seedlings. But in the vicinity of Wolfville, Nova Scotia, and Grand Pré, of Evangeline fame, many orchards of grafted varieties have passed their centennial, to say nothing of the hoary old monarchs which have braved the storms of a century and a half. One of the most serious enemies to the apple tree in the Annapolis Valley, is the canker worm. This, with the black spot, are foes against whose inroads a determined stand must be taken each year, and it is to the credit of the fruit growers of this region that a progressive spirit is exhibited by them in testing the best means to exterminate these pests, with the result that spraying with diluted Bordeaux mixture and Paris green combined is now quite the universal practice. Growers are divided in opinion as to the best remedy for the canker worm. It is said by some that Paris green sufficiently strong to kill the canker worm will seriously injure the foliage. The growers who hold this view protect their trees by tacking around the stem or trunk bands of tarred paper which is smeared with printer's ink, for the purpose of trapping the female moths as they crawl up in the autumn to deposit their eggs. When this banding and smearing is carefully attended to in the autumn and again in the spring, little injury is sustained from the canker worm. Other growers find that if spraying is resorted to before the larvæ have attained maturity they are easily destroyed.

President J. W. Bigelow, of the Nova Scotia Fruit Growers' Association, has recently secured the actual results for the last ten years of ten average orchards situated in the Annapolis Valley. As a result of his investigations, he shows that a profit of \$52,065 has been made from seventy-seven acres of apple orchard in ten years from an investment of \$7,820, and permanent value remaining in orchard worth \$42,400. To prove the cost of producing a young orchard, Mr. Bigelow obtained facts from the owners of four young orchards planted five years ago, selecting those who paid the highest and the lowest prices for the land. From this tabular statement it is shown that from an outlay of \$5,285 in

five years the value of the orchard is raised to \$15,915, and the whole cost of raising an orchard cannot exceed \$3 per tree, which tree will give an average income of \$2 a year for 100 years. A very important factor, as already stated, in estimating the profits of apple orcharding in Nova Scotia is the proved longevity of the apple tree, as good crops are now being raised on apple trees planted by the French more than 150 years ago. Fertilizing the orchard by a top dressing of marsh mud ("muddy") is a common practice with most growers, and one which generally assures a satisfactory growth of wood, though potash and phosphoric acid should be added in order to balance the fertilizing ration.

Of the varieties of apples grown in the Annapolis Valley, a large number are of English origin. In a collection comprising 153 varieties collected for the World's Fair, there are 25 Pippins of different kinds, including such as English Golden Pippin, French Pippin and Cluster Golden Pippin—all names indicating considerable antiquity. In the collection there are also 30 well-known sorts which are natural born "bluenoses," and though few of them have attained more than a provincial reputation, yet their excellence should lead to a wider test. As a commercial variety, Gravenstein heads the list. Ribston and King stand next, followed by Blenheim, Baldwin, Spy and Nonpareil. The great success of the apple in the Annapolis Valley, and the natural facilities which Nova Scotians possess for placing it in good condition upon the British market, have had the effect of retarding the development to a considerable extent of other lines of fruit culture. With a climate and soil excellently suited to pear growing, pears are little cultivated, peaches still less, while plums and cherries are as yet restricted to particular localities. Small fruits have recently, received considerable attention, so much so that, while six or eight years ago home markets were not sufficiently supplied, now these demands are fully met, and large quantities are exported to the neighboring provinces, and even to Boston. A strong wave of enthusiasm is now sweeping over the province in regard to the future success of fruit growing, and a new era in the development of this industry on broader lines has already set in.—J. CRAIG, in *American Gardening*.

Intermixing Varieties.—The subject of intermixing in an orchard different varieties of the same fruit, and intermixing different fruits, in order to secure the better fertilization of the pollen, is one which will receive the attention of pomologists during the coming ten years. These facts at present are known—That apple trees with several varieties of apples on them seem to bear better annual crops than trees that are surrounded with those of the same variety. That orchards near where bees are kept in large numbers bear better than those distant from the apiary. That large florists will buy swarms of bees and allow them the use of their conservatories for the sole purpose of carrying the pollen of one flower to another. We often notice that in some seasons our fruit trees blossom well, but we get a poor setting of fruit. Scientists seem to think that this is due to the climatic influences that happen to be unfavorable to the transition of the pollen from one tree or blossom to another, resulting in a lack of proper fecundation.

THE ROSE LEAF-HOPPER.



THE leaf-hoppers form a large and interesting family of the true bugs. They are especially distinguished by the long third joints of the hind legs, which are covered and armed with a row of spines on each margin. These long legs enable them to leap rapidly and some distance, a fact to which their common name of leaf-hopper is due. Nearly all of them are small and slender insects with blunt or pointed heads of the shape shown at Fig. 564. They feed upon a large number of plants, being especially abundant upon the grasses of pastures and meadows, where they frequently rise in swarms as one walks along. Professor Herbert Osborn has lately estimated, after a careful study of the subject, that one-half of the available nutriment from pastures often goes down the throats of these little pests. Probably no leaf-hopper attracts more general attention the country over than the one infesting rose bushes. Nearly half a century ago Dr. Harris wrote: "There is a little leaf-hopper that lives upon the leaves of rose bushes and is very injurious to them. In its perfect state it is rather less than three-twentieths of an inch long. Its body yellowish white, its wing covers and wings are white and transparent, and its eyes, claws and piercer brown. The male has two recurved appendages at the tip of its hind body. Swarms of these insects may be found in various stages of



FIG. 564.



FIG. 565.

growth on the leaves of the rose bush through the greater part of summer, and even in winter upon house plants. Their numerous cast skins may be seen adhering to the under side of the leaves. They pair and lay their eggs about the middle of June, and they probably live through the winter in the perfect state concealed under fallen leaves and rubbish on the surface of the ground." Fig. 565. The nymph or pupa of the rose leaf-hopper is shown somewhat magnified at Fig. 564, while the dult, also enlarged, is shown at Fig. 565. The back of the pupa is protected by numerous elongated spinous hairs. The injury to the leaf is manifested by the appearance of numerous white specs on its upper surface. This pest is easily destroyed in its immature stages by pyrethrum, kerosene emulsion, or some form of tobacco.—C. M. WEED, *Ohio Expert Station*.

NOTES ON EGG PLANTS.



THE egg plant is one of the important vegetables, which has as yet received little attention in this State, and the poor withered specimens sent in from other States give consumers little idea of the delicious character of this plant when fresh and well served. No doubt also, the fact that it is not common, and that cooks are not accustomed to serving it, may account to a large extent for its neglect.

The egg plant is a native of tropical America, and reaches perfection only in a warm climate and near the coast. By careful treatment, however, and by a process of acclimatization, it may be successfully grown far inland and much farther north than commonly attempted, as the successful plantings in the college gardens for the past two years abundantly prove.

The following notes embrace the more important results of our experiences with this plant during the past five years :

1. *Culture*.—As a long season is required for the egg plant to mature, it is highly important that the plants be started early. It is our practise to sow the seeds in "flats"—shallow boxes about three inches deep—in a warm forcing house about the middle of March or the first of April. After about a month, or when the first true leaves are nicely started, the young plants are pricked off into other boxes, two inches apart each way, or better, into two-inch pots. About three weeks later, when the pots are well filled with roots, or when the plants begin to crowd, the latter should be shifted to four-inch pots. We have almost invariably had better success when the plants were handled in pots than when they were transplanted into other flats, the check caused by frequent disturbance of the roots appearing to be detrimental to most sorts. An exception is noted, however, in case of the Early Dwarf Purple which seems able to withstand very harsh treatment. It is important that the plants be kept growing vigorously from the start, as they seldom fully recover from a check, and in order that fruit mature the plants must be strong and vigorous when planted in the field.

The plants may be set in the field, in this latitude, about June 10th to 15th. We usually set them in rows about three feet apart that they may be cultivated by horse power. The soil should be a rich sandy loam containing an abundance of organic matter. Heavy dressings of stable manure are advisable. Frequent and thorough cultivation are absolutely essential to success.

Perhaps the worst insect enemy of the egg plant is the potato beetle. The tender foliage of the young plants is especially subject to attack, and as the growth is so slow, severe injury nearly always proves fatal. Paris green, one pound to one hundred gallons of water (about one-half teaspoonful to a large pailful of water), applied about once a week, will be found useful.

2. *Methods of Serving.*—No doubt that the fact that cooks are not familiar with methods of serving the fruit of the egg plant accounts to a large extent for the failure to use it more. The following recipes for cooking the fruits are given in Bulletin twenty-six of the Cornell University Experiment Station, and have been found satisfactory:

“*a. Fried.*—Cut in slices cross-wise not over a half-inch thick and parboil about fifteen minutes; then remove and fry in a hot spider in butter and lard.

“*b. Fried.*—Cut into slices quarter to half-inch thick and lay in strong brine for two hours; then wash *very* thoroughly; sprinkle with brown sugar, pepper and salt and fry slowly to a dark brown.

“*c. Baked.*—Cut in two length wise remove the seeds and pulp and fill with dressing made of half teacupful bread crumbs, one teaspoonful butter, and salt and pepper to taste; lay the halves side to side in dripping pan, add a little water and bake nearly an hour.



FIG. 566—BLACK PEKIN.

“*d. Fritters.*—Pare, cut in slices cross-wise, and soak in salt water for eight or ten hours; dry on a towel, dip in beaten egg, and roll in bread crumbs, then fry slowly in hot butter until the pieces become rich brown; serve hot.”

3. *Varieties.*—For several seasons we have grown such varieties as we could obtain from all sources. The number of varieties is comparatively limited, but there are several distinct types of varying importance. These types vary in regard to color, size, form, habit of plant and season of maturity. Some from their earliness and productiveness but small size, are valuable only for home use. Others by virtue of their large size and attractive appearance are popular in the markets, but as a rule they are not sufficiently early and productive for the short seasons of this latitude.

Black Pekin is a large and vigorous growing kind ; stems petioles and veins always deep purple ; leaves large, more or less distinctly lobed, purple with metallic lustre above. Fruit large, five to seven inches in diameter—often larger—spherical or oblate, very dark purple. Entirely distinct from every other variety, rather late, but it fruited well the past season. A popular market variety—*Maine Experimental Station*.

SIERRA SNOW PLANT.

This plant is acknowledged by all, to be the most beautiful in the floral kingdom. It is a bulbous plant, and attains a height of from fifteen inches to three feet. It grows at various elevations, but is more generally distributed between the elevations of six and seven thousand feet above sea level. In their flowering season, they throw up a spike of deep, brilliant red flowers, so intensely colored, as to glisten and sparkle in the light. These blooms last for several days. For supreme beauty, and wild magnificence, this plant stands unrivalled.

Grizzley Flats, Cal.

S. L. WATKINS.

Washing the Bark of Fruit Trees.—I noticed with a great deal of interest and satisfaction last spring the effect of potash dissolved in water to the strength of one pound to two gallons, and applied as a wash to trees in the orchards of Mr. Thompson, Mr. Archibald and Mr. Chipman of this village. I afterwards used a milder solution in a young orchard of my own, and, although the trees were previously in an average healthy condition, yet the effects of the application were noticeable at quite a distance, for it had given the bark a particularly clean, dark brown appearance. I would strongly recommend the cleaning off of all the loose bark and moss—the dwelling places of the bark lice and the winter quarters of the codling moth—with a hoe during April, and an application of the potash about the middle of June. Experiments have been made with most astounding results as to crops where the diluted potash has been applied as a fertilizer to the roots.

Pruning Raspberries.—In growing for fruit the branches should be nipped at one foot in length. If tips are the object let the branches grow, and when they reach the ground bury the tip. If you wait until the cane runs much before it is covered you will have a long string of roots and plants and none of it fit to set. Last fall my tips were covered until the branches were three to four feet on the ground and then nearly all covered, and this spring the young plants put up all around the old bush as bad as the red varieties. The Marlboro, I fear, will not yield well with me. What berries I had were fine. The Golden Queen proves more hardy, and I think of better quality.—Farm and Home.

THE TUBEROUS BEGONIA.



THE article on "Tuberous Begonia," was, no doubt, written for the benefit of that flower alone; no doubt it is a pretty flower, but a good deal of care is required to get the bulbs properly started. I can hardly fancy the author of that article is a true lover of flowers, when he speaks of going into a dry goods store, to get "material" for a foliage bed. Now, what looks better than a round bed, the centre filled with scarlet geraniums, then two rows of coleus, planted so that all the colors seem to blend into one, with an outside row of Tom Thumb nasturtiums; then in a mixed border protected with evergreen sand shrubs, you can make a good show with a few "faded coleus." Last year I planted out in such a border, several Zinnia plants, about three feet apart, and in between I planted coleus in September, when the zinnias were in full bloom; the effect of the two plants growing together was very pleasing. There are many beautiful plants grown, not for the flowers only; take that grand flower, the Pæony, no plant so useful in an open border, because after it has flowered you still have a handsome plant, the bright clean leaves of it always afford a pleasing contrast to your many colored annuals or perennials. The Columbine you sent out last year has proved to be a very pretty flower, so early, and such large flowers, one over four inches in diameter. I have saved the centre stems for seed, and hope to raise some good plants for next year. I am pleased to see so much interest taken in flowers by our little monthly. What a change since 1856, when I might travel for a week and hardly see a flower among our farmers, but now our daughters vie with each other who shall have the best garden; and the road to a good garden is now made easy by our "Canadian" florists from whom we can get, for very little money, a collection of all the beautiful hardy perennials, which, with a good selection of easy growing annuals, you may be sure of a wealth of bloom from April till November. In conclusion I will say, friends, if you want a pretty bed, be it of flowers or foliage plants, keep away from the "dry goods store;" a very poor substitute will these be found for any of nature's gems.

C. J. F.

Delaware.

 SIX BEST APPLES.

For six of the best apples I have, or grown in this section, I should take the Baldwin, I have; then the Ribston, R. I. Greening, Canada Reinette, Ontario, (not for dessert), and Golden Russet. Another choice apple is the Fallawater, of fine flavor, long keeper; but I have not had experience as to its bearing qualities.

The prospects for fruit: is, for apples, scarce, cherries and plums full of bloom, peaches not much grown but a good bit of blossom.

Goderich.

WALTER HICK.

ORCHARDS NEED CULTIVATION.

The following opinions of experts in orcharding will confirm the views always advocated by this journal on orchard treatment.

CULTIVATE THE ORCHARD :—Mr. W. F. Murray of Missouri, writes in *Farm and Home* : I attribute our success to thorough cultivation and careful pruning. By no other means could we have grown such apples in such a dry, hot summer, on trees planted sixteen years ago on land already very much worn, and at the same time secure six to twelve inches of new growth and plenty of fruit buds for a crop next season. This agreeable lesson confirms my faith in thorough and continuous cultivation, and careful annual pruning from the time the trees are planted until they cease to produce paying crops ; then cut them down and burn them. Why should old dilapidated, half-dead trees, full of diseases and prolific breeders of insects, cumber the ground ?

One advantage of cultivation is that the rough, broken and mellow condition of the soil fits it for receiving the rainfall more rapidly than a smoother, more compact surface, and for retaining moisture much longer. I think this the best way to irrigate. Another advantage is the cutting and breaking of the roots, thereby greatly multiplying fibrous roots, increasing the vigor and fruitfulness of trees. In my own orchard—the seven acres of 16-year old trees—I have but four dead trees, and only ten that are damaged to an extent worthy of notice. I know of one man in our county that can hardly read or write, yet he has an orchard which he plows deep and cultivates thoroughly every year ; and lo ! we behold this man growing the finest apples received at the principal shipping station of our country,—the wonder and admiration of all who see them.

TREES IN GRASS.—Prof. L. N. Bailey writes in *Bulletin 31* :—Permanent sod is an injury to the orchard. This has been proved in the experience of nearly every successful orchardist. It is forcibly illustrated in the instance of the old college orchardist. In the earlier experiments conducted by Dr. Beal the same fact was emphasized. For some years he kept a part of the trees in sod, others were cultivated thoroughly, while still others were cultivated at varying distances from the body of the tree. Even as early as 1874 he found that “trees in grass made less growth, looked yellow in foliage, and bore smaller fruit and apparently less of it.” In 1875 he observed that “the evidences look more and more strongly every year against the propriety of leaving trees, in our section, in grass. They have stood the severe winters no better ; they have borne no better ; the apples are smaller, the trees grow more slowly ; a greater proportion of trees have died than of those cultivated each year. So marked have been the results that we have plowed up about half that part of the orchard which was left in grass”

A COMBINATION WIRE GATE.

Gates made wholly of wood are heavy. Since wire has become so cheap, it has entered largely into the construction of gates, proving light and serviceable.

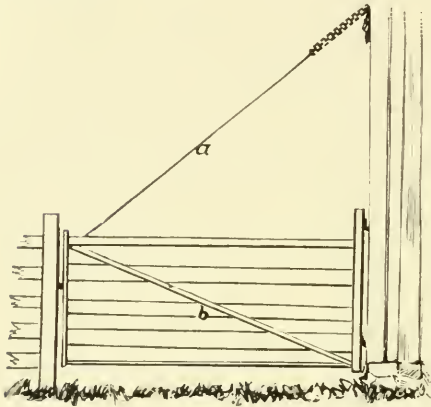


FIG. 567—A SERVICEABLE FARM GATE.

The accompanying sketch of a wire gate was sent us by S. Barrington. The form shown, is one of the best as regards strength, durability and freedom from swagging. The frame of the gate is wood put together in the usual manner, with a long brace *b* placed as shown in the sketch, and nailed in position. Holes are bored in the end pieces through which are passed and firmly secured annealed No. 7 or 8 wire; seven or eight single strands may be used to each gate. If the gate can be hinged to a building or high post, a wire support *a* can be used to prevent sagging. If a few links of chain are attached to one end of the wire it may be always kept tight by hooking up another link.

VARIETIES OF APPLES MOST USEFUL IN N. S.

In reply to the question, "What varieties of apples are best suited to Yarmouth County," Mr. C. E. Brown, our well-known correspondent in Yarmouth, N. S., writes in the last report of the Nova Scotia Fruit Association as follows:—We have now the names of 146 varieties of apples grown in the county, in addition to which there are numerous seedlings and others of recent introduction, not known to the writer. The conditions of soil, temperature, shelter, and sunshine vary greatly in different parts of the county; on the shore, within the influence of the cool and salt sea breezes and fogs, but few varieties do well. Of these, named in the order of usefulness, Keswick Codlin, Oldenburg, Gravenstein, Wagener, Ontario, Northern Spy, Winter Greening, Easter Pippin, Sweet Bough, Grimes' Golden, Golden Sweet, and Wealthy are best. Inland, most kinds succeed fairly, but Red Astrachan, Major or Andrew's Sweet, Gravenstein, Grimes' Golden, Ontario, Northern Spy, Fall Jenetting, Baldwin, Ben Davis, Gavel Pippin, King, Ribston, Yellow Bellefleur, and Wealthy are the most popular and profitable." Most of these varieties were on exhibition in the Nova Scotia court at the World's Fair, with numerous others.

✧ The Garden and Lawn. ✧

FORSYTHIA.



THE members of this ornamental genus are extremely desirable as early spring bloomers. The first shrub in bloom on these grounds this spring was *Forsythia viridissima*, its yellow bell-like blossoms appearing on the lower branches when well protected by snow, before the leaves had attained quarter of their full size. Three species have been tried here, none with entire success. *F. Fortunei* is an upright form, more hardy than either of the two following. *F. Suspensa*, is of trailing habits, resembling in this respect Bitter sweet (*Alastrus*), as a consequence it is more easily protected than those of upright habit. *F. Viridissima*, already referred to is probably the hardiest of this genus. It is usually injured at this point to some extent by the winter, which hinders a good show of flowers, as these appear on the wood of last year, but the vigor of the plant does not seem to be impaired. To obtain the best results in localities as cold as this, numbers of this group should be trained on trellises during summer, and laid down during winter. This will ensure early spring flowers.

They are easily increased by summer layering.

JOHN CRAIG.

Ottawa.

✧ The Apiary ✧

HINTS FOR JULY.



THIS is the time of year when many of us are found working from early morning to late at night, and a time when those who have only a few colonies of bees, and not much experience, are willing to take a few directions without going elaborately into why and wherefore. Too much swarming should not be allowed. To avoid, to a large extent, after swarms, put the new hive and new swarm on the old stand, and put the old colony and hive on a new stand. If full combs are used in the upper stories, be sure, early in July, leave two full combs of honey untouched for each colony. This should be kept and not extracted until fall, and until one has ascertained that the bees have enough honey below for winter and spring. Do not leave sections on the hive until they are soiled by travel stain from the bees; when filled remove them. When the honey season is over and the sections are only partially filled there is also no use in leaving the sections on the hive.

Brantford, Ont.

R. F. HOLTERMANN.



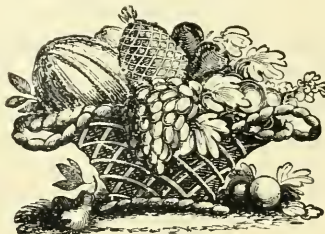
SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

EMPRESS AUGUSTA VICTORIA is a new and famous white rose, for forcing which, recently won the Pierson prize of a silver cup, worth \$50, in New York City. It is thought to equal the Bride in its habits of growth, and that it will also be popular with amateurs.

GRADING AND PACKING FOR MARKET.—Good and thoroughly honest packing may be the intention of the grower, but if the commission agent does not give sufficient attention to selling goods on their merits, and get correspondingly high prices for the best articles, is it to be wondered at if the grower becomes discouraged? Mr. G. R. Knapp writes in the American Agriculturist, that he knows some salesmen who only supply third-class trade, and cannot handle a first-class article to advantage. Others want goods shipped ungraded, in order that they may themselves do the grading and pocket the advance thus gained for the extra quality. The proper way is to make arrangements with some one who will give attention to handling extra selected stock, and work up a first-class fancy trade.



❖ Question Drawer. ❖

PRUNING EVERGREENS.

No. 576.—SIR,—Will you please let me know the best time to prune old evergreens, and if there is any book published on this subject?

W. C. SEARLE, *Clinton, Ont.*

Reply by Prof. John Craig, Horticulturist, Central Experimental Farm, Ottawa, Ont.

I do not gather from the question whether the pruning is to be applied to evergreen plants singly, in windbreak form or as hedges. Then, again, it is necessary to know what object the pruner has in view; whether to increase the vigor of the tree or to check its growth. Evergreens, meaning conifers, can usually be kept in symmetrical form by simply nipping out the terminal bud of any branch which is growing out of proportion with the others. Evergreen hedges should be clipped during the first two weeks in June, and again about three weeks later.

In pruning evergreens it is necessary to cut back to a strong bud, thus giving the limb a chance to start from the end bud so that it will not mar the symmetry of the branch. One of the best books that I know of on the subject of evergreens is that published by the Orange Judd Co.; the author of it is Josiah Hooper.

Pear Leaf Mite—Rose Pierre Guillot.

577. SIR,—I have some young pear trees in full bearing, which showed symptoms of blight two years ago; last year the leaves were covered with black spots, also the fruit, besides being much cracked. I send a sample of the leaves this year, and wish to know if there is any remedy for it, or if the trees should be cut down to prevent it spreading? Is the rose "Pierre Guillot" able to stand the winter, or is it a house plant? An early answer will oblige.

Yours,

J. H. MARSHALL, *Woodlands, Stormont Co., Ont.*

Reply by Mr. John Craig, Experimental Farm, Ottawa.

The pear leaves received are affected by an insect known to horticulturists as the Pear Leaf mite, *Phytoptus pyri*. This has been treated by the Entomologist to the Farm, Mr. Fletcher, in the Annual Report for 1891, a copy of which is mailed herewith. No satisfactory remedy has been discovered, but spraying with kerosene emulsion early in June is thought to be the best. The rose, Pierre Guillot, has not been tested in our rose grounds. It is a hybrid tea, and therefore not likely to endure, without injury, our cold winters; but with a fair amount of protection, I think it could be wintered at Woodlands. It is said to be as hardy as the tender hybrid perpetuals, such as Paul Neyron.

Treatment of Plum Trees and Grape Vines.

578. SIR.—Will you kindly inform me if it will now be too late to dress and trim young plum trees, varying in height from seven to ten feet, and four and five years in the ground? Bore a few plums last year, this year most of them heavily laden, but severely sprayed with sulphate of copper and the fruit very much destroyed. I wished them all to be topped, *i. e.*, about one-third of last year's growth to be cut off and so to make them *stocky* and strong, so as not to split when heavily laden in after years. Many also have been sprayed when the blossom seems to have been fully out. The same with many pear trees, young and old. The apple, mostly in full blossom now, have also been sprayed, were to have been all pruned, but not a branch cut as yet. Would it be better to let them alone till the fall? I mean the plum trees especially, but the others also. You will very much oblige if you will kindly advise me. Last year my grape vines were infested with a kind of round black scab. I sprayed them with sulphate of copper, which seems to be very effectual in causing the scab to peel off. But as it was not till the *very last* days of July that I knew of the remedy, and I dared to spray a second time only, the disease appeared when later on. A small bit of the sulphate (one ounce) seemed quite sufficient for 30 gallons of water to 200 grape vines.

GEO. STRANCHON, *Woodstock.*

Reply by Mr. John Craig, Experimental Farm, Ottawa.

I do not think it would be advisable at the present time to prune back your plum trees as severely as your letter leads me to believe that you intend to do. Such a severe heading-in, just at the season when they are making their most rapid growth, would be a dangerous blow to their vitality. Heading-in should be done in the fall or early spring. Your plum trees may be checked somewhat, by simply pinching back the ends of the terminal shoots; this may be done at once, and will prevent long straggling growths which are likely to be broken by wind-storms.

The grape vines you speak of are evidently affected by a disease called "Bird's-eye Rot"; this is best kept in check by close pruning and by spraying frequently with the Bordeaux mixture. Treatment should be commenced early and carried on until the fruit is nearly ripe, as the disease often develops on the fruit just before maturity. When the fruit is nearly ripe it is best to spray with the ammoniacal carbonate, as it does not discolor nor injure the berries and will not affect their sale.

✻ Our Book Table. ✻

BOOKS.

REPORT OF THE IOWA STATE HORTICULTURAL SOCIETY, for the year 1893. Twenty-seventh annual session held at Des Moines, January, 1893. J. L. Budd, Ames, Iowa, Secretary. It includes papers on—"Commercial Orchards," "In the Vineyard," "Improvement of Small Fruits," "Ornithology and its Relation to Horticulture," "Fruit Insects," "Climate and its Effects on Apples," "Cross-fertilization," "Notes on Lawn Making," etc.

CATALOGUES.

BEEES AND HONEY. Illustrated Catalogue and Price List. A. J. Root, Medina, Ohio.

* Open Letters. *

Leading Varieties of Strawberries in California.

In the Sacramento region the variety that is most extensively cultivated is the *Triomphe de Gand*. In all probability this is the most superior shipping variety of strawberry that is cultivated. It is shipped by the carload from the Sacramento Valley to New York, Chicago and many other distant markets. The *Triomphe de Gand* is a very vigorous grower, of a large size, and a very beautiful red color, and of a splendid flavor. It is very productive.

The *Jessie Strawberry*, which is in many places pronounced a fraud and swindle, is a grand success here and is very extensively planted. It is not noted for shipping qualities, but its flavor is the best.

Another grand variety, which is at present little known, is the *Australian Everbearing* or *Crimson Strawberry*. This wonderful variety was introduced from Australia, eight years ago, by E. J. Baldwin. It is now very extensively cultivated in the San Gabriel Valley in Southern California. It is undoubtedly the earliest strawberry in cultivation, and the most profitable everbearing strawberry cultivated. In Southern California it is never without fruit. The berries are of a large size, resembling the *Monarch* of the West in shape, they are of an exceedingly beautiful crimson in color, are very firm and deliciously flavored; this variety is a remarkable shipper, and is shipped in vast quantities from Los Angeles to all parts of the country. The strawberry growers of Los Angeles County realize immense profits from this variety, the present season twenty-five cents per lb., clear of all expenses. The *Australian Everbearing* will yield two good crops the same season that the plants are set out; the first crop of fruit will not be large in size, but as the plants get more firmly established the fruit will increase in size. In the winter, and late in the fall, the fruit is white on the underside, of course this is caused by the temperature of the weather.

Cloud's Seedling is a splendid shipping variety and does well on the Pacific coast.

The *Oregon Everbearing* also gives very good results and should be more extensively cultivated.

The *California Everbearing* is a very superior variety in all respects, the plants are of the very largest size, as is also the blossom, which is perfect. The fruit is of an immense size, of a beautiful glowing red color, very firm, and possessed of a rich, sweet, delicious flavor; this variety is exceedingly productive, and yields its immense fruits until killed by frosts.

The *Honey Strawberry*, or *Red Alpine*, is another wondrously productive variety; the fruit is of small to medium size, very highly colored, a glowing crimson, and possessed of a delightful fragrance, and a spicy aromatic flavor, which makes it an unrivalled variety for table use.

This variety is ever-bearing, and in favorable climates, will bear fruit all season long.

S. L. WATKINS,

Grizzly Flats, El Dorado Co, California.

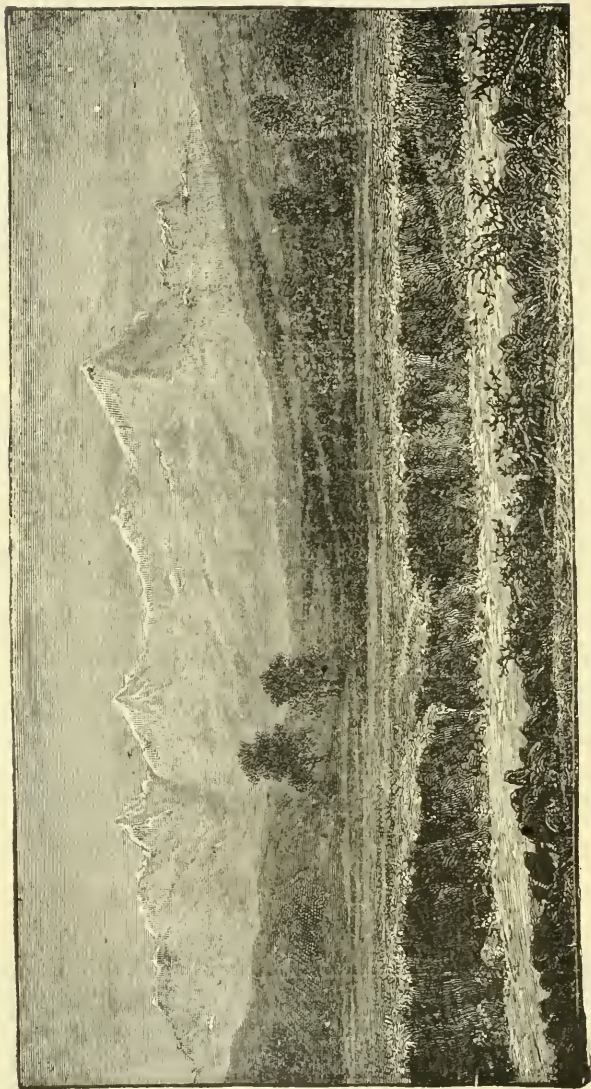
The Plants.

SIR,—Many thanks for Alfred Colomb rose kindly sent me, which I have planted in a pot in meantime. The blue spruce and strawberry plants you sent me in spring I gave to Mr. William Rose of this place, as I have no ground here of my own; he reports them doing well. Apples and plums about here promise fairly. Wild small fruits are abundant.

WM. H. WYLIE, *Marmora.*

SIR,—I ought sooner to have acknowledged your kindness in sending the plant I requested, with the addition of two fine strawberry plants. All came in good order, and are growing well. I heartily thank you for your prompt and generous favors.

FRANCIS COLEMAN, *Hamilton, Ont.*



THE ROCKY MOUNTAINS.

As one proceeds westward, after the first distant glimpse of the Rocky Mountains, the scenery grows in grandeur. Higher and higher rise the snowy peaks, loftier and more majestic than Alp or Appennine. One never grows weary of their ever-changing aspects. Like Cleopatra's beauty, age cannot wither nor custom stale their infinite variety. Rose-pink at dawn and eve, snow-white beneath the noontide sun, pale and spectral by the wan moonlight, they are a thing of beauty, and a joy forever.



ABUNDANCE.

THE
Canadian Horticulturist

VOL. XVI.

1893.

No. 8.



ABUNDANCE PLUM.



THE Japan plums are quite distinct from either our native, or the widely known European, varieties. In habit of tree they resemble somewhat the vigorous Chickasa varieties, but their foliage is peculiarly large and distinct. A few of the Japan plums are fairly hardy, but most of them are better adapted to the Middle and Southern States than they are to Ontario, and there their introduction has given a fresh impetus to plum growing, owing to their large size, beauty and excellent flavor.

There are two varieties which have been considerably pushed by nurserymen through their agents in Ontario, namely the Abundance, which is an American name for one of the Botan plums, and the Burbank. The latter will be treated of later on in this journal; the former, we have chosen to use as a frontispiece in this number. It is yet too early for any reliable statements to be made concerning its adaptability to our Canadian climate; but, from the fact of its succeeding well during the last three or four years in New York State, and Michigan, it is natural to infer that it will also be a success if planted in Southern Ontario.

Mr. Lovett, of Little Silver, N. J., viewing it from a nurseryman's standpoint, says of the Abundance: "This plum is unlike any other. In growth it is strong, and handsome enough to be planted as an ornamental, and equals the

Kieffer pear tree in thrift and beauty. Its propensity for early bearing is such that it loads in the nursery rows, bending the limbs with the weight of the fruit until they sometimes break. The fruit is large, showy and beautiful; color amber, turning to rich bright cherry, with a decidedly white bloom and high perfume; flesh, light yellow, and exceedingly juicy, tender and sweet; free stone; excellent for canning: season very early, ripening in advance of other plums."

Mr. S. D. Willard, of Geneva, New York, writes concerning it: "I have fruited this plum for four or five years and find it hardy and productive, of fair quality, and well received in the markets. I do not think it equal to the Burbank in productiveness, or to some of the sorts of the Japan in quality, but its very beautiful appearance causes it to take well in the city markets."

Mr. VanDeman, Chief of the United States Department of Pomology, says of it: "This plum is of medium size, that is among the Japanese plums, being fully as large as the larger of our common cultivated plums (*Pruñus Domestica*), heart-shaped, of very good quality and, I think, hardy over a large part of the United States. Color, greenish-red."

FIGHTING APPLE BORERS.

Prof. Forbes, Illinois State Entomologist, makes the following timely suggestions in reference to fighting apple borers:

1. *Preventing the Laying of Eggs.*—This is best accomplished by washing the trunk and the larger branches of the tree three or four times in summer, with a strong solution of soft soap, to which has been added a little crude carbolic acid. The soil should be evenly smoothed down about the base of the tree, so that the mixture may reach the lower portion of the trunk where the round-headed borer is apt to lay its eggs. Washing soda added to the soft soap, until the whole is of the consistency of thick paint, is also thought to make an excellent wash for repelling the beetles. In Ontario the first application should be made early in June or about the middle of May, and succeeding applications at intervals of about three weeks.

2. *Destroying Eggs and Larvæ.*—This should be done in August, September, and October. By a careful examination of the trees during this time the eggs and young larvæ may be detected, and by the judicious use of a knife they may easily be killed. If the ground is smoothed off about the young trees early in the season the insects in the lower part of the trunk are more readily reached; or an excellent way is to compel the beetles to lay their eggs where they can be easily reached, by mounding the bases of the trees either with sand, which is best as it does not crack open and allow the beetle to deposit below the surface, or with ordinary soil. According to Hon. J. W. Robinson, for many years a successful orchardist in Central Illinois, one man can usually examine and kill all eggs or borers in five hundred or more trees per day.

SIMON OR APRICOT PLUM.—*PRUNUS SIMONI*.

SOMETHING like a dozen years ago this fruit began to be talked about in North America, although it did not gain any notoriety until six or seven years ago. It had been introduced from France, where it was first described under its present name and with an admirable colored plate, in 1872, by Carrière, in the *Revue Horticole*. I do not know when the fruit reached Europe, but it could not have been introduced long prior to 1872. It was named for Eugene Simon, who sent pits to the Paris Museum while he was representing the French Government in China. It is probably native to China, although Hemsley, in his recent *Flora of China*, does not mention it; but this author evidently adopts Maximowicz's opinion that it is indistinguishable from the nectarine and does not regard it worth distinct

discussion. It was disseminated by Simon Brothers at Metz, in Alsace, and by Thibaut & Keteleer, at Sceaux, France.

Prunus Simoni began to fruit in this country about 1885 or 1886. I fruited it in 1886. The fruit was also figured and described in *The Rural New Yorker* in October, 1886. The fruit, which is shown about three-fourth's size in the engraving, is flattened longitudinally, marked with a deep step cavity and a very prominent suture, and is borne upon a very short stem. The color is very intense and striking, being a glowing dark red, slightly mottled with lighter shades. The flesh is yellow, hard, and clings tightly to the somewhat apricot-like pit. The flavor in all the specimens which I have tasted is very disagreeable, being mawkish bitter, and leaving a pronounced bitter almond taste in the mouth. I have never tried a specimen which I could say was edible, and this is an unwilling confession because the fruit is exceedingly attractive to look upon. Other persons appear to have had pleasanter experience with these fruits, for I occasionally read of favorable, or at least only indifferent, comments upon their quality. It is said that its bitterness passes away in cooking, although my experience in this direction has not been re-assuring.

But there are other demerits in this plant besides its mawkish-bitter fruits. It is not a productive tree so far as I have observed, and I have seen it in many different plantations. It bears young but the fruiting is not profuse. Many of the fruits are borne upon spurs upon the old wood, and they are often found well down to the base of the leaf-bearing portions of the top.

The two transcendent merits of the fruit of *Prunus Simoni* are the very

handsome shape and color, and its long keeping qualities consequent upon its hard flesh. Ripe fruits will ordinarily keep a week or ten days in good condition. And, aside from these merits, the tree appears to be as hardy as the common plums. But it blooms early and is often caught by late frosts. Professor Budd recently speaks of it as follows in Iowa: "Fruit large to very large, red in color, and is shaped much like a smooth tomato. Its fault is in the way of too early blossoming. It will pay to grow this fine fruit by laying down in winter, as recommended for the peach. This tree is not fully hardy at Ames without winter protection.

The fruit of *Prunus Simoni* ripens with the early peaches. The fruit often drops before it is fully ripe and it frequently rots on the tree. Although it is apparently less liable to attacks of curculio than peaches and plums, it is not exempt from such injury, as it is often said to be.

Prunus Simoni is a wholly distinct species from any other stone fruit. It is not a hybrid between the plum and apricot, as some have supposed. Botanically it probably belongs to the peach section of the genus *prunus*, although it is more plum than peach in character of fruit and habit of tree.—L. H. BAILEY, Cornell University Experimental Station.

PRUNING FRUIT TREES.

No time of the year is more suitable for the pruning of fruit trees than directly after the fall of the leaf. Where summer pruning has been judiciously performed very little will be required to be removed. The summer pruning of apples and pears is intended to obviate the barbarous system of mutilating the trees once a year—viz., in the winter. There are very few gardeners who leave the pruning of fruit trees until late in the winter, because, besides being a very uncomfortable operation then, late pruning has a detrimental effect upon both trees and crops. The pruning of fruit trees, principally apples and pears, consists in removing all portions of the shoots that are not wanted so that the tree may throw its strength into developing the shoots you wish to remain. If the spurs of the tree have been duly pinched in during summer, another growth from each portion that was left has been formed, and it will therefore be necessary to cut the portion left in the summer to within one or two eyes of the preceding year's growth, according to fancy or strength of the respective buds. Gooseberry and black currant shoots should be thinned out when required, and red currants should be spurred. Some cherries require spur-pruning, but the Morello does better on walls if the young shoots are laid on annually and some of the older branches cut short.—Hort. (Eng.) Times.

Too much water while the plants are in too low a temperature is frequently the cause of the buds of fuchsias falling off.

WEeping TREES.



I HAVE frequently been asked whether weeping trees were, or were not, made by inserting grafts or buds top downwards, and I have often heard it asserted (although not lately), that that was the way weepers are made. During the past few years I have been afforded considerable amusement watching experiments by a person who has on his lawn a tree which, when planted, was a weeping mountain ash. After the sapsuckers girdled the trunk, the fairly good sized head died and was taken off. A vigorous upright shoot came out from near the root, and in course of time it grew to be quite a tree which showed no indication to weep. Not understanding the cause of this phenomenon the owner drove tent pegs into the ground, bent down the branches and with cords fastened them to the pegs, thus making the tree have somewhat the appearance of a weeper. Last year, however, all the young shoots inclined to upright growth, and now the tree is in the shape of a round crowned hat, with an up turned rim.

On a lawn, not far from this tree, grows another (so called) weeping mountain ash, with stem or trunk only six feet high. The straggling trailing branches about twenty feet long, and propped up with crotched sticks, forming altogether a very distasteful object.

Similar instances are not at all uncommon. Whoever will have artificial weepers, should procure only such as have suitable stems or trunks. For the mountain ash the trunk should be not less than twelve feet long. For elms and poplars the trunk should be longer. I have noticed that on dry land, all the willows are short lived. I used to think they were not hardy enough. They require moisture throughout the summer. When on Wolfe Island last summer I observed a number of magnificent specimens of the common weeping willow (*Salix Babylonica*), tall trees with long, slender pendulous branches, far exceeding in beauty any artificial weeping willow I had ever seen. They are nearly all growing either by the sides of streams, pools or inlets, or near the lake shore, where their roots could reach the water.

The various kinds of weeping birch thrive well on either dry or wet land. When planted on dry ground they soon send down roots to where moisture is obtained, and I have seen good specimens growing on land too wet for many other trees. They expand their beautiful glossy leaves very early and retain them late in the season, and with their silvery bark and graceful form, are particularly attractive. Moreover, they are hardy enough to stand in any climate where trees grow.

The weeping beeches, also, do best on their own trunks. There are a

number of weepers with which I have but little experience. I know the Laburnum does not endure this climate. I tried the Dogwood, it was killed down to snow level the first winter. The Hawthorn is not a thrifty grower. I do not know the Pea-tree.

Perhaps some of your readers will kindly furnish us information regarding the Filbert, and the Hornbean; no doubt they are hardy enough for this part of the country.

Cataraqui.

D. NICOL.

TABLE FOR SORTING BEANS.

All beans before they go into the hands of the consumer are supposed to have been hand picked—that is, carefully looked over and all the spotted, injured, and slit ones removed. This operation is usually done while in the hands of the grower. It is a slow, tedious operation, as some years the beans are so badly damaged in the field that it takes a very active person to carefully hand-pick four bushels in ten hours' time, while with a crop secured in good condition four times that amount is fitted for market in the time mentioned. In either case it is very tiresome work, especially with the plan usually followed, whereas by the use of a sorting table the labor is greatly lessened.

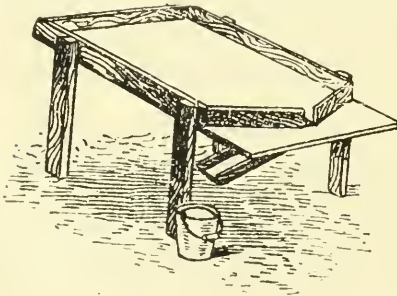
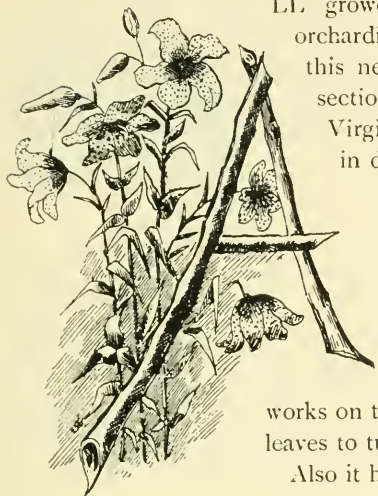


FIG. 568.

A good contrivance consists of two boards, one foot in width and three feet in length, nailed together and provided with four legs nailed firmly in position at the point shown. Those in front are three inches shorter than those in the rear. A light railing, two inches high is placed around the edge and brought to nearly a point in front. At this place a hole is cut through the boards, and the marketable beans, as fast as they are looked over, are allowed to fall through this opening into a spout and thence a pail, basket or other receptacle. The damaged beans, of course, are removed from the good ones, and placed in a separate basket, which should be conveniently located, one upon each side of the table, as an expert always picks with both hands.—American Agriculturist.

ONION seed is gathered when the heads are matured but before the seed begins to fall. The heads should be cut off and placed in a sack or laid on a cloth and carried to an airy loft or vacant room where they can be spread out thin on a cloth or sheet and be left for some time to dry. When quite dry the seed can be beaten out.

THE BLACK APHIS OF THE PEACH.



Ll. growers of the peach, both nurserymen and orchardists, have reason to be on the lookout for this new pest. It is very common in the peach sections of New Jersey, Maryland, Delaware and Virginia, and is said to come next to the yellows in destructiveness, having ruined in one nursery some 100,000 young trees in about three weeks. It has been introduced into Niagara County, State of New York, on trees imported from Delaware. This aphid feeds on the roots and swelling buds and young twigs and leaves. Often it does not appear in any considerable number on the tree, but works on the roots, stunting the trees, and causing the leaves to turn a sickly, yellowish-green color.

Also it has two forms: one without wings, which is the more common form, the other with four wings.

The one without wings is nearly one-tenth of an inch long; color, a dark shining brownish-black, parts of the legs yellowish. The winged form is more slender and a little longer: the antennæ are longer, and the wings transparent. All of these that have as yet been found are females, neither males nor eggs discovered. These females of both forms give birth to other females, which in turn give birth to more females, and thus keep up a succession of female breeders. Doubtless there is a period in their life history when males appear, but how many generations of female breeders intervene is not yet known. It is only the winged form that works on the roots, there they multiply and are to be found at all seasons, but some of them come out when the buds begin to swell, and by means of their wings fly to other trees and to neighboring orchards.

This pest in both forms feeds by suction, being provided with a beak and fine bristles or *selæ* with which it penetrates the tissues and sucks up the sap. Therefore they cannot be killed by spraying with poisons that must be taken into the alimentary system. Spraying with kerosene emulsion, diluted with ten parts of rain water, or a strong decoction of tobacco, say five pounds of stems steeped in three gallons of water for three hours, diluted to seven gallons, will kill those on the branches. Spraying should be done early in the season, for the aphid begins its work as soon as the buds swell. But this will not destroy those on the roots. No experiments have come to the writer's knowledge made for the purpose of killing those on the roots. It is suggested by Mr. Sling-

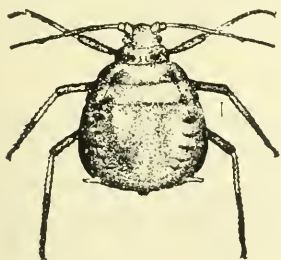


FIG. 569.—WINGLESS FEMALE
MAGNIFIED.

erland, of the Cornell University Experiment Station, in Bulletin 49, to whom we are indebted for the above facts, that possibly a very liberal application of kerosene emulsion just before or during a rain might result favorably, such an application having proved efficient in exterminating a species of white grub from the lawns about the Capitol at Washington.

Purchasers of peach trees, especially if from infected districts, are advised to dip every tree, root and branch, in the diluted kerosene emulsion immediately on arrival, letting it remain in it for three minutes. This, it is believed, would destroy any of the aphid that might be upon any part of the tree.

Will it not be advisable to place upon our Statute Book a law similar to that of California, which requires all trees, plants, cuttings, grafts, buds, seeds, pits and scions coming into the State to be disinfected on arrival, which is done by fumigating them with hydrocyanic gas.

Toronto, Ont.

D. W. BEADLE.



FIG. 570.—WINGED FEMALE MAGNIFIED.

A Hint Worth Remembering.—The owners of geraniums, coleus plants, etc., who are in the habit of picking them for bouquets should understand a little point which is too often overlooked. The practice of simply picking the leaves is a pernicious one, for it induces the plant to grow in a spindling manner, producing few leaves and long ungainly stalks that destroy the utility of the plant and its beauty in one operation. The true way is to generously break off a large end of the branch or shoot three or four inches from its terminus, when new sprouts will at once start out and take its place, and the plant will preserve a bushy appearance, producing a luxuriance of foliage which is very grateful to the owner. The best results, however, cannot be obtained with these plants more than with those of any other variety, unless the ground is kept exceedingly fertile. Do not be afraid to fertilize it in every possible way. For this purpose phosphates, ashes, soot, bones and scraps from the table, and even the dishwater, water from the washing, etc., containing the soap suds, is of great benefit.—Farm and Home.

THE apple tree borer can be destroyed in the following simple, cheap and easy manner. Pour spirits of turpentine into the hole, which may be done with a teaspoon or a small oil-can. If the borer works up, take a piece of wire and run it up to the top of the hole; then with a knife cut through the bark and throw in more turpentine. This will kill the borer every time without harm to the tree.—SYLVESTER BURREL, Ulster County, N. Y.

HANDLING APPLES FOR EXPORTATION.



WILL give you my ideas and methods, which are based on the experience of many years of active practical life in the orchard, and I hope that what I shall write may induce some others to take up the subject and give their methods and experience, so that we may finally get at the best and most economical method of placing our apple crop on the markets of the world.

I start with the idea that fruit should be handled as carefully and as little as possible, and so packed that it cannot move in the package until it is taken out for consumption. To this end we must be provided with proper tools, viz., baskets, ladders and sorting table, also packages and packing material. Baskets of light ash or oak splits with swinging bails, holding about half a bushel, are best, and should be lined with blanket or other thick woollen material, and have a hook made of 5-16 inch iron, tied securely to the bail, to hang it to a branch or the round of the ladder when picking.

Ladders.—Are made of light spruce poles cut at midsummer and peeled. Bored for the bottom rounds with an inch bit, the middle $\frac{7}{8}$ -inch and the upper $\frac{3}{4}$ -inch, then ripped in two and seasoned under cover. Rounds are made of seasoned white maple, lower one $2\frac{1}{2}$ feet, upper 8 inches; the sides are brought together above the upper round and secured with two or three clinch nails. They are made of different lengths, and are very light and strong.

Sorting Table.—This is made of $\frac{1}{2}$ -inch pine, on a light frame well braced. It is about $3\frac{1}{2}$ by 7 feet with a 4-inch rim around the edge; the legs at one end are short and attached to a long axled wheelbarrow wheel. The others are well spread at the bottom to make the table steady, a pair of handles provided to move it by, and a common, coarse grey blanket is spread on the table when in use.

Package.—We always use the barrel, and get the best made, neatest and tightest dry barrel in the market, of full flour size. We try to lay these in early, so that at odd times we may prepare them for use by nailing on the bilge hoops, nailing in the heads and taking out the bottoms, but leaving them in the barrel. We also lay in a stock of good white or manilla paper, cut in sheets 18 inches square (round would be better), and a lot of excelsior shavings, finest grade.

On commencing to pick, the sorting table is wheeled near, but not under, the tree, the blanket spread on it, and a bit of board or plank laid on the ground alongside to stand the barrels on. As the pickers fill their baskets they are carefully emptied on the table, and the packer, after placing a thin layer of excelsior in the barrel, puts a sheet of paper over it, and then "faces" the barrel by laying the first layer of apples, stem down, until the layer is full, then filling the barrel with the same grade directly from the table, occasionally giving the

barrel a gentle shake to settle the fruit into place, and when full the bottom is slipped in without pressure, wrong side out, name and quality written on it with a lumber pencil. Three grades or sizes are usually made, called extra, choice, and medium, and all apples that fall on the ground either before or during picking, are put into barrels by themselves, and set away for future examination, as they cannot be depended on for keeping.

When the barrels are filled, they are taken to the fruit room and stored on end, head down as filled, until wanted for market, when the bottom is taken out, the barrel filled as full as we think safe, a cushioned head is then laid on, and a man, seizing the chime by both hands and laying his fore arms on the head, rocks the barrel back and forth on the floor to shake the apples into place, and fill any shrinkage that may have occurred; then a sheet of paper is laid on the fruit and excelsior is spread on; the bottom is pressed in (right side up this time) and securely nailed. The barrel is now turned over and stenciled with name and quality of the fruit and grower's name and address, and it is ready for shipment. The reasons for turning the bottom at first are to give more room in the barrel and to prevent disfigurement by the packers' marks, which are turned inside and so out of sight.

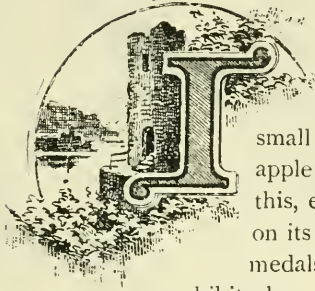
We use excelsior on the ends, both as a protection against bruising and as a material that will absorb the moisture exhaled by the fruit and swell, so as in a measure to fill the shrinkage and keep the package full. It is clean and sweet and does not head or develop blue mould as chaff or straw is liable to do, while the quantity used is so small that practically it makes no difference in the weight of fruit in the barrel.

Experience has taught us to distrust the keeping qualities of any apple that has lain on the ground over night, consequently they are kept apart, and usually put up for local markets as a separate grade. Our principal market is London, and the freight and other expenses are from 5s. to 5s. 6d. per barrel, and we find that a very few *spotted* apples in a barrel or a slight *slackness*, as it is called, when the fruit is found to move in the package when shaken, will cut the price from 20 to 50 per cent. below the market. This being the case, the importance of this subject can be easily estimated.—R. W. S., in Country Gentleman.

BEANS should be picked just as the berry begins to form and before it is perceptible. The universal complaint is that beans are too large. Spread in a cool dry place until thoroughly dry and cool. Pack in a regular vegetable crate, square or octagon—either will do. Settle carefully in filling, using a slight pressure, as the contents will shrink moderately in transit. The round bean sells much better than the flat variety and the wax bean generally higher than either, though the market will not consume near as many of the latter. The flat (Early Mohawk) is the earliest and most valuable on this account. The Valentine or round bean is tenderer and less stringy and sells higher. Pack in one-third bushel boxes. In packing exclude all the moisture possible and let them be as cool and dry as circumstances will permit.

NOTES FROM THE WORLD'S FAIR—IV.

The Judging.



It would be obviously impossible to deal with a great Exhibition like this as we would with a small country show, where plates of a single variety of apple compete for the first or second prize. Instead of this, each exhibit by a State or individual is to be judged on its own merits, without reference to any other. The medals are valuable works of art, given only where the exhibit shows a certain number of points of merit, while the points upon which the award is made are engrossed in an accompanying diploma. The Canadian judge in Horticulture is Mr. Starratt, of Nova Scotia, and the American, so far appointed, are Mr. Babcock, of Arkansas, Mr. Charles Garfield, of Michigan and Mr. Warder of Ohio.

Canada's Vegetable Exhibit attracts a great deal of attention. Nearly two hundred varieties of potatoes, besides numerous varieties of beets, turnips, mangolds, carrots, etc., in enormous piles, proved to the astonished gaze of the foreigners that Canada has a fertile and productive soil. In the centre is a table groaning under an enormous load of pickles and canned goods, over which the word **CANADA** stands pre-eminent. The writer has entrusted the care of this court largely to the assistant superintendent, Mr. M. C. Swanson, of Goderich, Ont.

The judge to whom the work of judging this exhibit was assigned, is Mr. Warder, of Ohio, son of the late Dr. Warder, of pomological fame. He was much pleased with the remarkable character of the exhibit, and we feel assured that it will receive full justice at his hands.

Prof. L. H. Bailey, of Cornell University, has written a good notice of Canada's vegetable exhibit in the Garden and Forest of June 21st, and it will be of so much interest to Canadians to read his remarks that we quote them in full:

"In stored vegetables Canada makes the only noteworthy exhibit. This Canadian show is remarkable because of the great territory concerned, contributions coming from Assiniboia and Manitoba to Prince Edward Island. These exhibits are made under the auspices of the provinces of Ontario, Quebec, Prince Edward Island, the Experiment Stations and the Department of Indian Affairs. These vegetables have been kept in cold storage, and include such things as potatoes, beets, carrots and turnips. The display is really a very large one, and is well disposed upon a series of rising shelves in the north end of the Horticultural Building. Ontario shows 182 plates and 86 varieties of potatoes, 22 varieties of turnips, all the leading field and table carrots, table beets in variety, sugar beets, mangolds, extra good winter radishes, parsnips and onions. In all the potato exhibits the predominance of varieties of more recent intro-

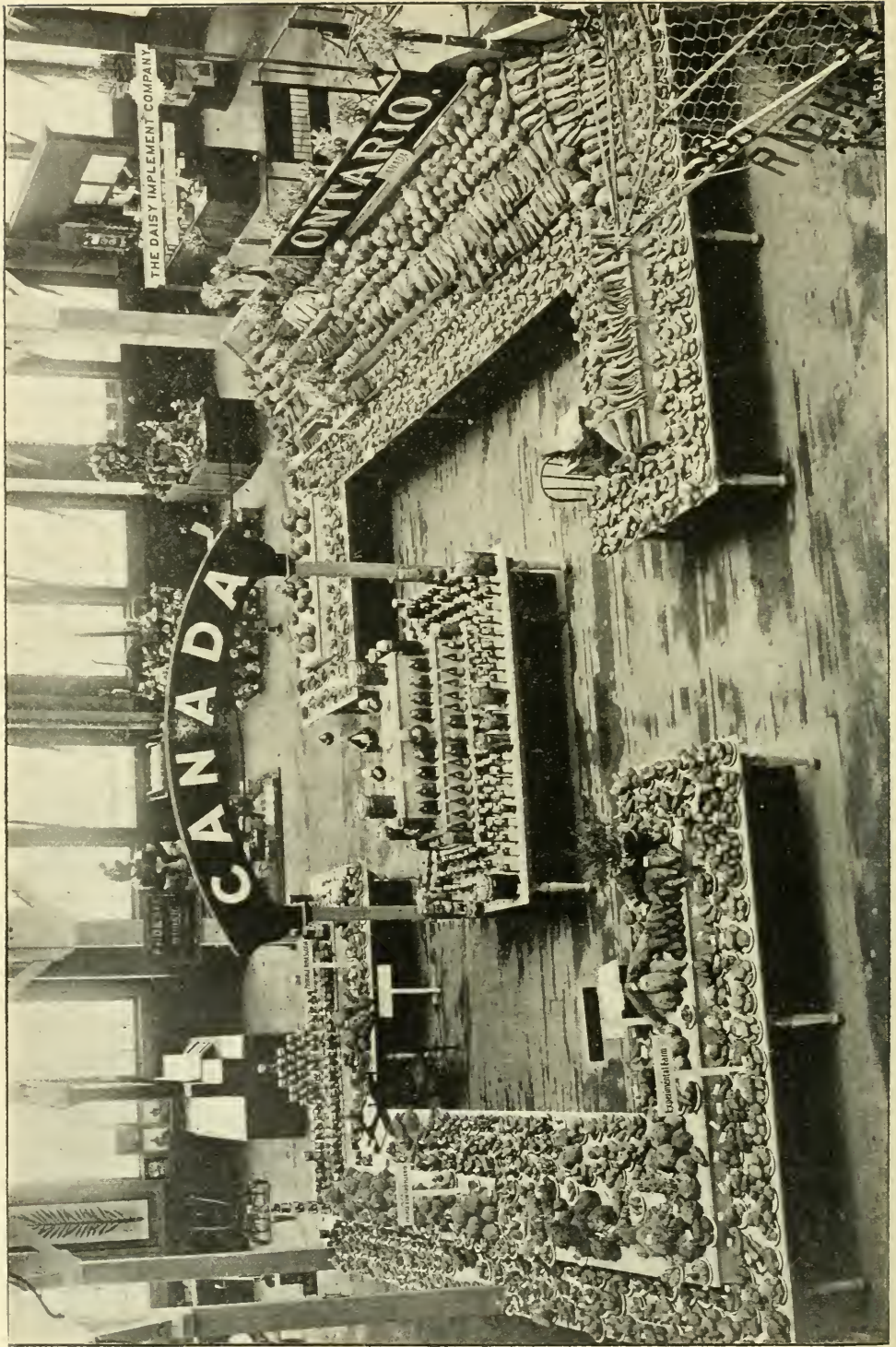


FIG. 571.— CANADA'S VEGETABLE EXHIBIT.

duction than the Early Rose is noticeable, showing that the commercial life of varieties of potatoes is not of long duration. Prince Edward Island shows but 8 varieties of potatoes, 16 other kinds, which were shipped for exhibition, having been accidentally lost. Here the Empire State seems to be the leading variety. This province shows of carrots 6 varieties, of turnips 4, of beets 3, with mangolds, parsnips and kohlrabi. Quebec lost much of its exhibit, but now has 5 varieties of potatoes, 3 of carrots, 2 of turnips and 1 of parsnips.

The Experiment Station displays for Canada fall under four general heads : the show of the Central Experimental Farm at Ottawa, and of the branch stations at Nappan, in Nova Scotia ; Brandon, in Manitoba, and Indian Head, in Assiniboia. The exhibits from the branch stations—at least from Nappan and Indian Head—are collected from various farmers as well as from the experiment farms themselves. The Central Experimental Farm now has on exhibition 14 named varieties of potatoes, and 76 unnamed seedlings, the latter being unusually promising ; also several varieties of carrots, onions, beets, mangolds and parsnips. From Brandon, Manitoba, there are 29 sorts of potatoes, with other roots. Very striking potatoes in this exhibit are two local seedlings—Village Blacksmith, a medium-sized, white, very scaly tuber, and Rock, a very firm, white variety. These are judged to be valuable potatoes for Manitoba. The displays from the North-West Territory (Assiniboia) are an astonishment to most observers. The products are shown in great variety, and they are usually very large. A tuber of the Man potato on exhibition weighs four and a quarter pounds. This and other varieties exhibit the same tendency to large size which is shown in tubers from Idaho and other parts of our north-west. From the station at Indian Head alone there are 70 varieties of potatoes, while no less than ten other villages are well represented in potatoes and roots. Indian Head has a large collection of turnips, beets, carrots, with kohlrabi and other vegetables. It was a happy and most effective thought on the part of the Canadians to show these excellent products of its almost boundless north-western territory.

Nova Scotia and New Brunswick are represented by collections made by the Experimental Farm at Nappan. Nova Scotia has 8 varieties of potatoes, 3 each of turnips, beets and carrots, with some mangolds. New Brunswick is represented by products obtained from its farmers, in 21 varieties of potatoes, with onions and various roots.

One of the most interesting of the Canadian displays is a collection from the Department of Indian Affairs, showing 10 varieties of potatoes, various carrots, turnips, onions from seeds, tops and potato-onions, and mangolds, grown by Indians in reservations in Ontario. Some of them were grown by chiefs. Six hundred pounds of vegetables were contributed by these Indians ; and there are also a dozen varieties of apples of their raising shown in the fruit-exhibit.

Altogether, the visitor is impressed with the adaptability of the Canadian provinces to the growing of potatoes and roots, both for human food and for the support of animals."

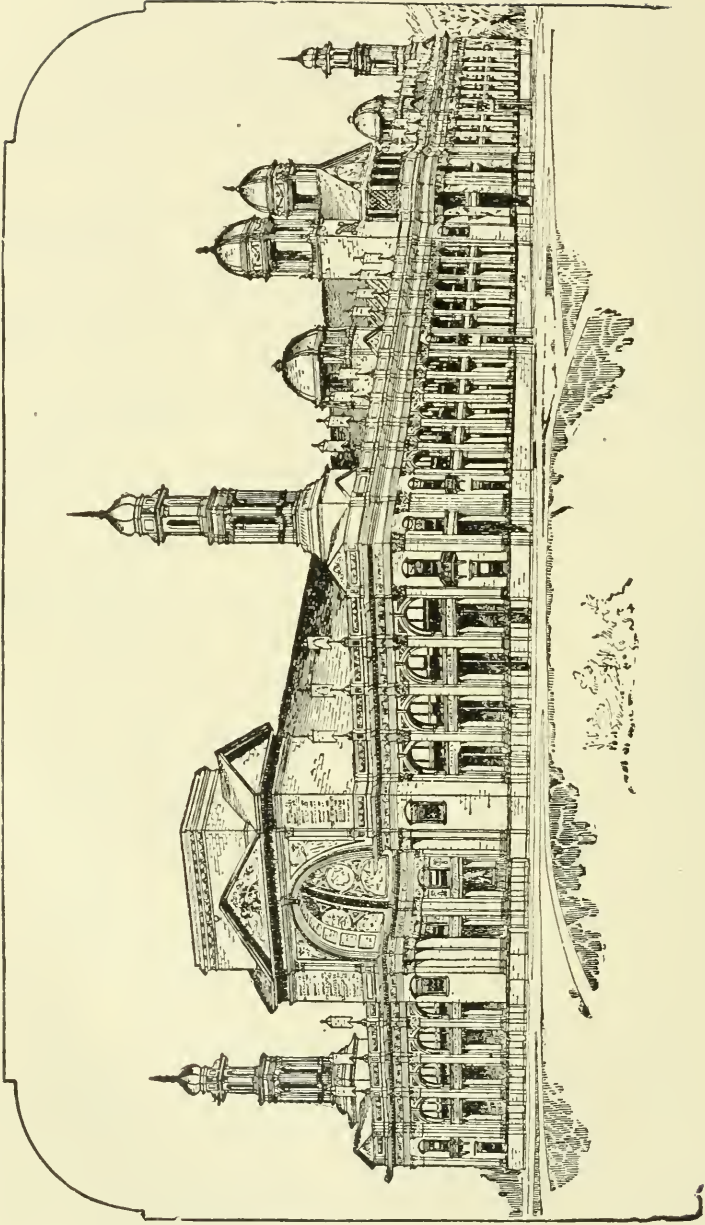


FIG. 572.—ELECTRICAL BUILDING.

Among the apples of 1892, the most prominent variety shown by the States of Idaho, Washington and Oregon, is the Ben Davis; and no wonder, so superior is this apple in size and beauty as grown under irrigation to the same apple as grown in Canada. Even its insipidity of flavor is less apparent than it is with the same apple grown with us. Surely the advantages of irrigation are wonderful.

The Willow Twig, an apple little grown in Canada, which has a peculiar nutty flavor, succeeds wonderfully in Delta County, Colorado, and in the State of Iowa. Mr. C. L. Watrons, of Iowa, showed magnificent samples, which had been kept over in cold storage since 1891, a testimony to the good keeping quality of this variety.

July 1st.—Dominion Day was heartily celebrated by Canadians at the World's Fair. The Military Band and Guard from England, which has been giving tournaments in the city, escorted us in a large procession to Festival Hall, where the Union Jack was prominent, and patriotic speeches in both English and French aroused the utmost enthusiasm; interspersed with patriotic airs rendered by the band in the most artistic style. Mayor Harrison, of Chicago, overstepped the line of courtesy in pointing out the future of Canada as a part of the glorious American Republic; but Commissioner Larke's reply was most appropriate. He pictured Miss Canada as being wooed by Mayor Harrison, but declining to be won, and saying significantly for his comfort that "she would be a sister to him." Another happy hit was in answer to the Mayor's point that the destiny of two such nations lying side by side with similar interests was eventual union, Mr. Larke reminded him of the axiom that "parallels never meet."

Altogether, the celebration was a happy one, and will be long remembered by all present.

July 4th.—This great national holiday of the United States quickly succeeds our own, and differs little from a similar celebration at home. The "small boy's" fire-crackers sound just as irksome, and the larger bombs are just as startling as they are in Toronto or Hamilton. The evening fireworks were magnificent, especially the set pieces such as showed "President Cleveland and the Stars and Stripes." The Canadian Courts are all well decorated with Union Jacks and with Canadian flags, but on this day Miss Canada paid her respects to Uncle Sam by investing about \$200 in Stars and Stripes, and hoisting one such flag in each Court in the most conspicuous spot possible. This was a proof of our friendly spirit toward the American nation, and the courtesy was heartily appreciated and most favorably commented upon in the Chicago dailies.

The grand illuminations all seem to pale in comparison with the display in the Electrical Building, where may be seen the most novel and brilliant exhibit in the whole Exposition. The building itself is very fine, and cost about \$375,000, but the exhibits are marvellous. Cooking by electricity, lightning used as a plaything, electric motors, the telantograph, which must soon displace the telegraph, and brilliant displays of every kind, all tend to make this building one of the most delightful on the grounds. Who knows but that very soon we may not only do all our cooking by electricity, but all our plowing and drawing of heavy loads, thus saving the heavy expenses of keeping horses.

THE PEACH TREE BORER.

(Ægeria exitiosa.)



THESE gay moths (fig. 573), resembling wasps in appearance, come forth in July, August and September. I have hatched them in all of these months. They soon pair and then the egg-laying commences. The eggs are laid just at the base of the trunk. Soon after the whitish larvæ will be found, as they have commenced boring in the bark and sapwood just beneath the surface of the ground. Wherever they work, just beneath the earth will be found a sticky mass formed of the oozing gum and their chip-dust, which gives quick indication of their presence. These larvæ are found of varying sizes, which is easily understood from the fact of the length of time at which the moths come forth, from July to September. These larvæ will be found at work till about the first week of July, when we will often only find pupæ encased in a rough cocoon of chip-dust, earth and gum. By seeking out these oval cocoons anyone may, by keeping them in earth in a close box, rear the beautiful moths. The female(1, Fig. 573) is larger, darker than the male, and has a bright, yellow band across her abdomen. The male (2, Fig. 573) expands about an inch. In hatching a large number I have found that the ratio of males to females is about one to five, which would seem to indicate that polygamy reigned among insects. In pushing out of their cocoon, the pupa-skin is always left projecting from the opening. Perhaps the split cocoon serves them as a vice, thus aiding them to gain their freedom.

This is a most destructive insect when allowed to increase for a few years without molestation, and their multiplication should be prevented by all possible means. The eggs are deposited in the summer on the base of the trunk near the collar, where the bark is soft. There they are hatched, and bore their way under the bark of the tree, either in the stem or roots, or both, producing an effusion of gum.



FIG. 573.—1, FEMALE ; 2, MALE.

REMEDY 1, *Mounding*.—Bank up the soil firmly around the stem eight to twelve inches directly after blooming, taking it away in the middle of the following August, and trace the grub through its holes in the tree and kill it; then place a shovelful or two of wood ashes around the base. Wood ashes or slaked lime may be applied every spring, and at the end of summer may be scattered about the tree, either of these articles forming an excellent dressing for the peach.

Judge J. G. Ramsdell, so well and favorably known as a pomologist, tells

me of a new method of mounding, which is without the usual objections, and he claims a great saving of labor. He hooks tins around the trees—the same used to keep the cut worm at bay. He fills in between them and the tree with earth. This is done about the first week of July, after the cut worms have ceased work, and in time for the first eggs of the borer. In September he removes the tins and destroys the caterpillars, which can be done with far less labor than when we have to dig them from beneath the earth at its usual level.

REMEDY 2, *Digging out the Borer*.—The best method, and, I believe, a cheaper than the above, is to dig them out in the fall, the last of September. The oozing gum leads to their quick detection, when they can be easily crushed. Our best pomologists, for fear some wee depredators escaped detection, go over the trees again in May. This is not a tedious process and should never be neglected. I have seen whole orchards languishing, and many trees killed outright, by neglect to destroy these hateful borers. Such neglect in case of a fruit so rare, so delicious, and so profitable wherever it can be successfully grown, is unvenial.

REMEDY 3.—Secretary Bateham, of Ohio, tells me that washing the base of the trees with the following compound is an effectual preventive, and he thinks the cheapest: Thin one quart of soft soap with water, heat this to nearly the boiling temperature, then add one ounce carbolic acid in crystallized form. When cool, add ten times its bulk of water. Apply in July with brush to the base of the tree. This prevents egg-laying.—P. C. LEWIS.

ESTIMATE OF CROPS IN ONTARIO.

The estimate below was published by an American exchange, under date of the 15th of July.

COUNTY.	Cherries.	Blackberries.	Red Ra-berries.	Blackcaps.	Huckleberries.	Blueberries.	Cranberries.	Currants.	Gooseberries.	Plums.	Early Apples.	Late Apples.	Peaches.	Early Pears.	Late Pears.	Quinces.	Grape.	Apricots.	Oranges.	Lemons.	Melons.	Tomatoes.	Chestnuts.	Hazelnuts.	Walnuts.	Shipped per cent.	Outlook.		
Brant	50	93	95	89	...	...	...	94	88	88	56	40	75	51	67	...	109	...	...	...	75	100	...	...	...	...	56	Fair
E. Northumb'd	25	100	100	100	...	...	...	75	...	50	75	25	...	50	25	...	75	...	...	...	...	...	...	...	...	...	90	Poor
Halton	45	100	15	101	...	...	...	84	80	90	77	29	75	37	15	...	100	50	...	...	100	100	...	...	...	...	99	Fair
Hastings	100	100	100	100	...	...	...	100	100	...	80	80	...	...	...	...	...	...	...	...	...	...	...	...	...	...	90	Poor
Huron	50	...	80	80	...	...	...	50	75	70	60	50	...	60	60	...	60	...	...	...	...	80	...	...	...	...	30	Fair
Lincoln	60	90	90	90	...	...	...	80	87	64	75	40	70	75	75	60	30	70	...	...	70	70	...	...	...	...	77	Good
Muskoka	100	100	...	100	100	50	...	50	50	77	Good
Perth	75	...	90	40	...	...	...	80	90	80	60	50	...	50	65	...	...	...	...	...	...	...	...	...	...	...	50	Good
Peterboro'	...	100	100	100	100	...	...	100	100	100	75	75	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25	Fair
Prince Edward.	87	90	95	90	...	100	...	83	80	85	50	83	...	50	62	...	90	...	...	...	70	95	...	...	...	...	83	Good
Victoria	75	100	100	100	100	60	80	40	...	10	20	...	100	100	Fair
Wellington	10	25	90	...	95	...	...	50	50	10	15	15	...	5	25	...	25	...	...	...	100	100	...	...	...	...	...	Poor
Wentworth	50	85	90	...	...	...	...	90	100	75	100	25	100	50	30	100	75	...	...	...	...	...	...	...	...	...	75	Fair
York	77	90	90	90	...	...	87	87	75	75	75	65	90	77	77	80	88	...	...	...	...	...	100	...	...	...	75	Fair
Average.....	49	87	86	89	98	100	50	80	75	71	66	48	82	49	51	89	80	60	...	...	88	92	...	...	100	67	.....	

❖ The Garden and Lawn. ❖

LAYING OUT HOME GROUNDS.



HIS higher practice of the profession of landscape gardening should begin with the selection of the site upon which the home is to be located, as the landscape gardener, in consultation with his client, not only learns his wishes concerning the form and location of the house, but also discovers his tastes and requirements respecting the whole estate, and can wisely determine the amount of land necessary and the respective advantages and disadvantages of different sites in the same neighborhood, thus by his trained judgment saving his client from much needless expense—and often disappointment—in the completed place. In most towns the pieces of land combining the greatest possibilities for the making of an original, interesting and often unique place are very likely the longest neglected, because their picturesque natural advantages, or irregular surface, will not lend themselves readily to the smoothing out process which most land undergoes under treatment by the real estate agent and land surveyor and the unskilled professor of landscape gardening. Many such sites are to be found within easy reach of railway stations and at low valuation.

In the selection of land healthfulness should be one of the first considerations. Well drained land, or that which can be well drained, preferably a porous, sandy or gravelly soil, should be chosen. Good sanitary conditions in the neighborhood are as important as good drainage. If in a thickly settled district, the ground may be saturated from leaking cess-pools. Rubbish collections, barnyards, sink-drains or cess pools should be investigated, and the purity of the water supply should be assured. A pleasing outlook is a desirable feature. A steep slope toward or away from the road is expensive to build upon, but may be slightly and cool in the summer, and warm in the winter if on the right side of the hill. A gentle slope either toward or from the road may, if properly managed, prove very eligible. Ledges, boulders, well-grown native trees or groups of them give character to an estate.

The success of a new place depends much upon the cordial co-operation of the house architect with the landscape architect ; much depends upon the proper fitting of the house to the grounds—in character, outline and elevation—by the former, and proper arrangement of roads, walks and vegetation with reference to the house, by the latter.

The character of the place having been determined, the location of the house and arrangement of the grounds are next to be considered. The house will be located with reference to views, exposure, the sub-division of the grounds, the surrounding buildings and the approaches, all which points should be studied before the house site can be determined.

Roads and walks are essential to secure convenient and comfortable access to the buildings and grounds, and are more important than fine views from the windows ; but they are not in themselves objects of beauty, and should be limited to the real needs of the place, and be inconspicuously located. They should be thoroughly constructed, with easy grades—about one foot in fifteen feet in roads, and one foot in ten in walks, and graceful curves, if any are necessary. Next the sub divisions of the distinctively home grounds must be considered. These are the lawn, the broadest piece of unbroken surface near the house ; the flat area for tennis and other games ; the flower garden and the vegetable garden, as well as the yards and ground for stable or other accessory buildings. These requirements would include the whole of a village lot, but the principle would apply to home grounds upon a farm or a large estate in the country. On the more extended domain there should be a distinct division between these home grounds, which should be nicely kept and the larger areas devoted to other purposes.

The house location having been determined and its construction commenced the next step is the grading of the grounds. This is an important matter, especially on that part which is not to be planted. A graceful and natural fitting of new surfaces to the old requires some skill. A gently undulating surface and long, gentle slopes are more natural, more pleasing and more easily cared for than short, steep slopes. The latter are seldom seen in nature. Her process is to gradually wear off sharp upper edges and fill it in at the abrupt base, thus in time producing what is called an O. G. curve ; this is what should be imitated in lawn grading. A formal terrace should be distinctly formal, with angles sharply defined and maintained. Very steep, abrupt slopes are sometimes necessary. They can be filled, and held in place with heavy natural boulders, and planted to imitate a similar slope in nature. It is desirable to secure a shallow, turf gutter at the base of a bank sloping toward the road, to prevent the water from flowing on the gravel surface. This water can be intercepted by occasional catch-basins, and carried across the road (if on a side hill) or disposed of by drains.

Where a permanently vigorous growth of plants or constantly fine turf is required, deep trenching and liberal fertilizing are essential. But masses of some native shrubs—barberry, etc.—do not need this treatment.

Drainage and disposal of house waste must be provided for in the original plans, and the work of construction of the place. The tight cesspool—periodically emptied—is the safer method of caring for wastes, in the absence of a public sewer ; but the drainage, even if it is necessary to carry them through an adjoining estate, should be put in for the disposal of surface water.

Planting, while an important part of the work of the landscape architect, is still only the dress and ornament of a place. There are many thousands of species and varieties of hardy plants in common cultivation in the North-eastern

United States. There are four or five thousand species and varieties of woody plants alone offered in American and foreign catalogues,* of which three-fourths would probably survive the ordinary winters here in Boston and vicinity. Of these a very large number, known by the landscape architect as valuable for ornamental planting will enable him to produce results and secure effects which cannot possibly be done by a person of more limited knowledge in this direction. While the great variety gives opportunities to produce a much longer season of flower and more interesting winter effects, it is safer to select a few reliably vigorous varieties having good healthy foliage through the season (more of them natives than exotics,) and let them predominate in the planting ; then add to the interest—where it comes under more frequent observation—by using a selection of native, exotic or garden forms of woody plants, or hardy perennials. A low border plantation of flowering dogwood, with a few of its red flowered variety, the paniced dogwood, clethra and wild rose—all natives—would give a better result than the same number of exotic varieties, or a many-times increased number of other varieties. If desirable to have more interesting details, large masses of loose-strife, golden-rods, asters, perennial sunflowers and the like would give it, without detracting from the effect of the woody plants.

The use of colored foliage in a lawn planted in a natural way, seldom produce a pleasing result, but we should not say that it cannot be used ; still it is more properly a feature of the garden. There is more or less fashion displayed in the planting of a lawn. It would be better if the vagaries of fashion were confined to the garden, and that the lawn should partake more of a bit of landscape, or a grassy glade in the midst of shrubbery or wood. It should have a fringing of green varying in texture, color, and outline, with a frequent glow and constant sparkle of flowers with groups and fine individuals breaking out from the bordering masses, but not interrupting the open centre of the lawn, excepting to increase the appearance of distance. You would expect to use a larger assortment in a lawn than in a distant border plantation, more exotics and more garden varieties, having a variation in flower, but certain reliable varieties should predominate and establish a character for the planting in keeping with the character of the place.

The position of groups on the lawn will be governed by the views and the topography of the ground. In general, elevation will be planted high and depressions low, or not at all, in order to increase their apparent height or depth. The planting would be arranged so that a slope would be away from it rather than toward it. A border plantation having an irregular edge with points and depressions gives more variety, more effects of light and shade, than a straight edge. In selecting plants, take those which will not attain a size too great for their positions. A border plantation should be an irregular mass of foliage rather than a series of individuals. Thick planting will best serve to produce this result by causing a quicker growth, and natural, graceful outline, with less care and culti-

vation. Judicious trimming each year will secure better results than Nature's own work; but be careful not to make a broom-headed shrubbery. If the ground has been thoroughly prepared in the beginning and a good top-dressing given every winter, but little further cultivation will be required, after the plants have grown sufficiently to cover the ground.

Shrubs and small growing trees should predominate in a small place. Large growing trees thus placed, will in time become obstructions. Broad-leaved evergreens, while more expansive are, as a rule, better and more permanent for a winter effect on a small place than coniferous trees. The best plants are those nursery grown. Wild plants of certain varieties, if properly handled, will transplant well and produce good effect; but these require experienced skill, else the result may prove unsatisfactory.

The employment of a trained gardener upon a small or medium-sized place is not practicable. Men offering themselves as gardeners at day laborer's wages are more likely to bring discredit than credit to the profession that requires for success, intelligence, enthusiasm and a true love of the work. A good gardener loves his plants and flowers next to his family, and is as impatient of neglect and bad treatment of the one as of the other. Such a man soon finds and stays in a good position with fair pay. I believe it is safe to say that the majority of those who call themselves gardeners, but who are drifting about, and ready to except a position at any price, are not safe men to have on a place, but can and doubtless would do more damage to it than the proprietor could. For this reason it is better for the owner to employ a willing and industrious man who claims no knowledge of gardening, but will do as he is told and give him directions how to do the work. The errors then made will serve to increase the knowledge and interest of the proprietor and also his man.

In this writing I have had in view especially small or medium-sized home-places. I have hardly touched upon the service a landscape architect may be to the real-estate owner in planning his property to avoid steep grades and heavy cuts and fills; to preserve and develop the natural features; in so arranging the lots that each may be accessible and have as nearly equal advantages as possible; and in planting, to utilize all the material on the grounds; to the village, town or city in designing public recreation grounds; advising in regard to street tree-planting or roadside improvement; to cemeteries in designing the grounds and their decorations; to public amusement resorts in providing a convenient and pleasing arrangement of buildings and grounds laid out in a manner to educate and elevate rather than to degrade public taste. I believe the time is not far distant when the man who is to build a new place, or remodel an old one and who wishes to secure the best and most economical result, will call in the landscape architect to help him plan the ground, as he now calls in the building architect to help him plan the building.—W. H. MANNING, before Mass. Hort. Society.

ABUTILON.



AMONG the most satisfactory house plants we have is the Abutilon, being of good, free growth and bloom, pretty foliage, seldom troubled with insects, handsome flowers, and of the easiest culture ; it ranks next to the geranium for the window garden. It likes a light, loamy soil, not too sandy nor too stiff ; turfy matter with good garden loam is the best. Of course, good drainage is indispensable with this, as with all other plants. Watering should be thoroughly done, giving enough each time to wet the ball of

earth entirely, but do not water too often, so that the soil will be kept in a wet, soggy condition, as soil that is not allowed to dry out will become sour, and so greatly injure the plant. No plant looks well when the foliage is covered with dust, as the leaves are the lungs of the plant, and should be clean and free from dust, by frequent washings and syringings. The blossoms are bell-shaped, pendulous, and grow on long, slender stalks, very graceful in appearance. The colors vary, from red, yellow, reddish-orange, rose, cream, and white. Some varieties are more abundant bloomers than others, yet all are quite satisfactory in that respect, and bloom well in summer or winter. Because of the resemblance of the leaves to the well-known maple leaf, the abutilon is often called the flowering-maple ; from the shape of the blossoms it is also called fairy bell. Two and three-year old plants make fine large specimens, from five to six feet high, forming a beautiful object when dotted all over with the long, pendulous blooms, amidst the clear, shining, green foliage, which always is beautiful, even without the blossoms. If short, bushy plants are wanted, pinch of the top when it has grown as high as desired. The laterals will then start, and these in turn should be pinched back also, keeping the eye open with regard to the good shape of the plant. If the plant is preferred in the form of a small tree, allow but one stalk to grow, and no side branches, until it is three feet in height ; then pinch out the top of this, when the side branches will grow, until there are as many of them as desired, being careful, however, to preserve a graceful shape to the small tree, and allowing no laterals to grow below two feet from the bottom. Among the best varieties we find :

Beule de Neige, pure white, comparatively dwarf, but strong in growth, and a free bloomer.

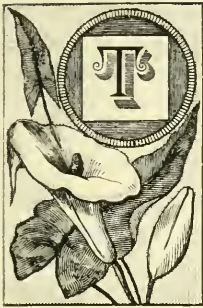
Eclipse, scarlet flowers in a yellow calyx ; a trailing variety.

Hibiscus, canary color, marked with violet ; flowers resembling a Hibiscus.

Thompsonii plena, the only double variety, having reddish-orange flowers with green and gold foliage.

In keeping abutilons over for winter bloom it is best to put them in a cool, shady place during the heat of the summer, not allowing them to bloom any, as they will then have more strength laid up for winter blooming.—GRETA BEVERLY, in Orchard and Garden.

THE VIRGINIA CREEPER.



THE Virginia creeper, *Ampelopsis quinquefolia*, so brilliantly beautiful in woods and gardens until late in autumn, is used for adornment in a variety of ways. Indeed, it is a question whether this hardy, rampant-growing vine cannot in most cases be employed with finer effect away from buildings than against them. There are objections to its use for covering painted wooden houses or verandas, in its inviting decay and refusing to cling readily; while, if employed on brick and stone residences, it invites the English sparrow in a way not tending to increase our esteem for that cheerful little town-bird. For covering rough or backyard buildings, such as barns, ice-houses and sties, as well as walls and fences, it is most admirable, for here various objections that may be raised to its use about the house or veranda can readily be overlooked.

The Virginia creeper is best known as a beautiful building-drapeer, but we illustrate some other uses for which it is finely adapted. Fig. 574 shows a simple, vine-covered column, formed by planting ampelopsis at the base of a dead tree stump. If such a stump is lacking, any section of tree-trunk that is covered with bark for the vine's roots to strike into will answer the purpose, if set in the earth about four feet deep. The advantage of the stump is, that until their decay its roots brace it erectly, and the erectness of such a column has much to do with its beauty.

The soil about the roots of the stump must be made very rich with old manure, using as much as a bushel for each four vines set, and incorporating it well with the earth. From three to five roots of ampelopsis should be set at equal distances about the base of the stump. Strong plants, set in such soil in spring, should cover the stump to the height of fifteen feet the first season. One special merit of this vine is that it produces fine effects in a very short time. A column such as is illustrated imparts a stately, dignified effect to a garden, and to produce it is one of the easiest exploits in gardening.

Fig. 575 shows the use of Virginia creeper for festooning trees on the lawn. Festoons of this character are always pleasing, and are easily produced where there are clear tree-trunks of some height, say ten feet or upwards, and not more than forty feet apart. It is rarely that we see such attempts at introducing garlands of green in garden ornamentation, but we can assure our readers of



FIG. 574.—PILLAR VIRGINIA CREEPER ON LAWN.

their beauty, both from an individual and a landscape point of view. Still the excessive use of the festoon must be guarded against. In planting the Virginia creeper for this purpose, the same course may be pursued as in planting for a column, excepting that from one to three strong vines, set at each tree, in well-

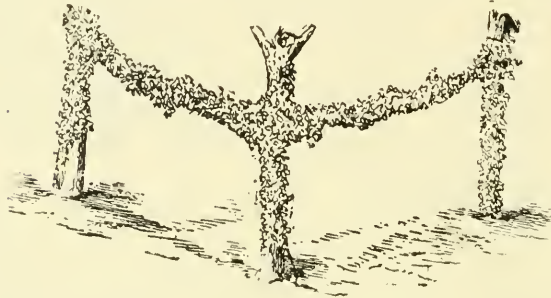


FIG. 575.—FESTOONS OF VIRGINIA CREEPER BETWEEN TREES.

manured soil, will suffice. The support of the garlands between the trees should be heavy galvanized wire. This should not encircle the trees, but be attached to a band of iron so formed that it can expand from one side, adapting itself to the growth of the tree.

One of the finest uses to which the Virginia creeper can be put is the formation of screens in a garden where these are needed. Fig. 576 shows a screen separating the backyard and stable from the street, in the case of a home situated on a street corner, the view being from the side street. The opening through the screen in the form of an archway represents the approach to the stable. For the support of the vines forming the screen, nothing is better than coarse galvanized-wire netting, the kind in extensive use for fine fence-making. If this material is not convenient, then ordinary galvanized fence-wire, extended about five inches apart horizontally from post to post, with some perpendicular wires reaching from bottom to top, a foot or more apart, and attached to the cross ones, will answer. The posts of such a screen should be not more than eight feet apart, while six feet apart would be better. Assuming that the screen need be so high as twelve or fifteen feet, if posts of such a length above ground are not readily procurable, then scantling can be spiked or bolted against ordinary posts, to give the proper height. When finished, the framework should have a scantling extending lengthwise along the top of the uprights to secure shapeliness in the upper part of the screen.

Vines that are to cover the screen should be set

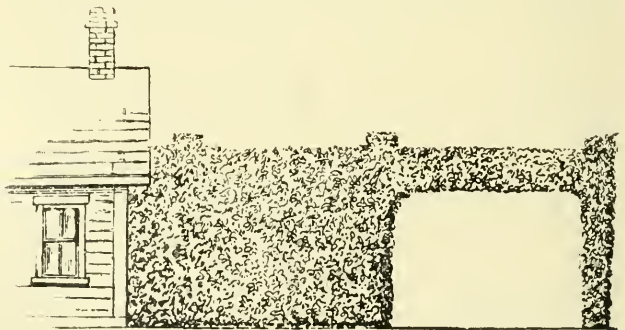


FIG. 576.—SCREEN AND ARCHWAY OF VIRGINIA CREEPER.

about two feet apart, in soil enriched as for the column, and in a few seasons they will form a wall of green twelve feet in height. Such a screen will present a lively, picturesque appearance for many years, with almost no care beyond that involved in getting it started. The soil about the roots of the plants should be kept clear of obnoxious growth, a proper course being to have the grass of the lawn come up quite against the vines. If the hose be turned upon the plants frequently during seasons of drouth, their growth would be much finer and stronger.

Screens or dividing lines of Virginia creeper can be made of any height or breadth. Their use in place of hedges in gardens is well worthy of consideration. They develop much more quickly, and are cared for with less trouble than hedges. They are also devoid of the air of stiffness which, to the minds of many, is a great objection to close-clipped hedges.

SOME VARIETIES OF CALIFORNIA LILIES.



SEVERAL different varieties of wild lilies flourish in California, all of which are extremely beautiful, and are worthy of more extended cultivation. Most all the varieties of California lilies occupy high lands and mountain meadows of the upper Sierras, and are extremely hardy and vigorous growers. The varieties with which I am acquainted, are as follows :—Sierra White lily, undoubtedly one of the most beautiful lilies known ; it has very large blossoms, which are a dazzling, snowy white, and are spiced with an intense, nameless fragrance. This variety grows very high, and many flowers are in bloom at one time, making it a surpassingly beautiful plant. Sierra Red lily, is a beautiful, glowing caffery, red in color, blossoms very large, and exceedingly attractive. Common Tiger lily is also quite a showy and attractive plant, blossoms large, orange, yellow, interspersed with reddish-black spots. Dwarf Tiger lily is a *fac-simile* of the common tiger lily, except that the blossoms are about one-tenth the size of the common tiger lily. Bush Lily of the Valley, or Andromedia, another exceedingly attractive plant, with glistening and sparkling dark green leaves, and with flowers exactly resembling those of the lily of the valley. It is a very profuse and long-season bloomer, and rarely attains a height of four feet ; this plant is an evergreen. Marijasa lilies, or tulips, are extremely showy, and brilliant flowers, of all shades and blendings, of the colors of red, white, yellow, black, orange, etc. These plants are so distinctly and delicately penciled, that they are rendered very conspicuous and showy among thousands of other plants ; there are varieties with large and small flowers ; some varieties are upright bloomers, and others have bell-shaped flowers. These plants grow only about fifteen inches in height.

Grizzly Flats, Cal.

S. L. WATKINS.

THE COMMON BIRCH.

(BETULA ALBA.)



HIS is met with in all the countries of Europe, and in the north of this continent, as well as in Northern Asia and America, it forms extensive forests. In Sweden, Norway and Lapland it springs up in places where fir, pine and beech forests have been destroyed by fire. The size and appearance of the birch vary considerably, according to the nature of the locality in which it grows. Upon lofty mountains it becomes comparatively small and shrub-like, thriving best upon slopes and plains. Its usual height is from forty to fifty feet, but it frequently attains seventy feet. The bark of young trees is of reddish-brown hue, but with increasing age, it whitens until it assumes a beautiful silvery color; the larger branches also become white, but the small twigs always retain their original hue. The birch throws off the outer layers of its bark annually, and thus it generally presents a smooth and shiny appearance. Upon very old trees, however, the bark is sometimes burst and rent in all directions. The branches are slender, and at their extremities divided into numerous small twigs and rods. The leaves droop downwards, and give a peculiar appearance to the tree, by which it can readily be distinguished from its forest companions.

The timber of the birch is white, close-grained, tough, light and pliant. It makes excellent firewood and yields superior charcoal for smelting. The *sabots*, or coarse shoes worn by the peasantry in some parts of France, are made from the wood of the birch; in Germany, spokes, ladder beams, axe-handles and cattle-yokes are made from it; and in Great Britain it is used for turnery, hoops and fish-barrels. Almost every part of the tree is utilized. Brooms and switches are made from the small twigs and rods.

In Sweden and Norway the leaves are often gathered while green, and given to sheep and goats in place of fodder. Prepared with alum, they yield an excellent dye, which imparts a beautiful permanent yellow color to linen and woollen materials. The outer bark of the tree is very tough, and contains valuable balsamic and antiseptic qualities. In Sweden, Norway and Finland the bark is used instead of slates for roofing houses. Along the Volga and in some parts of North America, canoes are constructed from the bark, and fishermen make their shoes of it. In Siberia and Lapland it is employed in the manufacture of boxes, baskets, hats, ropes, and drinking vessels. In Russia a bright reddish brown oil is distilled from the bark of old trees; it is used in the preparation of Russian leather, to which it imparts a peculiar odor. In Poland the inner bark is highly esteemed by tanners. When holes are bored in the trunk or branches, in spring, before the leaves begin to expand, the sap

readily flows out. This liquid is clear as water, and has a pleasant, though somewhat acid taste. Some trees yield a large quantity of sap, and as much as 10lb. of it may be obtained at once, especially if a bright sunny day follows upon a cold night. The sap contains a large amount of saccharine matter, and, when fresh, forms an agreeable beverage. In a fermented state it is known as birch wine.

The common birch is propagated by seeds, layers, suckers, and cuttings. The seeds do not retain the power of germinating for more than one season. Sandy wastes may be reclaimed by being planted with birches; but at the time of planting, it should always be remembered that such principal masses or trees as are to remain permanently must be arranged first, and their future size and character taken into consideration, so that the effect hereafter may not be left to chance.—The Garden.

PEAR TREES IN GRASS.—The editor of the Country Gentleman says:—Rules are often laid down for and against the practice of allowing pear trees to grow in grass, without any reference to the richness of the land. If the soil is thin and poor, the addition of a crop of grass will check the growth of the trees, give them a stunted character, and they will be likely to bear small and knotty fruit. On a very rich soil they may still do well and give handsome specimens, if properly treated in other respects. Trees in grass often do well if copiously top-dressed. Pear trees which assume a handsome and symmetrical form, are very suitable for the more remote parts of lawns, provided the grass is kept short and like a green carpet, and provided the whole surface receives a good annual top-dressing. The effect will be very different if the grass is allowed to grow rank and rampant, and to receive no manure on poor land.

THE peach crop, on June 1 of this year, as compared with the same date of the two preceding years in the principal peach producing States, showed an average condition this year of 85 as compared with 72 a year ago and 75½, on June 1, 1891. The largest increases are in New Jersey, Delaware, Maryland, Ohio and Virginia, while the condition this year is lower in Michigan, Georgia and California. The figures are as follows:

STATES.	1891.	1892.	1893.
New Jersey.....	94	85	104
Delaware.....	72	65	93
Maryland.....	90	55	93
Virginia.....	73	50	63
Georgia.....	50	89	82
Ohio.....	62	55	74
Michigan.....	60	95	86
California.....	95	85	83
Average.....	72½	72	85

❖ The Kitchen Garden. ❖

VEGETABLE NOVELTIES FOR 1893.



THE first of these specialties which is worthy of our attention, is the Buckeye State Tomato. It surpasses all others in size, solidity and quality, has a smooth surface, and is of a deeper red than the average tomato. It being so large a fruit would naturally lead one to believe that it is a shy bearer. This, however, is not true, as the fruit is even more abundant than on the standard varieties now in cultivation, and we would urge all who are interested in the growing of this fruit, to give the Buckeye state a trial.

Then we also have Livingston's Dwarf Tomato, which very much resembles the champion dwarf in both size and color, but excels it by far in flavor, productiveness and quality. It is very desirable for forcing under glass and growing outside for early marketing.

The Tip Top Melon, which after a thorough test has been pronounced the best muskmelon ever introduced, was first found by a gentleman in the east, who discovered it growing in a patch of variety melons. He cultivated it for a number of years, and when later he came to Ohio, he brought with him some of the valuable seed. For several years it has been grown exclusively for a fancy vegetable house, and has always been sold for twice the price of other melons; but we have been fortunate enough to secure some of this seed, so that every gardener may now have a corner of this most excellent melon. While its outside appearance is not as attractive as that of most others, yet it excels all in flavor and quality, and is eatable to the very outside coating.

Livingston's New Silver Coin Sweet Corn, is fully as early as Stowel's Evergreen, and is the most profitable corn the canner can grow. Its kernels are broad, deep and of a pearly white, the ears being larger than the ordinary corn, and growing two or three on a stalk. Those who like to eat corn without gnawing the cob, will hail the New Silver Coin with delight.

The Edible Podded Melting Sugar Pea is ahead of all other peas, not only in the size of pod and prolific bearing, but also in its delicious flavor. It grows five feet high, bears large, broad, light green pods, which are so brittle that they snap without any strings. Last season we were compelled to return many orders for this splendid pea, but we now have a fine stock in store with which we will be able to supply all orders intrusted to us.

Bush Lima Beans are something which have long been desired by growers. The bushes grow from 18 to 20 inches high and are always erect, yet branching so vigorously that each plant develops into a circular bush from 2 to 3 feet in diameter. Each bush yields from 50 to 200 of the handsome large pods, well filled with the largest of beans, which are precisely like the large Pole Limas in size and flavor and are of incalculable value for the fact, that now the best Lima

Beans can be raised the cheapest and without the expense and labor attached to the use of poles.

We offered the Turkish Watermelon for the first time last season, and when we consider all things, we do not hesitate to claim for it the first place in early market sorts. It is of a dark green color, round in shape, smooth surface, and averages about ten pounds. It is certainly of very fine quality, and owing to its fine appearance and quality will sell readily.

The Juno Pea is by far the best wrinkled Pea of its class to-day. It has a robust vine and stout straight pods which are filled from stem to tips with from seven to nine sweet, delicious dark green peas of immense size. It grows two feet high, and its season is from medium early to main crop. We are positive that it will become a standard variety.—BY W. D. LIVINGSTON, in *Journal of Columbus Horticultural Society*.

HOW TO SHIP EARLY POTATOES.

One of the great mistakes made by early shippers is that of putting in with the better stock very small potatoes. Half a bushel, or even a peck, of these little worthless things, spoil the sale of the whole barrel or package, and shippers have no idea the injury they inflict upon themselves and on the market, by gathering and shipping such objectionable stuff. The greatest care must be exercised in the gathering, handling, packing, etc—must, in fact, be handled like berries—to avoid the many bruises that very soon afterward become visible through becoming red, dark and discolored, and thus largely depreciating their market value, those not fully matured always shrinking up badly. At the early stage quality and not quantity must be considered. This is so with all early perishable stuff. The buyers of priced goods want only good stock ; the inferior they won't take at any price.

For early shipment the packages must be thoroughly ventilated, whether boxes or barrels are used, and should be well filled so as to prevent shaking while in transit. The unripe, or those not fully matured, are easily bruised and soon become so discolored as to spoil the sale of all. Many growers ship a little too soon and lose money by doing so. It is very important that potatoes should be barreled as soon as possible after they are dug, as lying in the sun heats them and causes them to rot. Avoid digging immediately after a heavy rain. All potatoes should be barreled when as dry and cool as it is possible to have them. Assort very carefully and ship nothing but the largest having them as uniform in size as possible. Use full-sized, well ventilated standard barrels, fill them to heaping and shake down thoroughly.

MANY farmers raised popcorn last year in anticipation of a large demand for the World's Fair. The result is that stocks are plenty and prices low.

❖ The Apiary ❖

AUGUST MANAGEMENT.



It is during the latter part of the honey flow, and often in August, that mistakes are made with bees that result in heavy winter losses. Those who do not observe their bees closely are extremely apt to take away honey when it should be left with the bees for winter. As a rule, with basswood or linden the honey flow is over. True, a few localities give buckwheat or golden rod and boneset honey, but these even yield in but few localities, and even then rarely, so they must not be depended on. Colonies run for comb honey are more apt to have sufficient honey in the lower storey than those run for extracted. I make a practice, as before stated, of having extra frames of honey on hand; these are reserved until I find in September that each colony has sufficient stores, when the extra frames are extracted.

A Langstroth hive, single-walled, eight frames, should weigh, without cover, 55 to 60 lbs., bees and all. The bees should, in other hives, have 25 lbs. of honey, if not, remove, as soon as the brood is hatched, the combs with least honey, and put the full combs of honey on the outside, closing in the remaining combs. Every colony should be examined, and have a fertile queen; if it has not this it should be given one or destroyed. Many waste 25 lbs. of stores on bees without a queen, and then report they do not know why their bees died; they had lots of honey and no dysentery.

R. F. HOLTERMANN.

A SELECTION OF HARDY ROSES.

Mr. W. C. Werner gives the following list of varieties of roses, assorted for color, in the journal of the Columbus Horticultural Society for March, 1893:

Crimson and Dark Red.—Alfred Colomb, Gen. Jacqueminot, Prince Camille de Rohan, Xavier Oliba, Madam Chas. Wood, Marshall P. Wilder, Marie Bauman, Ulrich Brunner.

Rose Color.—John Hopper, Paul Neyron, Victor Verdier, Caroline de Sansal, Magna Charta.

Pink and Light Rose.—La France, Anna de Diesbach, Silver Queen, Baroness de Rothschild, Mrs. J. H. Laing.

White.—Coquettes des Alpes, Coquette des Blanches, Madam Alfred de Rougement.

PRODUCE well put up is half sold because the buyer will be quickly tempted to purchase what looks neat, clean and attractive.

MR. R. F. HOLTERMANN, THE APIARIST.



WE have the pleasure of introducing to our readers this month the face of an enthusiast in bee-keeping; Mr. R. F. Holtermann, of Brantford, who has been contributing to these pages so much valuable matter in the apiary department. He first appeared before our Association at our meeting in Brantford, in December, 1892, and read a very interesting paper on "Bee-keeping and Fruit-growing as a United Industry," which appears in our last report on page 34. In it he shows that bee-keeping, if intelligently conducted, is profitable; but even if not directly profitable to the fruit-grower, it is indirectly so, by reason of the work done by the bees in the fertilization of the blossoms.

Richard Ferdinand Holtermann was born in Hamburg, Germany, in 1860. His boyhood was spent in the County of Renfrew, and his education was acquired at the Ottawa Collegiate Institute, Upper Canada College, Day's Commercial College, and the Ontario Agricultural College, Guelph. His knowledge of practical bee-keeping was gained by two years with Mr. D. A. Jones at Beeton, who is the Bee King of Canada.

In 1882, Mr. Holtermann was made Secretary of the Ontario Bee-Keepers' Association, and in his representative capacity is a frequent attendant upon the meetings of the various Convention of bee-keepers in the neighboring Republic. He has also held various other offices as Secretary of the Ontario Experimental Union, President of the same, President of the Brant Bee-Keepers' Association, Lecturer at the Farmers' Institute, besides being an active member of various other educational societies.

Mr. Holtermann is not without experience in fruit growing, having been one of the first to attempt growing apples and pears in the County of Renfrew. His venture was not very successful, owing to the selection of unsuitable varieties. Since that time, thanks to our Association, certain varieties have been proved hardy enough to be planted in that district. He is a warm friend of the fruit grower, as is evidenced by the tone of his recent

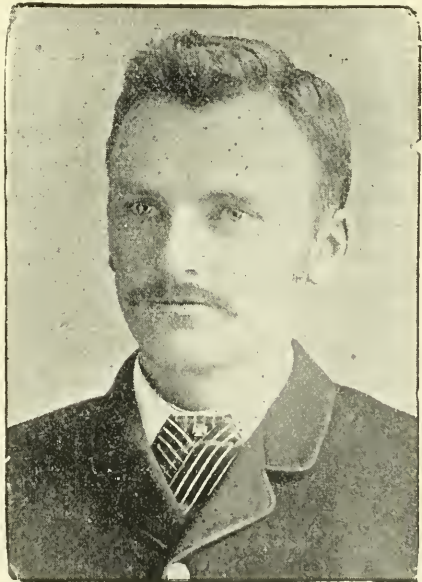


FIG. 577.—R. F. HOLTERMANN.

contributions to this journal. He often says that less cake and pastry and more fruit consumed, would result in a healthier race of people. For himself, he says there are many things he cannot afford, and, among them, he cannot afford to lay by money which should be spent in purchasing for his family such health-giving food as fruit and honey; and he thinks farmers should grow fruit more abundantly for their own table. Once a day honey, and three times fruit is a wholesome addition to one's daily bill of fare.

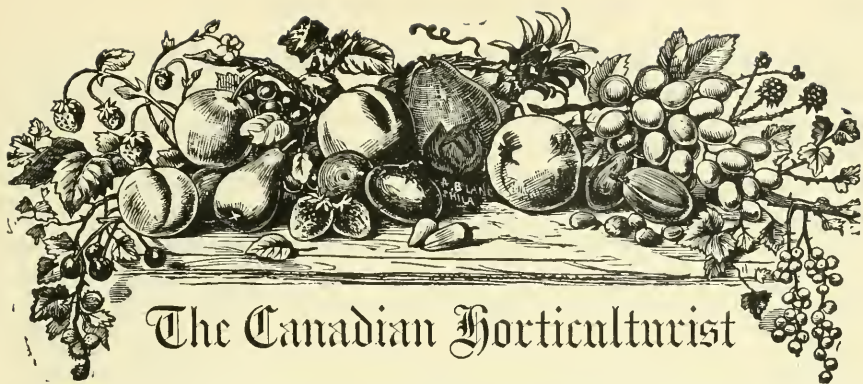
We wish our young and enthusiastic friend much success in life.

THE APPLE CROP OF NOVA SCOTIA.

The reports regarding the apple orchards show great local differences in the effect of the dry weather. The June crop has been somewhat serious in the region of shallow and light soils; but broadly, the outlook must thus far be considered as fairly good. Gravensteins in many orchards have set well, and the same is true of Baldwins, but many of the varieties which, in good years form no inconsiderable part of our shipment, are apparently below the average. Indeed it is estimated in some quarters that the Gravensteins will probably constitute one-half the total crop of the present season. It is to be remembered, however, that at this time of year estimates based on any but the most careful observations are likely to be under, rather than over, the mark, and the fact that almost no orchards are reported as disastrously barren of fruit is in itself an encouraging sign.—The Acadian Orchardist.

He Was a Little Dull.—A Penobscot County farmer, speaking of a former hired man in his employ, remarked quietly: "He's a pretty good sort of fellow, John is, but he's a little dull—a little dull." After a moment's further thought he continued, "It may be necessary to explain that a bit. I'll tell you how 'tis with him. I had a pretty nice field of onions growing, but they stood a little thick together and needed thinning out. So I told John he might do it. He worked away at them for a day or two and then I went out to see how he was getting on. I found he had pulled up all the biggest ones and thrown them away, leaving only the smallest plants in the rows. I asked him what in creation he had pulled out all the best ones for, and he said 'twas 't give the little fellows a chance, 'cos the big ones had crowded them and they couldn't grow.' A little dull, John is, a little dull."—Exchange.

THE GENERAL SHORTAGE OF APPLES this fall throughout the whole North American continent seems to be almost certain. Apple growers are much disappointed, but possibly prices will be high enough to make up.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

TWO FOREIGNERS called at the Canadian Fruit Court on the 22nd ult., viz., Prof. Dr. I. Singer, of Vienna, and Mr. E. Wagner, of Denmark. The latter discussed the possibility of opening up in his country a market for Canadian apples. When the crop is short in Denmark, and prices low in Canada, he believed it would pay Canadian exporters well to send their apples to Denmark direct.

THE TERRIBLE COLD STORAGE FIRE, which was such an awful holocaust of brave humanity, was also a serious damage to our Canadian fruit and vegetable exhibit. We still had some fifty or sixty large cases of fine vegetables and fruits there stored away from which to draw fresh supplies from time to time for replacing those on the table. Canada's was the only exhibit of vegetables of 1892, and the loss of our reserved supplies is a most serious calamity.

We must depend on our provinces and our Experimental Farms to forward fresh fruits and vegetables of this season's growth as soon as possible.

THE SALE OF CANADIAN APPLES in Chicago as a special line of business is proposed by Mr. R. H. Napier, Chicago, formerly a resident of Ontario. He called upon the Canadian Fruit Court a few days ago, and we discussed the prospects. Thousands of barrels of Canadian apples are yearly sold in Chicago, and they are more sought for than those grown in the United States, because of their superior flavor. The Canadian-grown Spy is the great favorite here, an apple which grows in Ontario to great perfection, but is less suitable than some others for export to great Britain. The present duty of 75c. per barrel is almost prohibition; still it is quite possible that this will soon be removed.

THE AMERICAN PAPERS compliment Canada quite freely on her exhibits. For instance, the Country Gentleman, of Albany, dated 29th June, says of our Horticultural Exhibit: "As the visitor enters the north-west curtain of the Horticultural Building, the first exhibit that will meet his eye is that of Canada. This country has done nobly, and is represented by the Provinces of Quebec, Prince Edward Island, British Columbia, Nova Scotia, Manitoba and Ontario. A larger and finer collection of fruits at this season of the year would be hard to find. The list embraces varieties of apples that approach a hundred, many of which grow, and to perfection, only in Canada. A few plates of fresh grapes and pears are also shown. Quantities of fruits preserved in liquids are also displayed, of which mammoth gooseberries are one of the chief attractions. This country will, no doubt, contribute large quantities of all kinds of fruits as the season advances. Canada probably shows the greatest variety of vegetables now—carrots, beets and potatoes, immense turnips and rutabagas, for which this country is famous, adorn the tables.

RULES FOR JUDGES IN HORTICULTURE.—The following are the modified rules of the American Pomological Society, adopted for the guidance of judges in awarding prizes on fruits at the World's Columbian Exposition.

RULE 1—In estimating the values of collections of fruits, judges are instructed to base such estimates strictly upon the varieties in such collections which shall have been correctly named by the exhibitor, prior to action thereon by the committee on nomenclature.

RULE 2—In estimating such values, judges are instructed to consider: 1st, the values of the varieties for the purposes to which they may be adapted; 2nd, the color, size and evenness of specimens; 3rd, their freedom from the marks of insects and other blemishes; 4th, the apparent carefulness in handling, and the taste displayed in the arrangement of the exhibit.

RULE 3—No comparison shall be made between any two exhibits, but each must contend against a standard of supreme excellence.

RULE 4—Judges are instructed to apply the principles enunciated in above rules to entries of single varieties.

THE EXTENSION OF CANADA'S TRADE with other nations is one of the objects in view in placing our exhibits before the world at the Columbian Exposition. This object will no doubt be gained in many lines, for there is a universal testimony to the excellence of Canada's goods. In agriculture she stands first in the Agricultural Building, and in fruit she occupies a similar position in the Horticultural Building.

On the 20th of July, we had a call from Mr. R. Napier, a Canadian who has lived some twelve years in Chicago, and he stated that the demand here for Canadian apples was much greater than any one imagined. Many thousands of

barrels were brought in last year from the Counties of Huron and Grey, kept in cold storage, and sold at a fine advance this spring. The variety from Canada most sought for was the Northern Spy, a variety which reaches great perfection in the Province of Ontario; and next in popularity is the Greening, and then the Russets. If our growers can but establish a brand, and a character for honest packing, seeking it as earnestly as they do in the market of Great Britain, there is no reason why apples may not form an important article of export to the United States.

Mr. Napier thinks he may be able to forward this industry in Chicago in the near future.

FRUIT PROSPECTS.

BRANT Co.—*Sir*,—Cherries and pears will be a light crop. Apples almost a failure, except some early varieties—Kings and Greenings. Grapes and plums promise well.—J. R. HOWELL, *Brantford, Ont.*

CORNWALL.—*Sir*,—Strawberries, good crop; currants and gooseberries promises to be very good; no cherries or raspberries grown here; plums, a failure; apples, a poor crop.—W. S. TURNER, *Cornwall.*

CATARAQUI.—*Sir*,—Apples will not be more than one-quarter of a crop; pears, very few grown; plums, almost a failure, caused by *curculio*.—D. NICOL.

NANTY.—*Sir*,—As we have just finished picking strawberries, I take the liberty of reporting. From a bed of eight square rods we picked 400 quarts, at 7½c., \$30; of these, three rows were Bubach, great in yield and size; two rows Haverland, medium; one row Jessie, almost *nie*. Black currants, almost *nie*; Red Fay, fair crop; raspberries, Shaffer, enormous. Gooseberries, loaded; but, sir, I cannot see any difference between Downing and Pearl. Same in leaf and wood; the fruit is the same shape—round—and the same size. Of course, I may not have the pure thing; if so, I should like to know it. If I have, I think the public ought to know that they are no improvement on Downing.—STANLEY SPILLET.

[Our correspondent has, no doubt, planted the Downing in place of the Pearl. The latter is both larger and more productive than the former.—ED.]

OTTAWA.—*Sir*,—Strawberries have been very abundant; raspberries promise to yield one of the largest crops we have had for some years; currants, gooseberries and grapes are almost equally promising, although grapes will need careful spraying in order to prevent mildew. Summer apples are medium to poor crop; winter apples are almost a total failure. Plums and cherries, medium to poor. Pears are not raised to any extent. On the whole, the season will be characterized by a heavy crop of small fruits and a very light crop of tree fruits.—JOHN CRAIG, *Horticulturist, Experimental Farm.*

FRONTENAC COUNTY.—*Sir*,—It has now become quite evident that the apple crop here is almost a failure. In this district there will not be ten per cent. of a crop. Pears the same. Plums about the same. Blackberries (wild) abundant.—D. NICOL, *Cataraqui, Ont.*

CORNWALL COUNTY.—*Sir*,—Yours received, and as near as I can find out, the percentage of fruit is as follows:—Apples, 25 per cent.; plums, 20 per cent.; grapes, 75 per cent.; gooseberries, 100 per cent. No pears, peaches or blackberries grown here.—W. S. TURNER.

HALTON COUNTY.—*Sir*,—Percentages estimated as follows:—Apples, fall, 30 per cent.; Greening and Ribston, 50 per cent.; other winter varieties, 20 per cent.; pears, Bartletts, 30 per cent.; other kinds, 50 per cent.; plums, 100 per cent.; grapes, 100 per cent.; blackberries, 100 per cent. Peaches not much grown, but there will be more than usual.—Geo. BUNBURY.

PRINCE EDWARD COUNTY.—*Sir*,—In reply to yours, *re* fruit prospects for my district:—Apples, excepting Early Harvest and a few late summer varieties, not a quarter crop;

cherries were almost a failure ; plums, same ; pears not a quarter crop ; strawberries were about half a crop ; red and black raspberries, about half a crop. No peaches grown in this locality. The cold, wet spring destroyed fruit prospects.—H. BOULTER.

LINCOLN COUNTY.—*Sir*,—From present appearances, fruit in this section will be about as follows :—Apples, about 10 per cent. ; pears, 10 per cent. ; peaches, 80 per cent. ; plums, 50 per cent. ; grapes, 100 per cent. ; blackberries, 80 per cent.—A. M. SMITH, *St. Catharines, Ont.*

SIMCOE COUNTY.—*Sir*,—In answer to your enquiry as to fruit prospects in this section, I may say that, so far as I have been able to ascertain, the situation is about as follows :—Small fruits plentiful and correspondingly cheap ; about four-fifths of the plum trees in this district winter-killed, any that are left are bearing well ; pears, fair crop, but some varieties, such as Flemish Beauty, badly scabbed ; early apples will not be so plentiful as last year, but will be a fair crop ; winter apples almost a failure ; taking 100 as representing a fair average crop, I would not place it this year at more than 25 or 30 per cent. for this district.—E. C. CASTOR.

PERTH COUNTY.—*Sir*,—Apples are not going to turn out one-quarter of a crop in this county ; pears are no better ; plums are a pretty fair crop, 80 per cent. at least ; grapes are good, but not extensively grown ; blackberries not grown ; cherries very plentiful.—T. H. RACE.

WELLAND COUNTY.—*Sir*,—The fruit prospects are :—Apples, 25 per cent. ; pears, 50 per cent. ; Bartletts, 90 per cent. ; peaches, 150 per cent. ; plums, 100 per cent. ; grapes, 125 per cent. ; blackberries, 125 per cent. Compared with a good average crop, peaches and apples are hard to percentage, as we often have very short crops of them.—E. MORDEN.

HURON COUNTY.—*Sir*,—Since last report, a change has taken place. Apples indicate little over 25 per cent. ; pears, 45 per cent. ; plums, 35 per cent. ; grapes, nearly a full crop along lake front ; raspberries and blackberries, good crop ; cherries had rot badly, reducing the crop one-half ; plums fell badly after forming ; apple scab, bad ; blight in pears more prevalent than last year. Insects worse than usual, even lice in young wood of plum and cherry.—ALEX. McD. ALLAN.

HURON COUNTY.—*Sir*,—In my last communication I stated that the prospects for fruit was : apples, scarce ; cherries and plums full of blossom. Since that I find the cherries and plums failed to set in a great measure so that they are a light crop. Pears, I forgot to mention, a very few varieties have a medium crop, others nil, blight appearing again. The Baldwin Rib-Pippin and R. I. Greening was generally full of bloom, but the fruit is very scarce, other varieties almost failed to bloom. I don't think there will be enough apples for home consumption.—WALTER HICK, *Goderich, Ont.*

YORK COUNTY.—*Sir*,—As far as I could ascertain on short notice apples bid fair for a good average crop. Crabs wilted. Plums, cherries, gooseberries, black caps and red rasps are yielding handsomely. Grapes, I think, suffered from the hard winter and are full of dead wood, those kept below the snow line appear to be more hopeful. All of these are in my own garden and show well, except red and black currants, which will prove a failure. My neighbors state pretty much the same condition of fruit prospects.—WM. HARRISON, *Richmond Hill.*

PEEL COUNTY.—*Sir*,—Answering your card of a few days ago, I may say the apple crop in this section is away below the average, being a great deal less than last season's. Plums and pears, fair crop, but not nearly as large a crop as last year's. Small fruits apparently very good.—JAS. STEWART, *Brampton, Ont.*

CARDWELL COUNTY.—*Sir*,—In answer to your post card of the 24th inst., I may inform you that the fruit crop in this section will be far below the average—apples and pears a very poor showing. Many plum trees were killed during the winter, and those that are left are not doing well. Currants, gooseberries and strawberries are a very fair crop, especially strawberries. Cherries are but little grown of late years, owing to ravages of black knot.—S. C. WALFORD, *Bolton, Ont.*

PEEL COUNTY.—*Sir*,—Apples are a very light crop all through this section, although they will be better quality than last year. I think the scarcity is due to the late spring and the heavy crop last year. Pear crop will be very light this year, although there are a few on nearly every tree. Plums will be a very large crop ; trees are at present nearly breaking down, and very few seem to be falling off. Grapes will be a medium crop ; they were very late in budding out this spring.—A. A. GAGE, *Mount Charles, Ont.*

RENFREW COUNTY.—*Sir*,—The following is as near an estimate as I can make at the present time of the probable yield of fruits yet to ripen in this district. These yields are based on a scale of 100 points being a full crop:—Summer apples, 90; winter apples, 50; native plums, 75; foreign plums, 50; grapes, 100; blackberries, 80; peaches, not grown; pears to a very limited extent. Apple and pear blight has been more destructive in the Ottawa Valley this summer than ever before. It has attacked some varieties which hitherto enjoyed immunity and has caused serious damage. Wealthy, among others, has suffered severely.—JOHN CRAIG, *Ottawa*.

PERTH COUNTY.—*Sir*,—On a basis of 100 for average, the apple crop in this district will probably run somewhere about 25; pears 40. The latter has cracked and dropped considerably since last report, notably so Flemish Beauty. Plums, 65; grapes, 100. Peaches and blackberries generally a little too tender for successful cultivation in our section of country, consequently no average is given.—J. D. STEWART, *Russeldale, Ont.*

ESSEX COUNTY.—*Sir*,—The percentage of yield will be about as follows:—Apples, 25; pears, 75; plums, 50; grapes, 100; blackberries, 85; peaches, 40. Hail damaged a few vineyards July 16, but not enough to materially lower the yield. Apples a poor sample; plums and pears fair.—A. MCNEILL, *Windsor, Ont.*

GRAY COUNTY.—*Sir*,—In answer to your request concerning an estimate of the fruit crop in this section, I have to say I have not been much out in the country, and reports are conflicting; but so far as I can learn, apples will be under an average crop; pears, a light crop; plums promised well some time ago, but the curculio and rot is thinning them out very fast. Those who sprayed their trees will have a good average. Cherries, an average crop; peaches not much grown here; small fruits, an abundant crop; gooseberries, a very large crop; grapes not grown to a large extent, what is grown seem heavily laden at present.—R. TROTTER, *Owen Sound*.

❖ Question Budget ❖

The Blenheim Orange Apple.

Answer to Question No. 27.

The Blenheim Orange, or Blenheim Pippin, as known in Nova Scotia, is one of our most valuable commercial apples, and is growing in favor yearly. It is an early and annual bearer, of fine appearance, with comparative freedom from spots, and but few culls. Seems well adapted to our sandy soils, but is grown successfully on heavier land. The Blenheim will compare favorably with Northern Spy in productiveness. Bears earlier and classes with the Spy, among our most valuable commercial apples.

S. C. PARKER.

❖ Open Letters. ❖

Plants Received.

SIR,—The Douglas fir and the Haverland strawberry plants arrived in good condition. I have a nice bed of the Williams strawberry from the plants you sent me two years ago; they are looking well. The Moore's Diamond grape I got last year is doing well. Small fruits are likely to be a large crop here, also plums and pears. Winter apples will be scarce.

WILLIAM LEONARD, *Woodstock, Ont.*

❖ Question Drawer. ❖

TREATMENT OF AZALEA.

579. SIR,—A friend of mine has a fine azalea which bloomed very profusely last spring and is now looking well and healthy. Will you kindly let us know what is the best way to treat it during the summer, and also when we may expect it to bloom again, and very much oblige,
GEO. D. GOODHUE, *Danville, P. Q.*

Reply by Mr. John Craig, Experimental Farm, Ottawa.

After blooming, the azalea should be watered freely and fertilized with liquid manure till its growth has been completed, when it should be allowed to harden off somewhat by lessening the amount of water and placing it in a somewhat drier and cooler situation. Previous to blooming, the plant should again be watered freely and well fertilized. During the period of its rapid growth, care should be taken to keep the plant in good form by pinching back the straggling shoots which are occasionally developed. Such treatment will probably bring it into flowering again in January or February.

THE BLACK KNOT.

580. SIR,—I have read a good deal about black knot as a fungus, but I cannot believe in the theory, because I always find white maggots in them, when the knots are about half grown. I enclose a sample. This evening I found a currelio in one of the knots, and I wonder if this insect deposited the eggs in the knot?

F. L. GERNDT, *Paris, Ont.*

Reply by John Craig, Experimental Farm, Ottawa.

It was originally supposed that the excrescences on plum and cherry trees which we call "black knots" were caused by insects, but microscopic examination proves beyond doubt that while insects may often infest and inhabit these knots, they do not occasion their development. The fungous origin of the black knot cannot be called a theory, but is an established fact. All gall-producing insects form their own characteristic galls exactly alike according to its species in each instance, while in the case of the black knot of the plum and cherry many insects of different kinds may be found harbored in the irregular crevices of these unsightly outgrowths. It is much wiser to cut out and destroy the knots than to search for an insect which may have formed them.

TOMATOES should not be picked too ripe nor too green, but should be all about the same ripeness or some will rot before others ripen. When shipped long distances from market they should be packed as soon as they begin to color and when nearer market they should be ripe. Let the size be even and pack tightly, so that they will not shake and become bruised.



JACQUES CARTIER WINTERING IN ST. LAWRENCE RIVER.





MOORE'S ARCTIC.

THE
Canadian Horticulturist

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No. 9.



MOORE'S ARCTIC.



PLUM growing in Ontario is becoming a very important industry. The difficulties in its pursuit, such as knot, curculio, etc., only increase the chances of success in the case of those who persevere.

In Southern Ontario we are able to grow nearly all the more tender and luscious varieties, such as the Washington, Jefferson, Bradshaw, Quackenbos, the Reine Claude, Gages, etc., but further north, where these varieties are often too tender, a plum like Moore's Arctic becomes of special value, on account of its hardiness. Possibly it may commend itself to us all, on account of its productiveness and its immunity from curculio stings.

Dr. Hoskins, of Newport, Vt., after fourteen years' experience with it, states that he has never seen the first mark of the curculio on the fruit, although the common red plums were riddled by it.

The tree begins bearing very young, and yields enormously. Mr. F. Sharp, of Woodstock, N. B., has an orchard of this one variety, and he is able to ship away the fruit by the car load. The trees are scarcely hardy enough for this climate, and to overcome this difficulty, he has adopted a plan of laying down the trees in autumn for winter protection, which was described in the *CANADIAN HORTICULTURIST*, some time ago. He prepares for this operation when planting his trees, by setting them closely in trenches, and permitting the roots to extend in two directions only. Then, on the approach of winter, the trees

are bent to the ground at right angles to the trench, and weighted down. In this condition the orchard more resembles a brush heap than a plantation of live plum trees, but the trees are safely protected from the cold by the snow which accumulates upon them. As a result he gathers an enormous crop annually.

Description—Size, below medium; form, roundish oval; skin, purplish black with a thin blue blush; flesh, greenish yellow, juicy, with a pleasant but not rich flavor; season, early autumn.

The variety originated on the highlands of the Aroostook River in the State of Maine, and is the favorite plum grown by the plum raisers of the Aroostook Valley.

EXPERIENCES IN THE FRUIT GARDEN.



AM very much pleased with the HORTICULTURIST so far. Our strawberries did well this year, and off a little less than one-fifth of an acre we took 2,400 quart boxes, and 40 boxes of gooseberries off 12 middle sized bushes. No sign of mould on the gooseberries. The Cuthbert raspberry does well with us, and also the Golden Queen raspberry, and Mammoth Cluster Black Cap. I like the idea I saw in the HORTICULTURIST, of nipping the black raspberry canes when one foot high. I wish I had known this sooner, and I would have done the same with ours. I nipped ours when 3 feet high, and since the side shoots have grown they have reached the height of nearly 5 feet. I am afraid the fierce winter winds will break the canes off at the ground.

The Concord and Brighton grapes do well here. We also like the Cherry currant as a canning fruit, but it is not prolific enough to pay for a market fruit, and the black currant never did well here, on our farm at any rate.

Our young apples, pear, cherry, and plum trees, are growing finely this season. We planted them four years ago last spring, and we consider spring the best time for such work. All our trees grew. We are just two miles from a good home market, and we have very little competition so far; everybody seems to want our berries, they are always so clean and fresh.

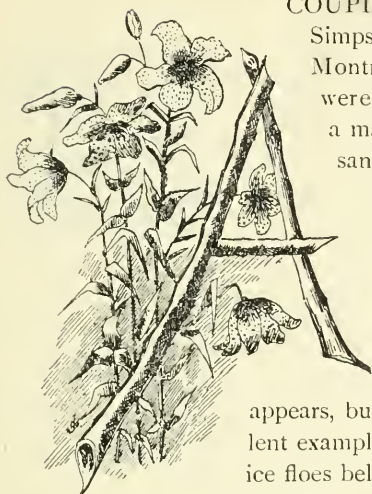
We have a colony of bees; and keep from 75 to 80 hens, which have the run of the orchard, they don't eat many berries, their object being to clean out all the insects they can find. You can read this lengthy epistle when you cannot find anything else to do.

You will, "if all goes right," find enclosed one dollar for the HORTICULTURIST. Wishing you success, "I remain as ever,"

Elmira, Ont.

ELLEN FEAR.

NOTES FROM GRAND ISLE, QUE.



COUPLE of days recently spent with Mr. Louis Simpson, the energetic and genial manager of the Montreal Cotton Company, at Valleyfield, Que., were full of interest to the visitor. Valleyfield is a manufacturing town made up of some six thousand inhabitants, many of whom are employees of the cotton and paper mills.

Grand Isle is formed by a division of the channel of the St. Lawrence, and is about fifteen miles long by two miles wide. The soil is alluvial; clay loam predominates, with occasional gravel beds interspersed with boulders. The limestone bed rock rarely appears, but here and there, in quarries, are seen excellent examples of the abrading power of the ponderous ice floes belonging to the ice age, the surface strata being beautifully defined. The limestone is found in hori-

zontal layers of convenient thickness, is easily quarried, and is used in considerable quantities by the Cotton Company in its building operations.

The presence of large bodies of open water during the entire year, has a marked effect on the local climate. This is evidenced by the kind of fruit trees, and the measure of their success, upon the island. For instance, no where in Quebec have I seen the common red cherry—a form of the Kentish—succeed so well, and with so little culture. The roadsides and gardens are sprinkled with well laden specimens of this tree, which is quite remarkable, considering the off year. Black knot has, so far, been unknown. Cherry slugs have seriously denuded many good trees. This seems a pity, as the slug is easily destroyed with weak applications of Paris green or hellebore, or with a sprinkling of dry ashes or lime.

Although natural conditions, such as soil and climate, are very favorable for farm and garden crops, yet neither agriculture nor horticulture have been developed to an extent justified by the evidence at hand. A very useful work is being prosecuted by Mr. Simpson, in bringing under cultivation, and in moderate sized blocks, quite an area of land adjoining the cottages of the factory employees. This land is being gradually brought into tillable condition; not by the expenditure of large sums of money in stumping and clearing, but by adopting the best methods; the careful management of a limited farm force, and the judicious expenditure of income arising from present cultivated areas. The benefits derived from this system of management are two-fold, viz., economy and the force of such an example upon the surrounding community.

Cottage gardening among the employees of the Cotton Company is encouraged through the liberality of the President, Mr. A. F. Gault, who offers prizes each year for the best kept and most beautiful garden lots.

The small fruit and truck gardening business of the island is mainly done by Messrs. Hood Bros., who have been engaged in the work for the past fifteen years, the success of which is amply testified by their comfortable surroundings. They have worked on the principle of the "Little farm well tilled," and have done it so thoroughly that their thirty cultivated acres in orchards, small fruits and vegetables, bring them a much larger income than many areas four and five times as large. It was a surprise to find that Concord ripened thoroughly every year, and is one of the principal grapes grown. Champion, Moore's Early, Prentiss, Niagara, Delaware and Lindley, are grown with success, though Niagara cannot be said as yet to have passed the experimental stage. No mildew has appeared this year, probably owing to the early application of Bordeaux mixture. A few vines of Champion were badly attacked by anthracnose, which, I fear is likely, on light soils in the Province of Quebec, to prove a troublesome disease. Of plums, Hood Bros. some years ago planted about 200 Moore's Arctic, which have now entirely disappeared, as have most other blue sorts, a few Damsons excepted. I was pleased to find the Lucretia Dewberry growing vigorously and bearing profusely. This I may say is the first instance of the kind I have noted in Eastern Ontario or Western Quebec, though there may be other cases which have not come under my attention. The vines in question were planted between rows of Gregg's and Shaffer's. It is possible that cross fertilization may have had some effect on their fruitfulness.

Twig and apple blight have appeared in this section, being first noticed about three years ago. It has increased somewhat each succeeding year till now it has assumed rather serious proportions. While no direct remedy is effectual, preventive measures should be instituted. All affected branches should be cut out and burned as soon as the injury becomes apparent. The cutting should be made some distance below the injured portion, and as soon after the presence of the disease is noted as possible. Orcharding is yet in its infancy on Grand Isle, but with natural conditions so favorable, a convenient market, and the growth of knowledge, as to varieties and methods of culture, fruit-growing cannot fail to become wide-spread in that locality.

J. CRAIG.

PURE, fine-ground bone and a good quality of unleached ashes form a complete fertilizer, and, if we use twice as much ashes as bone, a well-balanced fertilizer for almost any crops. We doubt if the fertilizer men can devise a better formula. True, the nitrogen of the fine bone is not so soluble as the nitrogen of nitrate of soda or sulphate of ammonia. We need only to apply the fine bone a little earlier to the land, or for that matter sow a little soda as a starter.

DISSOLVED BONES.



R. AITKIN thus writes of dissolved bones in the North British Agriculturist: Bones contain about half their weight of phosphate of lime, the other half consists chiefly of organic matter. The phosphate of lime in bones is what is called insoluble phosphate, that is to say, a combination of phosphoric acid with as much lime as they can unite with. One-third or two-thirds of the lime can, however, be taken away and still leave definite compounds. When two-thirds of the lime has been taken away, the compound formed is soluble in water and is called soluble phosphate of lime. The object of adding sulphuric acid to bone phosphate is to remove two-thirds of the lime by converting it into sulphate of lime, just as in the case of superphosphate, which is a mixture of soluble phosphate and lime and sulphate of lime.

In dissolving bones, however, it is found that if enough of acid is added to convert all the phosphates into the soluble form, the whole is converted into a liquid mass, which refuses to dry up and is unfit for use as manure. This is owing to the organic matter in the bones. There is therefore a practical limit set to the proportion of soluble phosphate which dissolved bones can maintain. As a rule, in the case of pure dissolved bones, not more than half the phosphate is present in the soluble form. The usual practice of manufacturers of pure dissolved bones is to add more acid than is necessary, and to dry up the product with fine bone meal, and, by careful mixing and somewhat laborious treatment, produce a sowable manure.

Other things besides fine bone meal are often used as dryers. Steamed bone flour dries more effectively than bone meal, but if it is used to any great extent the product will be somewhat high in phosphate and somewhat low in ammonia. Bone ash is found to be a still more absorbent substance, and it is used much to dry up dissolved bones. Bone ash, however, contains no nitrogenous matter, and is very rich in phosphate, and therefore when it is used the product is high in phosphate and correspondingly low in ammonia. Bone ash is not bones, it is simply impure phosphate of lime derived from bones. The same may be said of bone char, which is frequently used as a dryer, and which gives the black color to many manures sold as pure dissolved bones.

In England there is scarcely to be found a manure sold under the name of dissolved bones which is a genuine article. A great proportion of them contains no bone material at all, and the term dissolved bone is really a conventional name applied to compound manures consisting of any kind of mixture of phosphate and nitrogenous materials which can be dissolved with or without an admixture of bone.

Many of the manures are excellent preparations, just as good as pure dissolved bones, and they have the merit of being formed from materials which would otherwise be allowed to go to waste. Manure manufacturers make no secret of the spurious character of the manures called dissolved bones, and it has become quite recognized in the trade that purity is not expected in them. No doubt a great majority of buyers is deceived by the name, and they pay a higher price for what is called dissolved bones than if they knew the absolute character of the article.

If genuine dissolved bones are desired they should be bought under a guarantee of purity. Pure dissolved bones could not contain much more than twenty per cent. soluble phosphate, and from $2\frac{1}{2}$ to $3\frac{1}{2}$ per cent. of ammonia.

When well made it is of course a good manure, but not a whit better than many of its imitations.

The dissolving of bones in sulphurous acid is a wasteful process, not to be recommended, for by so doing the bones are degraded to the level of mineral phosphates, which supply soluble phosphates more cheaply and more efficiently than bones. If soluble phosphate is wanted for a crop, then the cheapest form of superphosphate is the best thing to apply. If bones are wanted for the crop or the land, then the natural bone, finely ground, is the cheapest form of application. If both are wanted, both should be applied separately; but to attempt to combine these advantages by dissolving the bones is to effect a compromise that is not economical. It is really in effect to spoil good bones and to make poor superphosphate.

A BARREL HEADER.



THIS barrel header works to perfection, and any blacksmith will make it for 75c. The part A A A is made of a small wagon tire with hinges at C C. D D are rods of half-inch round iron riveted to the frame 3 in. above the hinges on each side, but left to turn freely as a hinge. B is a piece of 2-in. plank nearly the size of the barrel head. Place the head on the fruit, then the header in position. Loosen the top hoops, bear down A to press the head in. Drive down the hoops and the head is in.

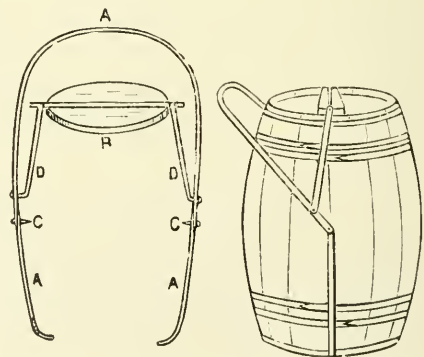


FIG. 577.

ROCK ELM.



THE growing scarcity of hickory and white ash has prompted wagon builders to look about for substitutes. The makers of common carriages are with them, to a certain extent, while the builders of high-class carriage work still adhere pretty generally to the old woods, finding, as yet, nothing that satisfies them where lightness, strength, and elasticity combined are required.

Agricultural implement makers have substituted steel and iron for wood in a large number of places where it was formerly used exclusively. The implement factories are using less than one-half the lumber they did only a few years ago. The light forged or cast steel plow beam has taken the place of the clumsy wooden one of our fathers, that formerly absorbed a large amount of the finest white oak, while the early spring tooth harrow, entirely of steel, has superseded the old time V-shaped implement that formerly vexed the bosom of Mother Earth.

But while the others have reduced the amount of lumber more or less required in their special lines, the makers of farm and road wagons and heavy trucks are still forced to use nearly the same amount of wood as formerly. White oak, white ash, and hickory has thus far been the chief wood used in wagon construction. Other woods have been used for certain parts, but the three woods named have been the chief reliance for good work, and now that hickory and white ash are becoming so scarce, especially the former, and good, tough white oak is no longer found in great abundance north of the Ohio River, while it is called for for so many other purposes as to greatly enhance its value, substitutes of as nearly equal value as possible, in strength, durability, and elasticity, are eagerly sought after, that may be furnished cheaper than the old stock.

Of all the woods tried, probably rock elm has proved the most satisfactory for many uses in wagon building, where one of the three, oak, ash, or hickory, has heretofore been almost exclusively used. Its elasticity and general toughness should recommend it for axles, bolsters, and reaches. Indeed, it is being sawed for these purposes to a large extent in some sections, a number of the Wisconsin and Michigan hardwood mills having large orders for future sawing.

While it may be true that the bulk of such stock at present goes to the small wagon makers and repair shops, it is also true that some of the largest manufacturing in the country are ordering a good deal of rock elm for their season's stock, while the bending factories are taking a large increase over a year ago.

This should be good news to the hardwood men of the extreme north, where the timber is found of the best quality and in greatest abundance. They will be gainers from the fact that it will allow them to clean up another kind of timber when logging a piece of hardwood land. If they can market their

rock or gray elm for furniture and hoops, and can add beach to the list of flooring stock, they will have less to complain of than now.

The elm is a noble tree, in its native habitat, but is by no means so abundant as is thought by many, and while it can be marketed at present at a profit at a much less price than white oak, the general free use of it for wagon and carriage building would, in a few years, greatly enhance its value, by producing a comparative scarcity.—N. W. Lumberman.

NOTES ON STRAWBERRIES AND RASPBERRIES AT OTTAWA.



LARGE number of the newer strawberries fruited in our trial plots this season. Among them the following are improvements as grown here over old varieties.

Parker Earle, B.—Is a remarkably strong grower, with good clean foliage. Berry of the pointed and rucked type, dark red, good quality, fairly firm, very prolific, about five days later than *Crescent*. As a fertilizer for berries like *Bubach*, or *Mrs. Cleveland*, it will be valuable.

Middlefield, P.—Is a fair grower, bearing round glossy berries, bright red, very firm and of good quality. It is also late. Not sufficiently productive for market.

Gov. Hoard, B.—Is of fair quality but unproductive. But, as quality is a characteristic of the first order, this variety should not be lost sight of.

Beder Wood, B.—Vigorous, very productive of pollen and berries. Fruit roundish, conical, of good size and quality, but lacking in firmness. Rather later than *Crescent*. The following kinds are not promising so far on these grounds: *Boynton*, *Standard*, *Yale*, *Westbrook*, *Leader*, *Gillespie*, *Crawford*, *Martha*, *Dayton*, *Barton*, *Beverly*, *Auburn*, *Van Deman*, *Princess*, *Iowa Beauty*, *Cameronian*, and *Westlawn*.

RASPBERRIES.

A number of English varieties have fruited, among them *Carter's Prolific*, *Baumforth Fillbasket*, *Gladstone*, and *Superlative*. The first and last mentioned are the best: while of better quality than *Cuthbert*, they do not equal it in productiveness or hardiness. *Heebner*, as noted in my report for '91, has again proved itself a decided acquisition on account of quality and productiveness.

The new *Black Cap Older*, of which plants were set out last year, has borne a large crop of fine berries ripening with *Hilborn*, of the size but surpassing *Gregg* in quality.

A large number of seedling and hybrids are fruiting this year, the curiosities are many, the useful and promising comparatively rare.

J. CRAIG.

THE VALUE OF LIME.



LIME is one of those elements of the soil which is essential to the growth of plants and trees, and when it is properly used a vast difference in the growth of the vegetation is noticeable. All farmers and horticulturalists use it in many ways, but it is probably as often abused as used. The full and direct effects of lime upon plants under all conditions have not yet been fathomed, but enough knowledge concerning its general effect is possessed for one to use it intelligently on many crops. In the vegetable garden lime is invaluable. It is the best preventive and check for mildew on cucumbers and diseases of potatoes. As soon as the cucumber vines show signs of the diseases the powdered lime should be sprinkled over every part of the plants that are affected, and the operation repeated after rain so long as there are any signs of mildew. If one watches the plants early in the spring, and applies the lime as soon as the disease manifests itself, it will never be allowed to make much progress, but sometimes in the case of plants being nearly dried up with the disease the lime will give them new life and growth. Potato stalks are often dried and eaten up by diseases, and this can also be prevented by an early application of the powdered lime sifted over the stalks with a fine sieve. The work on this crop, however, must be done early. If the disease is allowed to progress so much as to half eat the plants up the powdered lime has but little effect. If the disease has shown itself in spots all over the field it will pay to sprinkle the lime on all the plants, even though no signs of the disease can be seen in many places. It will prevent a breaking out in new places. Many potato fields could be saved from partial or total destruction in this way if the lime were used freely early in the season. Lime water is a great disinfectant and destroyer of insect life, and it will be needed in the summer time for many purposes. Caterpillars and tree grubs and insects die upon its application, and many orchards are saved from great ravages by its use. Gardens and lawns frequently need it in the spring of the year. It should be sprinkled over the grass lawn just before a rain, so that the water will soak it into the ground. The grubs and worms in the soil as a result will burrow far down in the soil to escape its destructive effects or crawl rapidly up to the surface of the ground for air and sunlight. The chickens should then be turned upon the lawn to pick up the dead or squirming worms and grubs. This is the most effectual way of clearing grass lawns of this pest. The flowers, plants and shrubs also need lime water when infected by worms and bugs. An application to the gooseberry and currant bushes will drive the bugs and ants away, and a similar treatment of the flowers will make the snails and bugs slink away to parts unknown. If the application is renewed occasionally the insects will continually avoid the shrubbery thus treated.—American Cultivator.

SOME PROMINENT HORTICULTURISTS XXII.

Mr. Wellington Boulter.



R. BOULTER was born of U. E. L. stock on the farm now owned by him, in the Township of Sophiasburg, Prince Edward County, on the 14th February, 1838. In his early days he had only the slim advantage of attending the common school through the winter months, having, as was then usual, to work early and late on the farm.

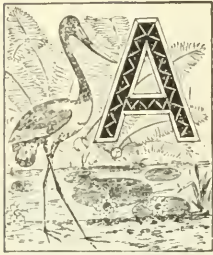
His father, the late George Boulter, had planted one of the first nurseries in the Midland district in 1818. He brought up from Montreal the first Famuese and Bourasa apple trees planted in the county, some of which are still bearing fruit, and from them many grafts have been taken. Mr. Boulter early evinced a fondness for fruit growing; and now he has on his farm over 2,000 apple, and 400 pear and plum trees, besides some eight acres raspberries and strawberries. This apple orchard has been splendidly kept and is one of the finest in the county.

Believing that we could grow as fine fruits in this Canada of ours as our cousins in the United States, and that they could be hermetically sealed to compare with any American goods he started the first canning factory in Eastern Ontario at Picton in 1882, and through his well-known energy his goods were soon pushed to the front. At that time nearly all the canned goods used in Canada were imported from the United States, but this was no help to fruit growers in Canada, and in 1883 a convention was called by Mr. Boulter, at Hamilton, of all the packers of canned goods in Canada, and he was unanimously chosen its first President, a position which he has filled for ten years. He went to Ottawa and succeeded in getting the present canned goods' law placed on the statutes with the duty removed from tin plates. At present, scarcely any American canned goods are now found in Canada. Those canning factories, scattered over Canada, furnish a good market for our fruits and vegetables. For the past five years he has been exporting the surplus goods to England and Germany, competing there with American goods. Mr. Boulter has always been in favor of a heavy duty being placed on all fruits coming from the United States into Canada, believing Canadians should have our own home markets; and he has always done what he could for them. At the last annual meeting of the Fruit Growers' Association, in his absence, he was elected as one of the Directors to represent the Counties of Hastings, Prince Edward, Lennox and Addington, to succeed the late P. C. Dempsey, Esq., who for many years occupied that position, and was also at one time President of the Association.



FIG. 578. MR. WELLINGTON BOULTER.

WILL FERTILIZERS EITHER PREVENT OR CURE PEACH YELLOWS?



An exhaustive series of experiments have been conducted by Dr. Irwin F. Smith, special agent in charge of the peach yellows investigations of the United States Department of Agriculture, for the purpose of ascertaining whether the peach yellows were caused by soil exhaustion, and whether they could be either prevented or cured by the application of potash salts and superphosphates. These experiments were continued for a period of four years, and the results, with full details, are embodied in Bulletin No. 4 of the Division of Vegetable Pathology, 1893, embracing 197 pages.

It will be remembered that Professor Penhallow has supported the view taken by Goessman, Fuller, Hale, and others, that by the use of potash salts and superphosphates the peach yellows could be both cured and prevented; and wide publicity has been given to frequent statements that the results obtained by these means were very satisfactory. In order to thoroughly test this matter, these experiments by Dr. Smith were undertaken and prosecuted on a scale and for a length of time sufficiently extensive to fully demonstrate the truth or error of the view taken and advocated by Professor Penhallow.

In order to ascertain whether affected trees were suffering from want of nourishment, Dr. Smith supplied potash, phosphoric acid, lime, nitrogen, etc., in the form of guano, dried blood, superphosphates, muriate of potash, kainit, kieserite, dissolved bone-black, dissolved bone ash, nitrate of potash, nitrate of soda, sulphate of ammonia, Canadian hardwood ashes, lime, tobacco dust, and barnyard manure. Also to learn whether healthy trees could be so strengthened that they would be able to resist the yellows if these fertilizers were applied to them also. Fifteen orchards were included in these experiments, containing over 16,000 trees, in the heart of the great Delaware and Maryland peach region. Here, before the advent of the peach yellows, the peach trees lived from twenty to forty years, and still attain to such age in a productive condition in those sections where the yellows have not yet appeared.

To determine whether, in diseased branches, excess of lime and deficiency of potash and of phosphoric acid were constant conditions, careful chemical analyses of such twigs were made by Dr. Eastwood, Professor of Chemistry in Georgetown College, Kentucky. In the case of branches sent from an orchard near Dover, Delaware, he found in the healthy branches 15.53 per cent. of potash, and 10.63 per cent. of phosphoric acid, and in those affected with yellows, 20.16 per cent. of potash and 12.63 per cent. of phosphoric acid. In branches from an orchard at Magnolia, Delaware, the healthy gave 28.26 per cent. of potash, and 10.45 per cent. of phosphoric acid; those showing yellows, 32.51 per cent. of potash, and 9.29 of phosphoric acid. Branches from an orchard at Still Pond, Maryland, from healthy trees gave 30.18 per cent. of

potash and 12 per cent. of phosphoric acid ; those diseased with yellows 30.76 per cent. of potash, and 16.86 per cent. of phosphoric acid. In all three cases the diseased branches shewed a deficiency of lime as compared with the healthy ; in one case the difference being as great as 14.53 per cent.

It is not necessary to mention the treatment and results in each of the fifteen orchards. They were all supplied separately or in combination with the fertilizers above mentioned, some receiving moderate, and others large, quantities ; to some trees applied in the spring, to others in the fall ; in some cases plowed under, in others harrowed in ; but "these variations do not appear to have sensibly modified the results."

Of 645 trees afflicted with the yellows at the beginning of these experiments, none recovered. A few improved so as to exhibit greener foliage and make more growth than the like trees not treated, especially the tree that received a large quantity of caustic lime, and those that were treated with tobacco dust and nitrogen compounds. "The symptoms of disease, namely, premature fruit, pale-branched shoots, and prematurely unfolding winter buds, did not disappear from any of these trees ; the most that can be said is that they did not pass into the final stunted and dying condition quite as rapidly." But even this poor satisfaction was not to be had in the great majority of those that he tried to cure, even when they were supplied with an overflowing abundance of wood ashes, potash salts, and high grade superphosphates.

Various preventive treatments were tried on about 3,800 healthy trees, which were in fine condition. Many of these were treated three and four times, yet at the end of the third season 1,741 of them had the yellows, and at the end of the fourth season 2,368, which is over sixty per cent. of them, were diseased. The number of these trees shewing the yellows increased with each succeeding season, being greater the second and third season than the first, and still greater at the end of the fourth. In three large orchards the treated portions as a whole developed more cases than the untreated in a given time, and this is especially noticeable in the orchard where the Goessmann-Penhallow mixture was tried for a long time and on a large scale."

We seem to have learned from these experiments which were continued for four years, that the addition of the fertilizers mentioned, in either large or small quantities, separately or in combination, will not prevent peach yellows, nor cure the disease when once begun. We may, therefore, presume that the cause of peach yellows is not to be traced to any want of proper peach tree food in the soil. It can hardly be said that these conclusions are very encouraging to the peach orchardist. They do not seem to throw any light on the means of preventing or curing this most serious disease. The results are wholly negative. We need not waste our energies on soil applications of the nature of fertilizers in the vain expectation of thereby being able to preserve our peach orchards. This much these experiments seem to prove. We need no longer to look in this direction, and may turn our investigations into other channels in the hope that patient study of these may yet disclose some mode of prevention or cure.

D. W. BEADLE.

NOTES FROM THE WORLD'S FAIR.—IV.



LEST our readers weary of too long a visit even in the Horticultural building, let us stray out to witness some of the wonders which electricity is working in this 19th century. Recognizing its importance the World's Fair directorate spent \$401,000 in constructing a palace for exhibiting scientific and applied electricity. A visit to it in the evening is enchanting, on account of the brilliant effect of innumerable incandescents, enclosed by glass of various colors. In one room with a glass ceiling, the appearance of a constant play of sheet-lighting is kept up, while near by is a column, up which rings of light seem to chase each other, through glass of red, white, blue, purple, etc., and then divide along four lines in the ceiling until they reach great revolving balls, which change to every hue in the rainbow. In another part Edison's phonograph repeats a cornet solo and accompaniment through a tin horn, which renders it easily heard at some distance, and in another the Belknap motors from Portland, Me., under charge of Mr. G. W. Brown, drive an electric fan with such rapidity that the breeze threatens to blow you away. Then there is cooking by electricity, electroplating, and chicken hatching, cutting clothes and transmitting cables: but the most wonderful is the telautograph, to which we referred in our last issue, because by means of it a writer in one town has his handwriting or sketching exactly reproduced in another before the eyes of his friend.

Outside immense electric fountains play in the Grand Court of Honor, the whole spray changing color constantly, to the wonderment of thousands.

Returning through Mining, one is especially attracted by the copper exhibit of Arizona, because of its great beauty. The various colored quartz rock looks like velvet of the richest green, and purple and red tints, which the geologist recognises as indicative of the amount of water in combination with the copper. All the courts are magnificent, and Canada's not the least so, with her little piece of nickel from Sudbury, weighing only five tons! and her rich ores from Quebec and British Columbia.

Through the courtesy of our friend, Mr. Berliner, of Cape Colony, we were permitted a private inspection of the Diamond Washing. One hundred and fifty tons of this valuable earth was brought to Chicago for the exhibition, and about one ton is washed each day. After being well washed, the dirt is placed upon a table, and an expert rapidly turns it over. So rich is it in diamonds, that one is found in almost every peck, and some of them of great value.

Passing through the Japanese Court, the superintendent, Mr. Saki, of Tokio, was very courteous, and pointed out the coal, graphite, and antimony, for which

his country was noted. How enterprising these Japanese people are! Everywhere their nation is to the front with exhibits peculiar to their country, and year by year they seem to approach nearer and nearer to European civilization.

THE WOODED ISLAND and its surroundings are, to the landscape gardener, the most attractive spot of the whole 650 acres, for at every turn the traces of the master hand of Mt. Olmstead were evident. An island, with irregular coast well covered with shrubbery to the waters' edge, and surrounded by lagoons of varying width, which are crossed by several bridges, and specked with numerous waterfowls; its face crossed by tastefully disposed walks bordered by beautiful floral exhibits, and on every side across the lagoons, the beautiful architecture of the White City, all combine to make a picture charming enough to form the subject of a description by the author of the famous "Arabian Nights."

Crossing the bridge from Mining we soon reach the Houdan, or Japanese

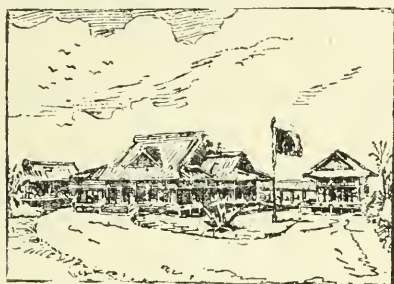


FIG. 579.—JAPANESE HOUDAN.

building, which is really a group of three, each representing a different period in Japanese history. They are very clean and tidy, richly decorated on wall and ceiling, but lacking entirely in those easy chairs and couches which our luxurious country provides. Another bridge or two and we pass the largest State building on the grounds, that of Illinois. Its grand dome is so showy that many new comers suppose it to be the Administration Building. Inside it has many fine exhibits; especially those in geology and entomology. In the latter was shown the average food of one robin for one year, and the immense number of larva, beetles, moths, etc., which he destroys, has led us to entertain a greater respect for the robin than ever before. Some wonderfully beautiful fern decorations ornament one part of this building, which will repay inspection, and in another part are cased the standards of the Illinois volunteers, as brought home from the Civil War.



FIG. 580.—ILLINOIS STATE BUILDING.

A little farther on, facing the lagoon, is the Art Palace, to many the most attractive building on the grounds, for it contains the most magnificent collection of paintings ever brought together in any one place. Of the most refined classic architecture of Grecian-Ionic style, the building itself is a study for

the architect. The main portion is 500 feet long and 320 broad, besides which there are two beautiful annexes. The great dome is 60 feet in diameter, 125 feet in height, and is surmounted by a colossal statue of "Winged Victory." The finest exhibits are those of Britain, Germany, France, and the United States; but in the Russian collection there were four very striking pictures, which very much interested the writer, viz., the ship "Santa Maria," on its way to America, when Columbus, during a heavy storm was surrounded by his revolting crew; Columbus landing at San Salvador; Columbus' farewell in Palos; arrival of Columbus' flotilla on America's shore. All these are by Aivazovsky. The French paintings are bright and attractive, the German historic educational, but the English have the highest finish, and bear the closest inspection. This is not the opinion of a professional artist, but only of a humble horticulturist, who only studies trees, fruits and flowers, and knows nothing of the painter's art.

EMINENT HORTICULTURISTS, representing the American Pomological Society and other societies met by invitation in Mr. Samuels' office, on Thursday afternoon, the 18th of August. The Chief of the Horticultural Building, had in store two rich treats, first, fruit from all parts of the country for sampling; and second a delightful ride through all the lagoons—a complete circle of the grounds in one of those rapid electric launches, a distance of nearly six miles. This was highly appreciated by all.



FIG. 581.—THE ART PALACE.

MARKET GRAPE GROWING.



Other fruit will in the future ever supplant the grape for table dessert use. Grapes will be bought for their own intrinsic merit and value, and not because people can not get other fruits. The assertion made a year ago by a St. Louis firm, namely, "That when nine-pound baskets of Concords can be retailed for twenty-five cents per basket the consumption will be practically unlimited,"

seems to hold good.

The freeze of October 12th, if it taught anything, clearly showed the firm hold which our grapes have upon the popular taste and consumption. There was no doubt as to the loss in fine quality from that freeze. It seemed wise to at once stop heavy shipments of such damaged goods, and for a time there was an almost entire cessation. When a few days later, some of our heavy growers shipped off a few hundred baskets, just as an experiment, and the returns came back, they were the most surprised men in the county to find those off quality grapes bringing the highest prices of the season. The reason is easily stated. For a time the demand far out-ran the supply, and, as a consequence, prices went up.

While as a rule up to October 12th, the quality of the fruit was good, and the weather and roads almost perfect, everything favoring economic marketing, and large consumption, as usual the shippers of first, early, sour grapes, the growers and sellers of the wretched Champion, and unripe Concord and Hartford, got in their damaging work, although perhaps to a less extent than in some former years. This year the Worden more than sustained its former high reputation. It is indeed a noble variety, and without controversy the best black grape we have.

While some improvement has been made, our whole system still remains crude, ineffective and vastly expensive. What would the dairymen of Stockman, Ellery, Sherman and other dairy towns say, if when butter was bringing twenty-five cents in New York, it only brought fifteen cents in the home market, and yet that is the precise grape situation. In the open market in towns less than one hundred miles distant, hundreds of baskets were daily sold at twenty-five cents and upward, while at home they were only bringing fifteen and some days slow at that.

Of course it will be said that fruits are more perishable, and less easily handled than dairy products, and that we must expect a wider margin between what the consumer pays, and the grower or producer receives. This is all true where only a limited amount is being handled, but here is a product easily the first agricultural industry of this great country. It is being shipped by the

hundreds of cars, and thousands of tons. Will any good business man for a moment affirm, that it need cost ten cents per nine-pound basket to move this product one hundred, two hundred, or even one thousand miles?

After deducting the cost of baskets and labor employed in picking and packing, estimates from several vineyards indicate a net profit per acre of from fifty to one hundred dollars. Doubtless some exceed the latter, and some may fall below the former figure. The demand for roots for spring planting goes steadily on, and everything indicates a prosperous outlook for the grape, and on a basis as substantial as that underlying any other agricultural industry.

In the improvement of farm buildings, the erection of fine packing houses, and the use of the best tools, the swift progress made in this department in the last ten years, stands unequalled in the entire history of Chautauqua County.—Chautauqua Co. in Vineyardist.

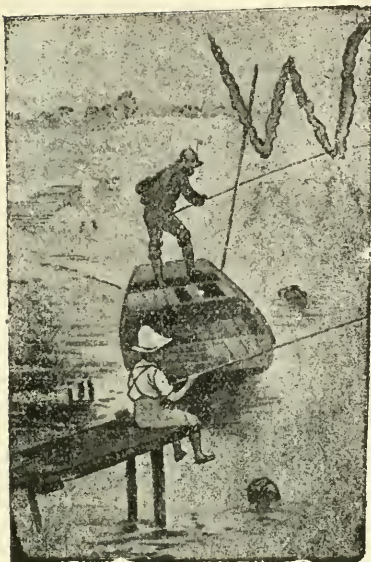
The Ontario, a hybrid resulting from the crossing of the Northern Spy and the Wagner, I consider the most valuable apple I have among 80 varieties. It was distributed by the Ontario Fruit Growers' Association, in 1879 or 1880, and is rated in Ontario at 39 points in a possible 40.—higher than any other, except Northern Spy. It is a strong grower and perfectly hardy, it bears early and annually; fruit above medium, and of remarkably uniform size, without waste from imperfections, that keep with ease in an ordinary cellar until May or June. I have reported favorably of the Ontario for the last ten years, and have given away thousands of scions but have not succeeded—and I do not know why—in getting it placed in the columns of desirable apples in the reports of the American Pomological Society.—CHARLES E. BROWN, *Yarmouth, N.S.*

FOR peppermint soil should be rich, mellow and moist. Divisions of the roots are dropped about six inches apart in rows two feet distant. Keep clear of weeds. Plant in May. When the plants come in blossom cut and carry immediately to the laboratory and distil. If dried for use, it must be done in the shade and branches must not become wet in drying. A plantation will last for years, but it is usual to renew it every three or four years. If Bert Walker's neighbors raise it, buy a few roots or cuttings from them. Expense of raising is light. Get your neighbors to try a mill on the co-operative plan.

STRAWBERRY LEAF BLIGHT may be prevented by the use of the Bordeaux mixture. This is our best known fungicide. The mixture is made by dissolving three pounds of sulphate of copper in three gallons water and mixing with it lime water made by slaking two pounds of quicklime in three gallons water. To the mixture add ten gallons water, then strain and it is ready for use.

PEACHES and apples have been seen in Eastern markets in small quantities. Peaches were too green to be desirable and the apples were small and common.

EVAPORATING OUR APPLES.



WHEN properly applied, evaporation produces but little change in the fruit beyond the removal of a large portion of the water originally present, and, of course, a corresponding reduction in weight and bulk. It follows, therefore, that if the proper quantity of water be added to the evaporated fruit it is practically fresh fruit. Why, then, is it that evaporation is not more extensively employed? The reason is not far to seek. On account of the amount of water removed in evaporating fruit, considerable time and care are required to prepare the evaporated fruits and vegetables for the table; whereas, in the case of can goods the cooking is done in the factory on a large scale, and the goods come into the consumers' hands quite

ready for the table, or at best merely requiring to be warmed. This it is that prevents the wider application of our process of fruit preservation. The question of fruit evaporation is thus practically limited to apples, and in this connection the industry has assumed somewhat large proportions, and is yet capable of considerable development.

The apples sent to the evaporating factory are such as are not suited for shipping; that is, such as are not possessed of keeping qualities, windfalls and the culls of winter fruit. At the factory the apples received are divided into two grades; first, those of good flavor, size and shape, and so suited for peeling by machinery; and second, all inferior, badly-bruised, mis-shapen and small fruit. The first grade is peeled, cored and sliced by machinery, often in one operation. The sliced fruit is at once exposed for a few minutes to the gas produced by burning sulphur. This prevents discoloration, and in no way injures the fruit; at most only a mere trace is left after evaporation is completed. After being "sulphured," the slices are spread on trays of galvanized iron netting, or of cloth, and heated air passed over them, the result being, as already mentioned, that a large portion of the water is withdrawn, and at the same time certain chemical changes, akin to increased ripening, are produced in the fruit, resulting in an increased percentage of sugar, and diminished acidity. The length of time the apples are exposed to the heated air depends

upon the temperature employed. Considerable skill is required to obtain a satisfactory article ; if the temperature of the evaporating chamber be not right at the beginning of the process there is danger that the slices will become damp, whereas a properly evaporated apple is dry and spongy. After withdrawal from the evaporator, the apples are usually allowed to lie in a heap for several days, to equalize the moisture that may be in different batches. They are then packed in boxes usually containing 50 lbs. each. The cores and peelings of the first grade of apples are not wasted. They and inferior apples that reach the evaporating factory may be classed together, as they usually undergo the same treatment, although worked up separately. According to the market, these two materials are used as a source of cider, or are evaporated, and shipped to jelly makers on this continent, or sent to Europe, where they are used in the fabrication of certain grades of wines. Sometimes the apples are quartered before being evaporated ; sometimes they are treated whole.

Let us glance now at this process in its relation to the fruit grower. In the first place an evaporating factory presents a means of rendering marketable fruit which otherwise would be unsalable, and in the second place it gives employment for several months of the year to a large number of hands, thus giving an increased home market for fruit growers' products. These benefits have been recognized by fruit growers in places where evaporating factories exist, and the inhabitants of such localities have been willing to offer inducements to companies to locate in their midst.

If it be granted that an evaporating factory is of advantage to fruit growers, the question arises : What is to be done in the fruit growing districts where no such factories exist ? Can the individual fruit grower evaporate his own apples ? There are small machines made for this purpose and widely advertised. Experience has shown, however, that they do not give as good results as they should, and as are claimed for them, and there is difficulty in finding a market for the small lots, and, of course, working on a small scale the expense of manufacturing is greater than in a large factory. In the opinion of the writer, evaporation on the large scale should be the object of those who would derive benefits from the process, and he would suggest that the fruit growers of a district combine, and agree to support a factory, as they do in the case of cheese factories and creameries, and it is altogether likely that someone could be found who would be willing to erect the not very expensive plant required and conduct the manufacture.—Report of Montreal Horticultural Society, 1892.

THOMPSON'S EARLY is one of the most prolific of the red raspberries. It is also early and of the best quality for table use. Its flavor is sweet and will command the highest price in the market. The vines will not ordinarily winter-kill or rust, which enables it to make a strong, hardy growth.

CIDER VINEGAR.



UNLESS near a large market it is often difficult to sell the surplus of summer and fall apples owing in great measure to their lack of keeping qualities. One good way to dispose of them is to work them up into vinegar. It will not be long now before apples begin to ripen and those who have a large number of early apple trees will find the following article from the Homestead suggestive and of value :

Good wholesome cider vinegar is seldom met with nowadays in a grocery. The product called cider sold everywhere in groceries is manufactured on a large scale directly from alcohol by diluting it with water, adding a little yeast, and exposing the mixture to the air. The last operation is best effected by causing the liquor to trickle slowly through a cask filled with beech or oak shavings which have been previously soaked in vinegar. The process is known as the quick process of making vinegar, and it is very sharp. It is reasonable to suppose that good vinegar cannot be made in this way. The best vinegar, therefore, can be made on every farm from the sugar contained in the juice of apples, and is the one in the manufacture of which farmers are interested, and which is the best for general domestic use.

When cider is exposed to air the yeast principle soon begins to operate and causes the first fermentation by which a little starch is converted into sugar, but almost simultaneously the stronger fermentation begins by which the sugar is converted in to alcohol. If the temperature is low, and the cider undisturbed, it will rest here for weeks and perhaps months. With a rise of temperature, or stirring frequently, the third fermentation begins called the acetic acid. The change will be slow or rapid, according to the atmospheric exposure.

If the cider fills the barrel the change will be slow ; if the barrel is full the exposure will be greater, and the change will consequently be more rapid. If this amount be stirred vigorously once a week it will be more rapid still. These very rapidly-made vinegars are always of inferior quality, having a stinging taste. No vinegar can be called a good article that has not a rich " body" and a fine aroma. It cannot be made in a hurry. A certain amount of old stocks in casks thoroughly impregnated with acetic acid is necessary for its production. The cider after having passed through the fermentation which converted the sugar into alcohol and precipitated all solid matter to the bottom, or threw off when the cask was full and the bung open, is racked off into other casks. A certain quantity, say five gallons more or less, is weekly through the summer season drawn out and added to the half filled hogshead containing stock.

After the cider is added to the stock the whole is stirred vigorously. This operation may be repeated once or twice a week, or not so often during the

summer, just owing to the temperature. Good vinegar cannot be made from poor watery cider. Sweet apples make the best. Unfortunately your city markets are full of poor stuff quickly cheaply made from whisky and water. A little of the former mixed with a large quantity of the latter produces acetic acid very rapidly. This now greatly injures the market for pure cider vinegar.

A barrel of pure cider vinegar was offered on the market by a farmer. The grocer after tasting the vinegar would not buy it, saying that he could not sell it, as his customers wanted sharp vinegar (made out of whisky,) and consequently no sale. Hence we do not see why every farmer who owns an orchard should not only have for his own use the pure cider vinegar, but can sell to those less fortunate in the ownership of an orchard.

HOW TO HANDLE FRUIT PROFITABLY.

EVERYWHERE properly grown and prepared fruit is what gives a margin, especially so in time of plenty. The disposition of the fruit is no less important than either of the foregoing. Growers should, as much as practicable, avoid the concentration of too much fruit at any one point. It should also be the aim of every one to get all perishable fruit from the plant, vine or tree to the consumer as quickly as circumstances will permit. My fruit is nearly all sold direct to the consumer. Commission business for the grower is unprofitable, although it cannot always be avoided. I am situated so that I can reach about a dozen towns, the most remote not over fourteen miles, one a city and some of the others large towns of great enterprize. A team will reach any of these points and deliver fine fresh fruit direct to the consumer at a price not easily obtained in any other way.

In this way the fruit, if as before designated, will get a reputation which is of itself a great seller. Could I not do this I would hire some person in each town to whom I would ship as much fruit as he could profitably handle, or I would ship my fruit to different points and follow it up myself or send a good man and sell to dealers, in this way creating a demand for it. One of our men sent nearly all of the berries he received to points back in the coal regions, and received more for them than he could at home, thereby lessening the glut at home and maintaining a better price for those sold there. Avoid as much as possible sending a large amount of fruit to market on Saturdays. Many growers rush the fruit out for fear it will perish before it can be handled on Monday. I prefer to let such fruit remain where it grew, as it holds better there than anywhere else, cold storage excepted. If some does perish I claim it financially better than overstocking a Saturday's market and selling at a non-paying figure. Some practice picking on the Sabbath in order to be in market first on Monday. This I detest and will not practice.—C. BRINSER, Dauphin County, Pa.

❖ The Apiary ❖

HOW TO SELL HONEY.



IT is one thing to raise a crop of honey, but quite another thing to sell it. The progressive beekeeper of to-day must be posted in regard to the markets and manner of putting his honey on the market, as well as the more modern methods of producing it, if he would make beekeeping as profitable as it should be. There are two things that tend to and do depress the honey market, which can and should be avoided. First, the great bulk of honey which is put on the market in a poor shape. We must have our honey put up in small sections and in the most attractive style. In order to have it thus it is important to attend to it properly, just as soon as the harvest is over, and get at least a part of it on the early market, as it always commands a better price than later.

Take the honey from the hive as soon as the main white honey season is over, and place it in a warm room with the temperature at 95° or 100°, and it will ripen just as well as if left in the hive. If left in the hive until late in the season, the bees begin to prepare for winter by filling every crevice and opening with propolis. The sections become travel stained and the honey gets dark, and no amount of work will make it as attractive as it otherwise would have been. The sections should be thoroughly cleaned, and labeled or stamped with the producer's name on them, and crated in neat crates with glass fronts, so it will present a nice appearance. Such a crate of honey will sell at good prices. The lack of knowledge in regard to the price in the different markets is more prevalent among the farmers and small producers. Many farmers will go to market, says a writer in *Practical Farmer*, and take what the merchant chooses to give them, when, with a reasonable knowledge of the markets and demand, they could in many cases get much more for their goods. This not only does them an injury, but injures all other people who are engaged in the same occupation. A goes to market with a few pounds of honey. He asks the grocer the price. The grocer replies: "I just received a very nice lot yesterday for 12½ cents per pound, and I guess that is about what it is worth in the market here." He is not pleased with the price, so he tries another grocer and gets a similar answer. So you see A is compelled to sell his honey under its real market value, simply on account of those ignorant and inexcusable ones who are not posted about the market. I find this the case quite often, even this year when the crop is away below the average. Always sell it in your home market if possible. It is risky to ship. Honey is an excellent article to retail and I have adopted this way largely in disposing of my crop. The retailers won't pay as much as they will to commission houses, besides freight, drayage, and the risk in shipping. They

want five cents per pound for selling, which is too much. If you have honey to sell watch these points. It will pay you. I can retail my honey at a little less profit than the grocers and make good wages. This cuts out the middlemen's profit and brings the producer face to face with the consumer. You can create a better demand and soon establish a firm trade. But you must produce a fancy article ; try it.

BEES AFTER THE HONEY FLOW.



FTER the honey flow has passed, bees sometimes become somewhat troublesome. These troubles are often augmented by a lack of correct information upon the habits and natural tendencies of the honey bee. A little mistake may cause a great commotion, and a little foresight will generally entirely prevent any difficulty.

When bees are unable to gather nectar in the fields, and especially in the beginning of such a period, they are liable to make every effort to secure from other sources those sweets they are unable to gather from the natural. They will attack a weak colony—one unable or unwilling to defend itself. Amongst the former we find weak colonies and colonies largely black, amongst the latter, colonies which are queenless. If bees must be handled, it should be done under cover of a tent made for the purpose, or towards evening, and combs exposed for as brief a time as possible.

The advantage to be derived from an examination towards evening is this : if the bees get a notion and opportunity to rob they keep right at it until night, or even longer, and the longer they have to work before night the more liable they are to continue the attack next morning, and the more harm they are likely to do.

When the bees get excited through robbing they become irritated ; they are more inclined to sting, and attempt to get into houses, and especially the kitchen department. There is really no necessity for such discomfort, and the bee-keeper who thus causes unnecessary discomfort to himself and his neighbors should be corrected.

As before stated, at such a time handle only towards evening, the later the better, as long as the operation can be completed before night. Do the work under cover of tent, if possible, but if the former condition is watched this latter is not an absolute necessity. Expose no sweets at any time ; this will begin the trouble. If bees are kept close to the house, it is well, if much canning or preserving of fruit has to be done, to do it in the afternoon.

To the bee-keeper who has not much experience, I would say : see that all colonies have queens ; the bees lose courage when without a queen, and fall a ready prey to those with more energy. The black bees are peculiarly liable to thus become discouraged.

Should the attacking bees once get into another hive, it is a difficult matter to stop robbing. A great many ways have been recommended, and yet, I know of no sure means of stopping this. First of all, there should only be one way of getting into the hive, and that by means of the entrance, that should be made no larger than the bees can defend. If a full colony, two inches or less will answer, unless the heat is excessive. The blocks should be nailed, or of heavy material, otherwise the bees can crowd it away. If this does not stop the robbing, grass thrown loosely and plentifully over the entrance makes it difficult for the bees to pass through it, and the bees in the hive have a chance to renew their defences. This failing, coal oil poured about the entrance may stop the bees. In conclusion, it may be well to say the first indication of robbing, to one not experienced, is a great commotion about the hive and dead bees about the entrance.

Brantford, Ont.

R. F. HOLTERMANN.

HOW TO PACK GRAPES.

It pays to put up grapes in a careful and attractive manner. They should be cut two or three days before they are to be packed and allowed to stand. The stems will become limp and pliable, the skins will toughen a little so that the bunches will pack closer and with less bursting of the berries. Every bunch should be handled and the green, decayed and cracked berries removed with a pair of scissors. Five or 10-lb baskets are best and handiest, although many use gift crates. A new spring crate is rapidly coming into favor. It is about as cheap as baskets, and a wire serves both as a handle to the boxes and a spring for the grapes to rest on.

Many growers who handle tons of grapes every year find it pays to look over every bunch and take out the bad ones. Women are generally employed to do the packing and pruning, as they have a lighter touch than the common man laborer. One woman should pack 300 10-lb baskets a day and two good cutters will fix up the bunches as fast as she can take them. This means only 1c. more on a basket and they will often bring 5c. to 10c. more because they look nice.—*Farm and Home.*

SMYTHE : "I hear you are having a delightful time in the suburbs—raising vegetables and keeping chickens." TOMPKINS : Not exactly. I simply keep the chickens ; they raze the vegetables."—*Truth.*

SIMSON (sternly) : "Willie, where are those green apples gone that were down cellar?" WILLIE : "They are with the Jamaica ginger that was in the closet."—*New York Sun.*



SUBSCRIPTION PRICE, \$1 00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE AMERICAN POMOLOGICAL SOCIETY held a reunion here in Chicago in the Art Palace, lake front, on Wednesday evening, the 17th inst. Owing to the great World's Columbian Exposition, it was decided to postpone the meeting one year, and then accept an invitation which has been received from San Francisco.

THE POMOLOGICAL SECTION of the World's Congress Auxiliary met the same evening, and listened to able addresses from Mr. G. B. Brackett, of Iowa ; T. P. Lyon, of Michigan ; and Geo. T. Snow, of New York State.

RED ASTRACHAN IN CHICAGO.—Were it not for the duty of seventy-five cents per barrel, it might pay Canadian growers to send some of their summer apples to Chicago. The Red Astrachan is worth \$3 and \$4 here (Aug. 8th) ; and Canadian stock seems to have the precedency here

PAMPAS GRASS FOR DECORATION.—Mrs. H. W. R. Strong, of Whittier, Los Angeles Co., California, is a lady of wealth and enterprise. She has a large ranch on which she makes the growth of pampas a prominent industry, and this beautiful pampas palace is a specimen of pampas decoration. The rugs on the floor, the panelling on the ceiling, the lattice work of the windows, even the tea kettle hanging in the fireplace, are all made of this king among grass. In England it is much in demand for decorative work, 30,000 plumes per annum being the present rate of the export, and this is rapidly increasing.

VISITORS TO THE CANADIAN COURTS all seem to unite in one voice that Canada is doing herself great credit before the world with her exhibits. Great

Britain is not so prominent as she should be, especially considering the fine showing made by France and Germany; but Canada stands out quite at the front. Mr. J. J. Long, President of the Board of Trade of Collingwood, called to-day; he said, "I am much pleased with the exhibits of Canada throughout, and I think the fruits we grow—notably our apples and peaches—compare favorably with any others; and are only excelled by California."

TRADE BETWEEN BELGIUM AND CANADA.—On the 27th inst., Mr. A. J. Shoenfeld, of Antwerp, called at our office at the World's Fair. His object in interviewing the Dominion Superintendents was to learn what prospect there might be for Belgian settlers in Canada, and what articles might be interchangeable between the two countries. He believes that Belgium could use a large quantity of Canadian apples, both in fresh state and evaporated; also canned goods, especially tomatoes, sugar corn, and pickled onions. He also thought that the best brands of Canadian flour might find a market in Belgium.

On the other hand, Belgium could furnish Canada such products as linen, glass and marble. The following are the names of two houses in Antwerp with whom business might be opened experimentally, viz, Louis Strauss & Co., 120 Boulevard Leopold, and Jacob Shoenfeld, 10 Rue de Nerviens, Antwerp, Belgium.

Further information may be obtained by communicating through Mr. Arthur J. Shoenfeld, 2221 Calumet Ave., Chicago, Ill.

CANADA'S WINE EXHIBIT, which forms the third Court under the charge of the editor of this Journal, is shown to good advantage by means of a unique and artistic trophy. Many foreigners, interested in viticulture and wine-making, express their surprise that we can ripen vine grapes in Canada, and on testing the quality of the wine, testify to its good qualities. The last caller was Mr. Victor Latorez, of Wartburg, Tennessee. He said he was not surprised that we should produce good wine, for the farther north a wine grape would ripen, the better the quality of the wine made from it. He was himself planting vineyards in higher altitudes than formerly in order to get similar results.

He advised Canadian wine makers to try Jaegars 70, a variety originating with Hermann Jaegar, in Maryland, a cross between the Post Oak and a Rupes-tre's, and maturing before Norton's Virginia; also the *Old Hundred*, a new variety originating with the Roanoke Nursery Co., Salem, Virginia, both excellent wine grapes.

To ripen the Isabella grape before frosts, clean up the ground and let the sun pour in and dry and heat it. One of my vines which has not ripened any fruit for years is doing nicely under this fall treatment. To clip off part off the leaves is also recommended.—A. C. WEST.

THE BRITISH APPLE MARKET.

LIVERPOOL.

SIR,—We beg to hand you the annexed annual report of the apple crop in the United Kingdom for 1893. The early promise of an abundant crop has, up to the present, been realized, and should the weather continue favorable during the next two months the quantity will be the largest for many years past. Out of 270 reports obtained this year, 79 are over average, 134 are average, and 57 are under average, and prospects are best in the most important districts.

The import from America and Canada last season was 1,203,538, as against 1,450,336 in 1891-92, which was the largest on record. The experience of the past season has been anything but satisfactory, the bulk of the Canadian crop was secured by a few operators, who must have lost heavily, and the season from beginning to end has been one of disappointments. The crop generally was of poor quality, size, and color, the exact reverse of the previous year, which was the finest in quality and condition ever received, and no doubt this, in conjunction with badness of trade, had much to do with the unsatisfactory results. The prospects for the coming season cannot be considered brilliant; the depression in trade still continues, and there is no indication of any immediate improvement. Should the English apple crop be all safely harvested, it will be ample to supply the demand during the early part of the season, and, consequently, none will be wanted from America and Canada before good, well-matured winter stock can be shipped, at which period the English crop (which is fully one month earlier than usual) is mostly disposed of, an insignificant quantity only being of keeping quality.

The total imports to Great Britain during the past season, from United States, Canada, and Nova Scotia, were as follows: Liverpool, 799,000 barrels; other ports, 405,000; total, 1,204,000. Against same period 1891-92, 1,450,000 barrels; 1890-91, 451,000; 1889-90, 650,000; 1888-89, 1,435,000; 1887-88, 629,000.

Yours truly,

WOODALL & Co.

Liverpool, July, 1893.

With the approach of another season, we desire to place before our friends the following information regarding home and continental crops, also what appears to us the probable prospects for American and Canadian, as viewed in their present aspect.

ENGLAND—Owing to the exceptionally fine weather, the trees have borne remarkably well, and, after allowing for the falling off of many apples through the prolonged drought, the crop is more than an average one, while on all hands the quality of the fruit is said to be good. The Gardeners' Chronicle of this date publishes reports received from correspondents residing in the principal growing districts throughout the country, and, summarizing them, we find whereas fifty-three record an "under average" yield, sixty-nine give the crop in their respective localities as being "over," and one hundred and twenty-seven fully up to the average.

CONTINENT.—Climatic conditions have been equally favorable there as with us, and reports to hand show good crops all around. France has a very plentiful supply, and will undoubtedly send us large quantities, while Belgium and Germany are not much behind, their crops being estimated as of a good average. From Portugal we have been getting large quantities for the past month, and although prices now ruling are very low, it is not likely that supplies will be totally stopped, even from this source, for some little time to come.

Altogether, it will be clearly seen that for the next two months or so our wants will be fully supplied from the above-named sources, without any Falls from your side, though, after the unfortunate experiences of last year, we doubt if many would, under any circumstances, feel disposed to risk sending any forward. Should, however, an outlet be wanted for some of this class, we advise the sending of *colored varieties* only, as while not wishing in any way to mislead, it is just possible some few may do fairly well, owing to the preponderance of green among own and continental varieties. Of course, if any of these are sent forward, particular care should be given to the grading and packing, with a view to their reaching us in good order, as we feel sure if shippers had attended to this more last season, results of their earlier shipments would have proved more satisfactory to them.

About *Winters*, we feel we cannot say much, not knowing what the crop is likely to be, but if the quality is good, and quantity not over large, we shall be disappointed if a fairly good demand is not experienced. It will be remembered that the depression in trade spoiled the market completely last season, and it must be admitted that things now are not by any means so bright as they might be, a strike of most serious import being now imminent among colliers. At any rate, prospects do not favor extreme prices, and it is to be hoped dealers will not be induced to pay too much in the orchard, as was the case last season.

Liverpool, Eng., July 22nd, 1893.

JAS. ADAM, SON & CO.

SIRS,—It is our custom to annually ascertain as correctly as possible the prospects presented by the apple crops of the United Kingdom. We do this in the belief that such information may be useful to our friends, who intend shipping American and Canadian apples during the coming season.

We are led to expect a home crop much superior in extent and quality to recent seasons. This fact is likely to be unfavorable to shipments of the inferior descriptions of Canadian and American apples, but it is fair to mention that the very advanced state of the home crops will most likely throw the bulk of supplies earlier than usual for consumption on the markets, and consequently foreign supplies, which arrive later, will not have to compete with the full weight of the crop.

As regards the *superior qualities* of the winter stock of Canadian apples, we do not hesitate to expect a good demand.

We repeat our warning of last year that *very small and common qualities* are not likely to result favorably to shippers, and are better left alone. This, in face of plenty of English apples, is more than ever likely to prove wise advice.

At foot we give you the names of our representatives at the three principal shipping ports, who will be pleased at any time to give you information respecting freights, state of the English markets, etc., as we are in constant cable communication with them.

Yours truly,

Liverpool, 29th July, 1893.

J. C. HOUGHTON & Co.

LONDON.

SIR,—The time having now arrived when those interested in apple shipments from America, Canada, and Nova Scotia, should be able to form some idea as to the probable amount of business with Great Britain during the coming season, I submit for your information a digest of reports to hand as to the condition of the apple crop here, as well as on the Continent.

The almost phenomenal early summer, with continuous fine weather since the month of March, has had a remarkable effect on our fruit, as well as other farm crops, and in the result our season is from four to six weeks earlier than usual. The continuance of the drought such a long period has not had such dire results as might have been anticipated, and with the exception that there is a large percentage of apples falling from the trees, our crop will be more than an average one for early sorts. Later kinds have suffered most from the drought during the setting period, and fallings continue to be heavy.

GREAT BRITAIN.—The reports received from the Counties, from which London derives its principal supplies, may be summarized as follows: That the early apple crop will be more than an average, and the condition of the fruit generally very good. Later sorts may improve, but this will largely depend on the weather; present appearances are favorable for an average yield, provided fallings do not continue so heavy. The Western and Midland Counties report heavy early crop, but lighter yield of the later sorts; condition of fruit trees not very healthy, stated to look "scrumpy" for want of moisture; and in a few important districts the red spider and other insects have attacked the orchards to some extent.

HOLLAND AND BELGIUM.—Reports indicate a full crop of the early sorts; but some of the later kinds do not show so healthy, owing, no doubt, to the early drought.

GERMANY.—The apple crop here will not be so good as was originally expected, fallings being exceptionally heavy; the dry period during setting time has had a worse effect on the fruit trees than in neighboring countries. There has, however, been some rain lately, which may modify present anticipations.

FRANCE.—The long drought has caused a large proportion of the fruit to fall, and the apple crop, which originally promised to be abundant, will only be a medium one. This refers to all kinds. Rennet de Canada will be ready by the end of this month, which, for this apple, is exceptionally early.

The conclusions to be derived from the above reports are: That the home crop will be abundant for supplying the wants of our markets during the early part of the season, and the later sorts, even with a loss from "fallings," will be sufficient to fully supply the demand for South of England until end of October. Shipments ought, therefore, not to commence till the end of October or beginning of November, when our markets should be open for choice samples.

London, England, July, 1893.

J. B. THOMAS.

FRUIT PROSPECTS.

WATERFORD.—*Sir*,—The apple crop will be about ten per cent. of an average. The foliage is very fine; the fruit is likely to be large, and of fair sample. Pears, thirty per cent., and the trees almost free from blight; peaches, eighty per cent.; plums, forty per cent.; blackberries, one hundred per cent.—J. H. MCMICHAEL.

MIDDLESEX COUNTY.—*Sir*,—Blackberries, grapes and plums are a heavy crop. Peaches good, but few grown in this district. Apples are light, and pears average, or rather heavy.—GEO. H. DIXON, *Hyde Park*.

VICTORIA COUNTY.—*Sir*,—Estimate of probable fruit crop for present season, on basis of 100 per cent. for average yield: Apples, 50; grapes, 100; pears, 30, and very much spotted: Plums, 100, not much curculio.—THOS. BEALL, *Lindsay, Ont.*

❖ Question Drawer. ❖

Diseased Peaches.

511. *SIR*.—What is the cause, and the best cure for mildew on the peach, and what injury is done by it? I have quite a number of trees that the top seems to be affected with it. Would spraying with Bordeaux mixture, made just strong enough so as not to affect the foliage, be of benefit?

H. W. COTTLE, *Salem, Oregon.*

Reply by Prof. John Craig, Central Experimental Farm, Ottawa.

Supposing the above disease to be "monilia," one of the commonest fungus enemies attacking the peach and the plum, the following course of treatment is recommended for trial: Spray as soon as the fruit sets with sulphate of copper, two ounces to 45 gallons of water; follow this with diluted Bordeaux mixture, to which Paris green has been added, for the purpose of checking attacks of the curculio. If rot develops late in the season, as sometimes is the case, just before the ripening of the fruit, spray again with sulphate of copper solution, or ammoniacal copper carbonate. No diseased fruit should be allowed to hang upon the tree, as it only serves to spread the malady.

❖ Open Letters. ❖

Report on Strawberries.

SIR.—The spring of 1893, was the most favorable for a good crop of the strawberry for many years past. No frost in the ground, the weather mild and warm, and rain sufficient to make strong healthy plants; the forerunner (weather being favorable) for a fairly good yield of berries.

The varieties that have done well here this season, are as follows:

Woolverton.—Notable for size of berry and productiveness and long bearing with no small berries.

Saunders compares favorably with Bubach in size and productiveness. A deep red color is good in this respect. I think it excels Bubach.

Bubach still maintains its reputation as a market berry, although its quality is none of the best.

Haverland is another of those early berries that take the eye, if it is a light red; it is a good home market kind, so is Lovett, Warfield, Barton's Eclipse, Princess and Shuster's Gem.

Some of the newer varieties have done well here and are worthy of trial among strawberry men generally, and are an acquisition to the strawberry plot that will drive the number of small berries now offered for sale out of the market.

The new varieties I have fruited this season are large—Beverly—the plant is healthy, making many crowns; fruit large and good color, late in ripening, and a long time in bearing, giving berries to the last of the season.

Iowa Beauty—The berry is perfect in form and shape; it ought to have a place in every garden; it reminds one of the old Jucunda, also Beebe, Dayton, Muskingum and Regina.

Arkansas Traveller—Tall and vigorous vines, fairly prolific, berries medium size, medium to late in ripening. I can see no difference between it and Judsonia.

Van de man—I like both plant and berry, which is a medium size, with prominent golden seed, fairly prolific, flavor none of the best. I have been disappointed in it from the reports of many experimental stations about it.

I have added several varieties to my testing plot this spring, namely: Timbrell, Leader, Gen. Putnam, Ona, Oscar, Ostego, Robinson, Edward's Favorite, Chesapeake, Topeka, Stewart, Californian, Cowan, Idaho, Miller's Seedling, Chou's Favorite, Oregon, Everbearing, Alpine Seedling, with seven seedlings and the R. N. Yorker's great seedling—the Brandywine—these eight are under restrictions.

JOHN LITTLE, *Granton, Ont.*

Potash for Peaches, Orchards, Gardens.

SIR,—I am a great believer in potash for fruit trees. There may be no cure for Yellows, Black-knot, etc., but there is no doubt a strong healthy tree or plant can resist and throw off disease better than one run down, weak and sickly, one that has been bled to death for season after season. I advise potash in any form that it can be had, but for peaches, vines and small fruits I think the Muriate is best. Mr. D. Kerman, of Port Dalhousie, had some Muriate of Potash this spring to test. I enclose his letter which I shall be glad if you will publish for the benefit of our fruit growers. I am a great believer in testing and trying experiments. I don't think Mr. Kerman regrets his outlay for his experiment with potash this spring. We have such clever fruit growers in Ontario that it surprises me that they don't all test for themselves the different foods that they know the trees need—Nitrogen, Potash and Phosphoric Acid. Potash is very important, but to get the *very best* results Phosphoric Acid is needed as well. These two things should go on in the fall; though wonderful results have resulted to Mr. Kerman after putting potash on in the spring and summer. I also experimented this summer on some corn and asparagus in Toronto; the result is very marked. The corn is 12 to 18 inches higher and much stronger, and the asparagus much thicker and foliage much darker than the portion untreated with the potash. Nitrogen I should put on as early as possible in the spring. It is only by many experiments and often failures that we get at anything like perfection. I therefore strongly urge your readers to test these things for themselves.

ALFRED BOYD, *Toronto.*

Mr. Kerman and Muriate of Potash.

SIR,—The Muriate of Potash which I got of you in the spring has far exceeded anything I have seen in the way of fertilizers. The first thing I applied it to was my asparagus bed; the result was really astonishing. Owing to my being ill and confined to the house for some weeks about the end of May, I had a small block of peach trees which were omitted to be cultivated. I did not get round until the 10th of July, there were a large crop of fruit on them, but the trees looked very sickly and the leaves yellow. On the 13th of July I put on round the trees about 3 feet from the stem, 3 lbs. of Muriate of Potash per tree. The effect in even 10 days was extraordinary (they were Alexander peaches), and there were not near the rotten ones on those trees that there were on other trees that had not been dressed. I am very pleased you recommended it me, and cannot speak too highly of it. Should you at any time wish to make any use of this letter, you are at perfect liberty to do so.

29th Aug., 1893.

D. KERMAN, *Port Dalhousie.*

✻ Our Book Table. ✻

BOOKS.

ANNUAL REPORT OF THE FARMERS' INSTITUTES of the Province of Ontario, 1892. President, Thos. Lloyd Jones, Burford; Secretary, A. H. Pettet, Grimsby.

REPORT OF THE POMOLOGIST for 1892, by H. E. Van Deman. Issued by the U. S. Department of Agriculture, Washington, D. C.

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ILLUSTRATED CATALOGUE AND PRICE LIST OF SILVERWARE, Imperial Silverware Co., Windsor, Ont.



HOWELL.

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THE HOWELL PEAR.



IF the pears grown for market at Maplehurst, one of the most satisfactory of its season is the Howell. Its size, freedom from scab, worm holes and other blemishes, and clear, yellow skin at maturity, combine to make it a very attractive pear for market. It ripens about the end of September, just when the Bartlett season is over. We do not know of any other variety more desirable at this season, unless we except the Duchess which is often very inferior in appearance owing to curculio knots. The Sheldon, of course, surpasses them all for dessert purposes, but the tree is not nearly so productive and the fruit is not more attractive in appearance. In the estimation of fruit growers generally, the Howell is one of the best of the varieties of American pears.

The tree is an upright, vigorous grower and very productive.

The pear is thus described by Downing: Fruit rather large, roundish, pyriform; light, waxy color, often with a finely shaded cheek, thickly sprinkled with minute russet dots and some russet patches; stalk medium length, inserted without cavity, sometimes by a ring or lip, sometimes in a small cavity; calyx open; segments recurved; basin rather large and uneven; flesh whitish, juicy, melting, brisk, vinous. Quality very good; season, September, October.

It originated with Thomas Howell, of New Haven, Conn.

THE AMERICAN WHITE ELM.



GOOD professional landscape gardeners and architects do not need any more information about this tree ; I am not writing with a view of trying to instruct them, but because so many who are not of the profession have erred in not assigning it situations for which it is most suitable.

This much, however, may be said about many trees, both native and foreign, but at present I will only mention the elm. If I were to speak of the elm as a forest tree I would tell you about a straight stick of square timber seventy-five feet long, which was gotten out of a swamp forest by a negro near here a few years ago, but just now I will speak of it only as a shade and ornamental tree.

For parks, avenues, village streets and school grounds no tree is so well adapted. Its high arching branches affording ample shade for comfort, without dense foliage like some other trees, which preclude the free circulation of air, which often is of more importance than shade.

Lately I drove over a road, two miles of which is straight and nearly level, lined on either side with a straight monotonous row of hard maples growing rather closely together. Their low spreading branches meeting over the road, and giving the roadway somewhat the appearance of a dismal tunnel, which during summer time is kept continually in a muddy state. I would not be understood as offering one word of disparagement of the maple. They are, when judiciously appropriated, both beautiful and useful, but a tree which is ornamental and useful in certain places, may be unnecessary and displeasing in other places. For shelter belts, sometimes called wind breaks, I would not recommend elms, because they soon override other trees of less robust growth, such as maples, beeches, birches, oaks, hickorys, walnuts and lindens. The elm is a majestic tree, and needs more head-room than any tree that I know of.

Elms send out wide spreading roots near the surface devouring what plant nourishment the soil may contain, hence they should not be planted near fruit trees of any kind.

As a wayside tree the elm is peculiarly adapted, not only because of the lofty arch its branches form, but being free from low spreading branches, under its shade many wild flowering plants and shrubs thrive finely ; thus beautifying the road margins, which, under a dense shade, are usually covered with dead tree leaves, preventing even the growth of native ferns.

Speaking of wayside adornment brings to my mind the most beautiful piece of road I ever travelled ; many miles of which there grows on either side a great variety of native trees, planted by nature at irregular distances, with an undergrowth of ferns, wild flowers and shrubs, with occasional open views of lakes

and mountains alternating with shady spaces, altogether making the road exceedingly attractive.

The general habit of the white elm gives a high wide-spreading top, yet we now quite frequently find individual trees, which are natural weepers after they attain a considerable height, forming exceedingly picturesque trees.

Such, however, are merely accidental, because seed from them does not produce a large proportion of true weepers, although many of the seedlings are more inclined to weep than of those grown from seed of stiffer growing varieties.

Elms, when not planted too closely, grow to a great size and live long. In the Village of Portsmouth, there grows one which is said to be over 100 feet high, with branches extending 45 feet on either side. Old inhabitants tell me this was an old tree 75 years ago, so it is now probably more than 150 years old, and shows but little sign of decay.

Elm seed should be sown soon after it is ripe, because if kept dry it soon loses its vitality. The seedlings should be left to grow in the seed-bed the second year, after which they should be planted in nursery row, and transplanted again in two years, when they can be lifted with abundance of fibrous roots.

Cataraqui.

D. NICOL.

CONCERNING PEARS.

A writer in the New England "Homestead" who says he has been raising and handling for the Boston market about all the well-known varieties of pears for 25 years past, gives the following points in relation to that fruit:

"The pear never can be classed with the apple and peach as a food product. The peach pickers of the South during picking season live principally on them, while the apple furnishes pies and puddings used throughout the world. Where does the pear come in? Only to tickle the fancy of some well-fed epicure. The sweet flavor of the Seckel properly ripened pleases all, the tart and pungent flavor of the Beurre d' Anjou and Louise Bonne de Jersey have their friends, although the appetite of our pickers in the orchard is hardly ever attracted to the Anjou pear as it is to the juicy Sheldon and Beurre Bosc. The Bartlett takes the lead, coming as it does in the proper pear season, the others following in rotation. Each and every variety has its place to decorate the banquet table in the holiday season. The poorest flavored pear, the Beurre Clairgeau, is often used on account of its bright rosy cheeks and attractive looks, the guests never eating but one and wishing they hadn't begun after the first bite. The intelligent housekeeper fills her preserve jars with the tart-flavored Louise Bonne when she can get them mixed with quince, making a most delightful preserve. But as a table luxury the Bartlett, Sheldon, Beurre Bosc, Lawrence, de Anjou and Duchess, ripening about in the order given, will always be wanted to supply the family as well as hotel trade in all our towns and cities."

VINEGAR MAKING.



THE Farmers' Call gives the following hints on vinegar making, which, it says, are based on years of practical experience:—One of the common uses now made of the apple crop in many sections, is to convert a large part of it into vinegar. With many farmers this has entirely superseded making cider for a beverage, and from the fact that less care is necessary in gathering the fruit, it is found fully as profitable. When made in large quantities the process begins as soon as enough apples have fallen from the trees to furnish a supply.

The apples are ground in mills, as for cider, and the juice may be expressed at once, but more commonly the pomace is kept in vats or hogsheads until it has fermented and become quite sour before the pressing is done. This sour cider is then allowed to settle and is run into barrels, but not quite full. Throughout the fall season these barrels should be kept in the sun, covered with loose boards as a protection to the cooperage, and the bungs should be left out until it is necessary to remove them for the winter. The bungholes should be covered with bits of thin netting that will keep out insects without excluding the air.

Experience has demonstrated that a barrel contains about the right quantity of liquid, and an open bunghole gives sufficient exposure to the atmosphere for making vinegar of the best quality by this slow, natural process. Some dilution with water is often necessary where the cider is so rich in saccharine matter as to prevent its turning to vinegar in a reasonable length of time.

Vinegar barrels should be iron-hooped and be kept well painted to resist exposure and prevent leakage. The natural process will require a year or more of time to produce an article acid enough to meet the requirements of the market, but it will continue to grow stronger by age, and will admit of sufficient dilution to compensate for loss by evaporation and leakage.

The natural process of vinegar making may be accelerated by occasionally running the cider from one barrel into another, and thus exposing it for a time more fully to the air. Adding a gallon or two of strong vinegar or a little mother to each barrel of sour cider is another method. Still another method is trickling it down through beech chips or shavings, and corncobs saturated with strong old vinegar.

Summer pruning is desirable because the wound heals rapidly, and is not followed by an excessive growth of water sprouts. The objection to summer pruning is the supposed shock to the tree by cutting away boughs in the growing season. The objection is mostly avoided by annual pruning and a little attention to water sprouts.

THE USE OF SHADE TREES.



REES, other than fruit trees, are planted mainly for two purposes, ornament and shade. For ornament alone, we desire trees that are beautiful in color or shape of leaf, color of bark, habit of growth, character of flowers or oddity of habit. Cut-leaved trees and those of a graceful, weeping habit do not cast a great amount of shade, nor attain great size; neither are they able to stand neglect or abuse. They may be said to belong to a higher order than other trees, and with their higher structure comes a greater and more complex development of parts, which necessarily

renders them more delicate and susceptible to injury, climatic conditions and changes. A purple beech or cut-leaved birch would be as much out of place, even if it could be made to grow, in a crowded city street as would a mammoth oak in the back yard of a 25 x 80 foot city lot. For shade purposes, then, it is desirable to secure trees which present characteristics somewhat different from purely ornamental trees. Some of them have directly opposite characteristics, others similar ones; as the character of the one class approaches that of the other the trees may be used for the one purpose or the other. Shade trees may be used for ornamental purposes, but the purely ornamental trees, so called, are not generally adapted for shade or street planting.

The chief requisities of a shade tree are that it be large and shapely, with abundant foliage, so that the sun does not shine through to any extent. A street tree must possess, in addition to the above qualities, a disposition to transplant easily when of good size, ability to grow well in poor, dry, hard soil, be capable of withstanding cold, heat and dust, and have few or no enemies. Along a country road or wide village street the soil is usually better than in a city street, where either the good surface soil has been removed in grading, or sand or other equally poor soil has been carted in on top. Paved streets have gutters that carry off the water, and the soil beneath is usually very dry and hard. In the city there is also a great amount of dust, smoke and soot, which is fatal to many trees, especially to evergreens. The conditions which a tree meets in the city street are directly opposite to those of its natural habitat; therefore, it is not strange that we see few large, healthy trees in the thickly settled streets of any city of considerable size or age. Most of the large trees we do see were planted when the city was a mere village, or they came up naturally before the street was laid out. The roots have gone far and deep in search of food and moisture, and became established before the present conditions existed. Along

country roads, in villages and the suburbs of cities, where the streets are not paved, more of the natural conditions are present, and dust is the only serious enemy present. Thus a great variety of trees can be used in such places, and better and more perfect specimens can be grown. On the lawn, in parks or private grounds, the chief natural condition which does not exist is the shade and protection of other trees that is found in the forest. By planting in groups this can be partly afforded, but most trees thrive by themselves after a year or two of slight protection. A nursery-grown tree is hardier and will stand transplanting to a position by itself better than a tree taken from the shade of its native forest. Never buy trees that are brought into the villages in wagon loads from the woods and peddled about the streets; they are usually poor investments.

For shade purposes and nobleness of stature there is no tree in the north which equals or excels the American elm. Its great height and spreading, drooping branches, place it above all rivals, but the elm-tree borer has become so serious in many sections in the east as to almost exterminate it and forbid setting any more. The canker worm and several caterpillars have also preyed on it, and it is such a high tree as to be out of reach of most spray pumps. The elms of Northampton and of Old Hadley, Mass., are famous for their stateliness and grandeur, and one who has seen them cannot but be impressed with their beauty and desirability for a street or shade tree wherever they will grow. The maple is a great favorite, and is a beautiful tree. It grows rapidly and symmetrically, casts a good shade in summer, and is pleasant to look upon in winter. Oaks are admired for their sturdiness, but are slower growing than the maples, and do not form so neat and compact a head, and they do not transplant easily. The locust presents a rough, crooked trunk and many dead branches, but is valuable for its flowering qualities and quick growth. The linden and tulip tree are of a similar character of foliage, are tall and upright, with a bare trunk for some distance and a good, round, close-growing head. A few evergreens are always desirable about a place to break the monotony of trees of a similar habit of growth and to present something green and snug in winter. Norway spruces are good while young, but are apt to be ungainly as they grow large. They should be kept well trimmed. Pines are effective, especially when planted in a group or at some distance from the residence. It is always desirable to plant a variety of trees, especially upon the home grounds.

In laying out a place, trees should be planted in groups, clumps and masses about the borders, with but few single specimens. A purple beech and other colored or exotic trees look better alone than mixed with other trees. As a rule, do not mix deciduous and evergreen trees promiscuously in the same clump, but keep them separate. So, also, do not plant oaks and willows together, for they are not only of widely dissimilar habits of growth, but the rapid-growing willow would soon hide and possibly injure the slower growing oak. Avoid so many trees that the place looks like a forest, but do not plant so

few as to give it barren aspect. Those of greatly differing characteristics should be somewhat separated. Planting for color effect in autumn foliage may also be done, and to secure this a careful study of the shades of leaf of each variety and species, with the time of their assuming different tints, is necessary. As a rule an individual tree takes on the same tint each fall, but this color would probably be made to vary by transplanting the tree to other soil. The autumn color of American foliage is among the brightest in the world, and its effects should be more sought in lawn planting.—From "Street and Shade Trees," a book issued by the Rural Publishing Co.

COMPOSITION OF THE APPLE.



HEMICALLY, the apple is composed of vegetable fibre, albumen, sugar, gum chlorophyll, malic acid, garlic acid, lime, and much water. Furthermore, the German analysts say that the apple contains a larger percentage of phosphorus than any other fruit or vegetable. This phosphorus is admirably adapted for renewing the essential nervous matter, lethon, of the brain and spinal cord. It is, perhaps, for the same reason, rudely understood, that old Scandinavian traditions represent the apple as the food of the gods, who, when they felt themselves to be growing feeble and infirm, resorted to this fruit for renewing their powers of mind and body. Also, the acids of the apple are of signal use for men of sedentary habits, whose livers are sluggish in action; these acids serving to eliminate from the body noxious matters which, if retained, would make the brain heavy and dull, or bring about jaundice or skin eruptions and other allied troubles. Some such an experience must have led to our custom of taking apple sauce with roast pork, rich goose, and other like dishes.

The malic acid of ripe apples, either raw or cooked, will neutralize any excess of chalky matter engendered by eating too much meat. It is also a fact that such fresh fruits as the apple, the pear, and the plum, when taken ripe and without sugar, diminish acidity in the stomach rather than provoke it. Their vegetable salts and juices are converted into alkaline carbonates, which tend to counteract acidity. A good ripe raw apple is one of the easiest of vegetable substances for the stomach to deal with, the whole process of its digestion being completed in eighty-five minutes. Gerard found that the "pulpe of roasted apples mixed in a wine-quart of faire water, and laboured together until it comes to be as apples and ale—which we call lambswool—never faileth in certain diseases of the raines, which myself hath often proved, gaining both crownes and credit."—*Ex.*

EXPENSES OF EVAPORATING.



WHILE there is doubtless a wide field open in the dissection of co-operative fruit evaporating, says *Farm and Home*, some of the statements are very misleading, and the estimates of the cost of production are palpably incorrect. I have had several years' experience as superintendent of a large establishment of this kind, have "made apple" under a variety of conditions (and that circumstances do vary the chances for the successful

manufacture of evaporated products there is no doubt). The quickest parers I have ever had would not average more than thirty bushels in a day or night of eleven hours, and such as are able to do that are paid \$1.10 to \$1.25 per day. It also requires two very smart girls to trim and spread for one parer (and in one factory that part kept three girls to each parer) at 90 cents to \$1.00 per day or night, the night gang receiving the larger price. Again, under the most favorable circumstances, it will require one pound of coal for each pound of fruit, making 600 pounds of coal in a day, at a cost varying according to the price of coal, but about \$1.50 a day for the 100 bushels of apples. So we find, not including the cost of running the drier, or an extra man to handle so many apples and remove the refuse of the packing, we have as running expense for 600 pounds of dried fruit :

4 boys (two by day and two by night).....	\$ 4 50
8 girls (four by day and four by night).....	8 00
Coal.....	1 50
	<hr/>
Total.....	\$14 00

Interest of cost of plant, breakage and wear of machines, insurance, etc., will balance the value of the refuse for either cider or jelly.

The original cost of the green fruit determines, in a great measure, the price of the dried, as when apples are scarce in the fall, good evaporated stock will command a good price. Sometimes as high as fifty cents per bushel has been paid for apples, the manufactured products selling for \$400 a ton, or twenty cents a pound at wholesale. Again, good fruit is bought for ten cents per bushel, the price for evaporated apple corresponding.

Where many hands are employed, the one who attends the drier will get good pay, which, together with various incidentals, will bring the cost of manufacture alone to from \$24 to \$30 for 600 pounds, or four to five cents per pound. This, with the cost of the apples (that will vary from three to ten cents per pound of dried fruit), gives us as the minimum cost of the production eight cents, and from that to fifteen cents per pound, or from \$42 to \$90 as the cost of 600 pounds of dried apple. This is within actual experience.

In many places hundreds of bushels of apples are wasted, or made into cider at low prices. Probably in such cases two or three neighbors might get a low cost apparatus, and by performing the labor themselves, could dispose of the better quality of their windfalls at prices more satisfactory than cider mill prices, and at the same time put on the market an article of food much superior to the old sun-dried apple; but anyone expecting to make \$15 profit on an outlay of \$25 will be doomed to disappointment. While any old room or shed may answer for a few weeks' operations, or the preparation of but a few pounds of apples, for the proper storing of the green fruit, packing and handling the dried product, disposing of the refuse, and warmth and shelter day and night for the help, a much more expensive structure will be required for permanent operations. Again, no one need expect to make a No. 1 article of dried apple, such as will sell readily and at a good price, unless he has had some experience, as a few pounds of imperfectly prepared or improperly dried fruit might spoil an entire batch, thus entailing loss and disappointment. With sufficient capital, well arranged buildings, the best machinery, and careful, intelligent supervision, the business of evaporating fruit (either co-operative or not) is profitable, one season with another, fairly profitable, while it enhances the value of a grade of apples hitherto nearly worthless.

The Colorado Spruce is *Picea pungens*. It is called "Colorado" blue spruce because the species is a native of the mountains there, and not because the trees are cultivated there for sale. Different trees are of different shades of green, varying from the plain green color to a light silvery or steel blue color. If you should raise them from seed, probably half of the seedlings would have bluish foliage, and five or ten per cent. of the seedlings would be of a handsome glaucous blue color. Nurserymen who raise these spruces from seed usually pick out the blue ones and sell them for handsome garden specimens, and the green or poorly glaucous ones are disposed of for hedges, shelter belts and forest planting.

In Keeping Celery for Winter Use always keep the tops dry, although

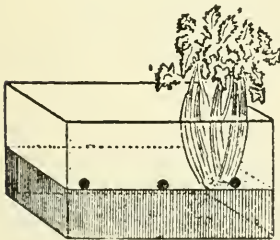


FIG. 382.

the roots should be kept moist. The cut given herewith shows a good way by which it may be done: Take an ordinary soap box, shoe box or any of sufficient size, and bore holes three or four inches from the bottom. Then fill in a shallow layer of soil or sand and put in the plants, placing them upright. The soil can be then kept damp by moistening through the holes in the side.

A LOW-PRICED EVAPORATOR.

WE so often receive inquiries from subscribers about evaporators, and so few apparently are in use in Ontario, that we took notes of the Improved Evaporator, on exhibition at the World's Fair, by D. Stutzman, of Ligonier, Indiana. It is to all appearance, simple, durable, and efficient. The largest size shown was the Farmers' Favorite, weight, 225 lbs., and capable of evaporating four or five bushels of apples per day.

It has twenty trays, 12 x 24 inches of surface each.

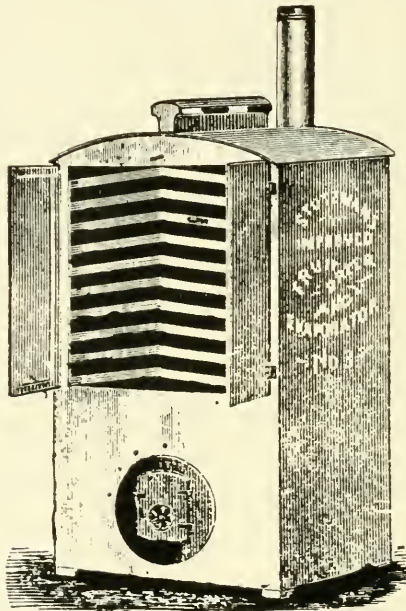


FIG. 383.—THE FARMERS' FAVORITE.

HOW TO SECURE YEARLY CROPS OF FRUIT.

President Barry, of the Western New York Horticultural Society, in reply to various questions says :

“I think that the cultivation and fertilizing of orchards, notwithstanding all that has been said and written about it, is not properly understood to-day. I believe firmly that if an orchard be thoroughly cultivated and well manured, and the fruit thinned, and this method put in practice every year, we can have a good crop of fruit. Those are the great secrets of fruit culture ; you cannot put on too much manure nor keep the ground too thoroughly cultivated.

“Is there any method of pruning that will answer as a method of thinning the fruit? Proper pruning does thin the fruit; that is one of the ways of accomplishing thinning properly, by pruning, which should be attended to every year. An orchard that is not pruned in four or five years becomes so injured that it is almost impossible to get it into proper condition again.

“What has been your experience in sorting apples for market? That is another very important operation in fruit growing that does not receive the attention that it merits. The ordinary fruit grower is not particular enough in grading his fruit to get satisfactory returns from sales. Our practice is to sort out the very choicest fruit and put it up in small packages, and I believe this is the course to pursue, not only with pears but with apples.”

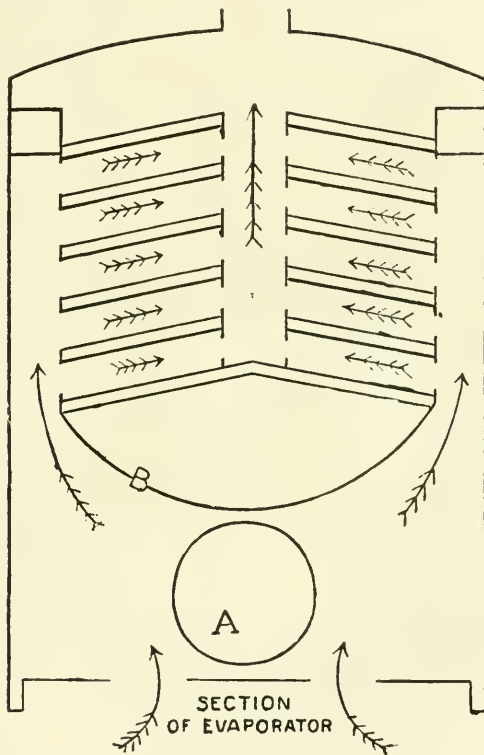


FIG. 384.—SECTION OF EVAPORATOR.

This cut shows the inside working of the Stutzman Fruit Evaporator. The two arrows below show the free access of dry air into the hot air chamber around the furnace A; heat divider B distributing heat equally to openings on either side, thence over trays as indicated by arrows, thence out at top. All the moisture arising from the fruit is carried off very rapidly by an unobstructed current of hot air passing over trays as indicated; leaving the fruit with all its original flavor and of a very bright color.

REQUISITIES FOR APPLES.



SUCCESS in orcharding has to do with varieties, treatment, and sale. Cast all personal preferences aside, and select such kinds as succeed in our respective localities. This is most important. We must know the prejudices of purchasers—whether red or white apples prove the most popular; whether the size shall be large, medium or small. The question of quality settles itself. It is a fine theory that would compel orchardists to become public instructors; but if high flavored, beautiful fruit cannot be raised at a profit, that of inferior quality will, and must, take its place. Another strong point is to be content with few varieties—the fewer the better. “Succession of kind” sounds plausible, as well as the assumption that when we have many varieties some one or more will surely produce a crop. That this is unsound reasoning many orchardists have learned to their sorrow. One thoroughly reliable variety is worth more than a hundred of doubtful character. With naturally good mellow soil, all needed preparation is to manure with no stinted hand, and then plough deep and thoroughly. It is of the utmost importance that the young orchard receive a good send-off; after that, if cultivated carefully for a few years, meanwhile cropping with vegetables, there will be no cessation of growth in the trees. This part of the programme is generally carried out, but, after cropping with vegetables ceases, how many people ever fertilize the soil, or care for the trees? More failures resulting from the cessation of surface culture and proper pruning, than from attacks of insects, which, under preventives and treatment of recent years, are not considered a serious obstacle. How to place one’s fruit properly on the market seems to the uninitiated a point of minor consequence, but when we perceive customers calling year after year for packages bearing the imprint of some noted orchardist, there must be a reason for it, and the solution is, that the fruit is carefully and evenly selected, preserved in first-class condition, and is, in short, just what the invoice calls for. Nearness to good market is an important factor in making apples pay; the nearer producer can get to consumer, and consequent reduced freight, the greater the margin of profit of course. Finally, much depends upon close application and earnest work. Under the impression that trees can care for themselves many young orchardists have utterly failed.—
Josiah Hoopes.

CLOVES are largely grown in Zanzibar. A tree ten years old often yields twenty pounds a year, while one of twenty years’ growth may yield one hundred pounds. The crop last year was not far from 13,000,000 pounds, and the average local value is about fivepence a pound.

THE RED SPIDER.

(Tetranychus telarius, Linn.)



PERHAPS there is no pest that does so much damage as the red mite, or, as it is improperly called, the "red spider." All florists have had it to deal with, especially those who grow roses. It is not only an enemy to the rose, but is equally destructive when it attacks any tender plant. It has been found upon the currant and gooseberry, where it did considerable damage to the foliage. It has also done harm to quince and plum trees.

The red mite, *Tetranychus telarius* (Fig. 385), has been found on a great variety of plants, and from its shape and habits it was supposed to be the same insect in every instance. This fact has been proved, as the rearing of these specimens has brought forth the same species. The mites vary much in color, from a greenish to a brick red. This great difference in color may depend upon the character of the material in the alimentary canal or upon the age of the insect, the older ones being of a brick-red color.

The "red spider" is very small, being only about one twenty-fourth of an inch long. The body is of an oval form. The legs are eight in number, in the mature mite, two pairs extending forward and two backward, the first pair being the longest (see Fig.) 385. The eyes, which are two in number, are very small, and can be seen only by means of a highly magnifying power. On the posterior portion of the body, and on the ventral side, is the spinning organ. From this habit of spinning a web, many people are led to believe this insect a spider, while in reality it belongs to the spinning mites. The mandibles, or jaws, are short, and are fitted for cutting. Just between the mandibles is a barbed sucking apparatus. With the

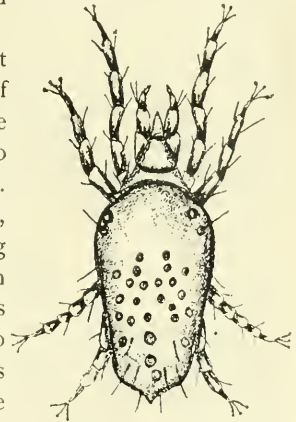


FIG. 385.

the jaws the mite tears away a portion of the leaf, and then inserting its sucking tube into the ruptured leaf, takes up the juices of the plant, and thus destroys the cells. This gives to the leaves "a yellowish or greyish appearance above, with some patches of a lighter shade, forming a kind of marbling." The edges of the leaves are rolled back on the under side, and the leaf beneath is whitish and shiny. The under-side of leaves having the above-mentioned appearance will be found literally covered with eggs and mites, in all stages of development and growth.

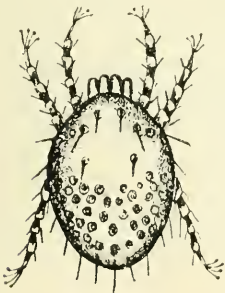


FIG. 386.

In the construction of the web the feet aid greatly, and by means of the hairs at the ends of the claws the web is

drawn out and attached. While spinning, the feet are very active, and the mite moves about freely, but if placed upon a smooth surface the movements are more sluggish, and are produced with greater labor.

The eggs of the "red spider" are spherical, and nearly colorless. Within less than two weeks the eggs hatch, and the young mites appear. They differ from the imago or mature mite in size, and by having three instead of four pairs of legs (Fig. 386). The young mites are of a clear, transparent color, and after shedding their skin for the last time, have eight legs.

In order for the red mite to thrive well, the atmosphere must necessarily be hot and dry. From this fact, one can readily destroy them by means of a thorough spraying with pure water.

During a very dry year at the Michigan Agricultural College, these mites were exceedingly thick on the evergreens, which they threatened to injure seriously. Spraying profusely with pure water seemed to be as effective to destroy them as did such insecticides as whale oil soap, kerosene emulsion, etc. Care should be taken, however, to make the application thorough, especially on the under side of the leaves, as it is here the mites congregate. Sulphur has been used extensively as a remedy for the "red spider." The sulphur should be mixed with quicklime and water; about one pound of sulphur and two of lime to four gallons of water. This will make a solution strong enough to destroy the pest in all its forms. If the heating pipes are painted with a mixture of sulphur and lime, the pest may be destroyed. This, however, can only be practised upon plants that are reared under glass.—Orchard and Garden.

MURIATE OF POTASH.

Manuring Peach Trees.—The experiments which were made a year or two ago in New Jersey gave interesting as well as varying results. Nitrate of soda at the usual rate of 150 pounds to the acre produced no results at all; superphosphate added about 30 per cent. with 350 pounds to the acre, but muriate of potash, above all the rest, with only 150 pounds doubled the crop. When these three fertilizers were applied together the product was more than doubled. Still above all these was the result of 20 two-horse loads of barn manure, yielding three times as much as the unmanured ground. The value of potash for peach trees is seen in the above mentioned increase with muriate of potash. The large quantity in bulk of the horse manure is sufficient to account for its effects. These experiments were performed in Somerset County near the centre of the State. In other localities and with unlike soils, the results in some instances might have been quite different.



CANADIAN WILDFLOWERS.—III.

The Buttercup Family—(Continued).

ANEMONE TRIBE—Genus *Hepatica*.



IS there any need to describe the hepaticas? They are so widely distributed, and open their pretty blossoms so early in the spring, that they are favorites with every woodland wanderer, known to some by the name of Liver-leaf, to some as Snow-flower, and to a few as Wind-flower, though the latter name is usually given to the anémone. Bryant alludes to it under the name Windflower, where he says :

“Lodged in sunny clefts,
Where the cold breeze comes not, blooms alone
The little Wind-flower, whose just opened eye
Is blue as the spring heaven it gazes at.”

Linnæus named it *Anemone hepatica*, but later botanists have followed the earlier name given by Dillenius. They also make two species of our hepaticas, giving to those plants in which the leaves are composed of three obtuse, or rounded lobes, the name of *Hepatica triloba* ; and to those in which the lobes instead of being rounded are acute, or pointed, the name *Hepatica acutiloba*. Beyond this difference in the form of the leaves there does not seem to be any permanent features to distinguish one from the other. In both of them the involucre leaves are placed so near to the flower that they might be easily mistaken for a calyx, and in those plants that have rounded lobes these leaves are rounded, while the acute lobed have the involucre leaves also acute. The flowers in both have no petals, but the sepals are colored, sometimes a pale purple, oftener a pure azure blue, “as the spring heaven it gazes at,” and sometimes pink, or white; they also vary in number from six to twelve. In some localities one will find only the round lobed variety ; again in others the acute lobed seems to be the only form. Both forms are to be found in the vicinity of Toronto ; the round lobed prevailing in the vicinity of Victoria Park, the acute lobed on the western slopes of the Don, and seems to be the only form in the vicinity of Whitby. In both, the leaves are radical, that is, grow directly from the root, the flowers single, perfect but not complete, and borne on long peduncles, flower stalks, from hairy scapes. Both prefer partial shade, and a somewhat sandy loam.

They are both of easy culture in the garden if given a shady spot, either among shrubs or under trees, where the sunlight sifts down through the branches or where the shadow of fence or buildings will screen them from the hot rays of noontide sun. They will abundantly repay a little care in the giving them a yearly dressing of fresh leaf mould, or rotted turf, and in the autumn a light covering of fallen leaves, which may be allowed to remain. It is said that under generous treatment the flowers become sometimes double, though this has not occurred in the writer's experience; nevertheless a well-cared for bed of them, even if the flowers are all single, is a most beautiful and pleasing object in the early spring.

ANEMONE TRIBE—*Genus Thalictrum.*

THE RUE-ANEMONE, *Thalictrum anemonoides*, is the best of our species for the flower garden. It blooms at the same time as our wood anemone, described in the April number, page 140, and is often found associated with it. None of the species have any petals. In most of them the flowers are small, and the sepals fall early, but the sepals of this one are half an inch long, oval in form, numbering variously from five to ten, usually white, sometimes, though rarely, suffused with pink, and do not fall early. The radical leaves are compound, composed of three leaflets that are three lobed at the end and heart-shaped at the base. The stem leaves are in the form of an involucre at the top. Occasionally the sepals are three-lobed like the leaflets. It is quite common in the woods, its distribution extending from Canada to North Carolina, and it is a pleasing flower in the garden as a companion with other early spring flowering plants.

Our remaining species are none of them particularly desirable for the flower garden. The following are found in Canada, and will be interesting to the botanist or student making a collection of Canadian plants:

EARLY MEADOW-RUE, *T. dioicum*, is common from Gaspé to the Pacific, and as far north as latitude 67°. It grows from one to two feet high, and blooms in April or May, varying as to date according to the locality. The flowers are purplish and greenish.

PURPLISH MEADOW-RUE, *T. purpurescens*, grows to the height of two to four feet; is found on dry uplands and rocky hills, and is mentioned as growing near Belleville and London, Ont. Blooms in May or June.

TALL MEADOW-RUE, *T. cornuti*, is found growing around springs and small streams, and in wet meadows. It varies in height from four to eight feet, and is quite common from Nova Scotia and New Brunswick to the Pacific. May be found in bloom from July to September. Flowers white.

CROWFOOT OR BUTTERCUP TRIBE—*Genus Ranunculus.*

There is at least a dozen species of this genus growing in Canada. Two of them are aquatic, and unless one has a pond in which to grow them, they cannot be used as ornamental plants.

THE COMMON WHITE WATER-CROWFOOT, *R. aquatilis*, is found in slow-flowing waters; in bloom from June to August.

THE YELLOW WATER-CROWFOOT, *R. multifidus*, is in flower from May to July, the flowers from half an inch to an inch in diameter, and of a deep, bright yellow color.

The first two of the following varieties are suitable for the flower garden. The one called

RANUNCULUS RHOMBOIDEUS is very abundant in the sandy soil about Toronto Junction, blooming in April or May. It is of very dwarf habit, not more than from three to six inches high. The root leaves are roundish ovate, the upper stem leaves three to five parted, and the whole plant thickly set with soft hairs. The flowers are of a rich, bright yellow, about an inch in diameter. It takes very kindly to cultivation, increasing in size and beauty. The petals are five in number, and the sepals the same.

THE EARLY CROWFOOT, *R. fascicularis*, is also a low-growing, pubescent plant, about nine inches high, but the root-leaves have a pinnate appearance. Its flowers are also yellow, about an inch broad; petals often six or seven in number. It is usually found blooming in May, but this season it was most abundant about Toronto in the early days of June. Both of these varieties take kindly to the garden.

THE SMALL-FLOWERED CROWFOOT, *R. abortivus*, is very smooth, the lower root-leaves round, heart shaped, the upper ones frequently three-lobed, and the pale yellow petals shorter than the reflexed calyx. It is quite common on shady hillsides, and along brooks, growing from six inches to two feet high, but the flowers are too small for ornamental purposes. So also the following varieties are not ornamental, namely:

THE CURSED CROWFOOT, *R. sceleratus*; smooth, root-leaves three lobed, petals scarcely longer than the calyx; pale yellow. Grows in wet ditches and blooms from June to August.

THE HOOKED CROWFOOT, *R. recurvatus*; hairy, leaves of the root and stem deeply three-cleft and borne on long leaf-stalks. The petals are shorter than the calyx, which is reflexed. Common in the woods in May or June.

THE BRISTLY CROWFOOT, *R. Pennsylvanicus*, is hirsute, the leaves divided, and the divisions unequally three-cleft. It grows in wet places from two to three feet high, but the flowers are insignificant.

There seems to be some doubt whether the

CREeping CROWFOOT, *R. repens*, of Linnæus, is found in Ontario, though mentioned by both Logie and Billings. It grows in moist and shady places and wet meadows; its flowers are an inch broad, and to be found from May to August.

The three named below grow in wet places, such as the shores of lakes and inundated banks:

WATER PLANTAIN SPEARWORT, *R. alismefolius*, is from one to two feet high, sometimes rooting from the lower joints ; flowers bright yellow, but small, the petals being only about one quarter of an inch long, appearing from June to August.

SMALLER SPEARWORT, *R. flammula*, has also very small yellow flowers ; and the variety *riptans*, known as the CREEPING SPEARWORT, its threadlike, creeping stems rooting at all the joints ; may be found in bloom from June to September.

450 Markham St., Toronto.

D. W. BEADLE.

MAKE THE ORCHARD PAY.



F orchardists want the greatest returns from their trees they must be prepared to dispose of their products in the most economical and profitable way. I have found that to evaporate second quality apples is a good plan, but the expense depended greatly on the condition of the fruit, whether it be badly bruised and soft, or not. The fruit that I evaporate is nearly all from grafted trees and averages six pounds per bushel. The average natural fruit will make about four pounds per bushel. Baldwins and Greenings six to seven, Russets eight.

My average expense for evaporating and boxing has been three and a half cents per pound, or at the rate of twenty cents per bushel. About ten cents is the average price at wholesale for evaporated apples. I use an American evaporator, that is intended for bleaching apples, but it is not desirable. The dry fruit should be bleached from five to eight minutes in a separate place, and as soon as it is cut and spread on the trays it should go thence directly to the evaporator. There will be thus no complaint of smell or taste of sulphur in the apples. Another fault that I found with my evaporator was that it was built to take the apples into the top and deliver them next the furnace. In this way it is impossible to keep the desired amount of heat without scorching the apples. I improved this by entering the apples over the furnace and taking them out dry at the upper end. Steam heat in pipes would be much more economical than furnace heat.

Expenses for making this crop salable, doubtless vary in different localities. My apples are cut and placed on trays by women at sixty cents per day. A man is employed to attend the evaporator, and he is paid one dollar. Six hands dry, on an average, 150 pounds per day. One must not expect to get rich, drying apples. The fuel costs me three dollars per cord. When one has a quantity of apples hardly fit for market, he can get a fair profit by drying them. I consider it safe to dry all not worth a dollar per barrel at the door without the barrels. The fruit is sometimes quite scabby, and when it is so afflicted it seldom pays to pack it for market. I put such fruit through my evaporator and then it pays.—P. Whittier, in Alleghany Gazette.

FRUIT SPURS AND FRUIT TREES.



WE know that fruit spurs are short twigs growing on the sides of limbs or branches of fruit trees. They are not sprouts nor branches, nor limbs. They consist simply of spurs, from one to several inches in length, terminating with one or many fruit buds. When they are not broken, or pruned off, these spurs appear on the bodies of every limb and branch of a fruit tree. Dame Nature is an expert pomologist, hence she covers every limb of a tree with fruit spurs. There is a scientific reason for producing fruit spurs, and there are also plausible reasons why they should not be broken off. Dame Nature produces them so that the leaves on them may shade the bare surface of limbs, and thus protect the sap and cambium from being scalded and baked by the intense heat of a summer sun. I have often observed the upper side of large limbs, from which all these spurs had been broken off, that were as dry and dead as if the surface had been scorched by a fire. The burning sun caused this damage. All the fruit spurs had been sawed, or cut or jammed off by the feet of those who were climbing in the tree top.

Dame Nature produces these short spurs for an important purpose—namely, to bear fruit. In this scientific arrangement we perceive wonderful wisdom. When there are several apples or pears on a spur they will be less liable to be blown off by high winds than if they were hanging to the end of a limb or long twig. When most of a crop hangs at the ends of long and slender branches, a large portion will be jerked off by the rapid and continuous swaying of the branches during driving storms and tempestuous winds. Now then, we have a few important facts for the consideration of every person who owns only one fruit tree. There is no doubtful speculation about them. They are bed-rock facts which cannot be controverted. I have been familiar with them from early boyhood. Whenever I have pruned fruit trees, my invariable practice has been to spare the fruit spurs. Instead of sawing or cutting them all off one limb, I always leave enough to shade every branch, if possible, from the body of the tree to the extremities of the limbs. When climbing about in a tree top, I always spare the fruit spurs as much as possible. When plucking fruit, instead of pulling them off, fruit and all, and then separating the fruit from the spurs and throwing the latter to the ground, I always separate the fruit from the spurs with care, so as to avoid all injury or damage to the buds on the spurs. These buds are the embryo of the fruit for the next year. If the buds are broken off the tree will yield no fruit the next season. Every spur that is broken off this year lessens or damages the crop for next season. Cherry trees are frequently badly damaged by clawing off these fruit spurs, fruit and all, and thus throwing the crop for the next year to the ground. I have often seen the ground literally covered with

them, which had been broken off when the thoughtless were gathering the ripe fruit. When I pick cherries or plums, instead of hauling off a handful of fruit with the spurs, I take hold of the stems and thrust the thumb nail against the base of the stem so as to separate them from the fruit spurs without damaging next year's crop of fruit. Very few people ever think of this. The consequence is, many fruit trees have long bare limbs on which there is not a fruit spur for ten or more lineal feet ; whereas every naked branch should be covered with fruit spurs to shade the new bark in hot weather and to produce fruit. When children and thoughtless adults are plucking fruit they should be instructed repeatedly to spare the fruit spurs, and the matter should be explained to them often so that they will thoroughly understand that if they persist in hauling off the spurs they will damage the crop of fruit for the next season. Immediately after cherries are gathered, Dame Nature concentrates all the energies of the growing tree to develop the fruit buds, preparatory to the next crop of cherries. Every fruit spur thrown to the ground this year represents a cluster of cherries destroyed of next year's crop.—S. E. TODD, in Horticultural Times.

THE CULTURE OF HARDY BULBS.

The Best Time to Plant.—Any time between now and November will do, but bear it in mind that the bulbs will be better if put into the ground now than they will be if left in the seedman's store for another month or two. And the prices don't get any less, no matter how long you delay buying, but the longer you put off getting the bulbs, the less likely you are of getting a good selection of good bulbs.

What to Plant.—This will depend on what you want them for. If for beds then tulips, hyacinths, crocuses and Siberian squills ; the first two to fill the centre of the beds and the last two for use as edgings.

If you want them to set out in your borders to give you a variety and display of spring flowers, then get hyacinths, tulips, daffodils, Poet's narcissus, Crown Imperials, Guinea-hen flowers, crocuses, snowdrops, Siberian squills, Spanish squills, European blue bells, Grape and feather hyacinths, and the like. And this is a most enjoyable way of using them ; you can plant them most any where, and in summer after they have bloomed and died down you may let other plants spread over them without hurting them. In the case of crocuses and snowdrops they seem most at home when spread broadcast in the grass or skirting the bushes. But in thus naturalizing them plant them in good, moderately moist ground only, and instead of spreading them thinly all over the grass, keep them together, quite thickly in the main patch and more thinly towards the outer edges. And don't mix up a lot of things, as crocuses, snowdrops and Siberian squills together ; keep each in a colony by itself.—Popular Gardening.

POINTS OF MERIT IN TOMATOES.



THIS is the queen of vegetables, and one in which there is as wide a difference between the good and the bad as between a "frost" pear of the hedge-row and a well-grown Seckel. The ideal tomato may vary somewhat in shape, but, whatever that may be, there should be no deep corrugations or seams, the fruit being nearly smooth, although a slight depression along the line of natural division is not objectionable. The stem should always be relatively small, and set in a very shallow basin. When it is large and set deeply into the fruit it is accompanied by a pithy core extending into the fruit, and ruining it for slicing or for canning. The stem end of the fruit should be nearly flat or slightly rounded. When there are any marked projections here they will be sure to be imperfectly ripened at the time the rest of the fruit is in the best condition. As to color, tastes differ; but I have never yet found a tomato of the purple tint of the old Fiji, which was not of a sharp, hard, metallic-like acid, very much less pleasant than the mild, fruit-like acid of the true red or scarlet tomato; and I am quite certain that, were we to select ten of the best varieties, quality to rule, eight at least—and, I believe more likely nine or all of them—would be found to be clear, bright red, with little trace of purple.

Of the interior of the fruit, the general opinion as to what constitutes merit is certainly at fault. Most people only ask for a solid, seedless, pulpless flesh. Fortunately, the fruit is too good to develop any such worthless variety as is thus called for. If you carefully examine a tomato you will find that the greatest amount, and by far the finest flavor, is found in the pulp surrounding the seed, and that the flesh surrounding the fruit next to the skin is quite different, and greatly superior, to that in the interior divisions, which many people value as making a solid fruit. Often these interior divisions are made up of perfectly flavorless, hard, but corky tissue. This is the case in an exceedingly large fruited sort which I have grown several years for comparison, but have not considered worthy of a name or of general cultivation, although I am certain that this variety can be made to produce the largest fruit having the smallest proportionate weight of seed and the largest proportion of dry matter of any of the hundreds of sorts I have tried; and yet I have seen the Mikado recommended as the best variety, because it stood first of any the writer had tested in these respects. My ideal tomato, as far as interior is concerned, is one in which the outer circle of flesh next to the skin is very thick, the thicker the better; the interior divisions few, and, consequently, comparatively large, and each completely filled with pulp. Seeds are of themselves a disadvantage, but as we never have pulp except surrounding seeds, we shall have to have a fair quantity of them in order to get the

desired pulp. This pulp should be as thick as possible. We sometimes find fruit in which it is very thin, and in such cases it is usually quite acid. The pulp should be as thick or solid as may be, while the flesh, both of the outer circle and of the inner division, should be as soft and juicy as possible, thus making the fruit as nearly uniform in consistency as it can be made to grow. I would be as critical as to the flavor of the fruit as of that of a pear or apple, and insist that, to be good, a tomato must have a distinct fruit-like sub-acid flavor. Lastly, the entire interior, except the seeds, should be in color as nearly like the deep, rich red of the outside as possible, making a fruit which is a delight both in color and flavor.—PROFESSOR W. W. TRACY, before the Michigan Horticultural Society.

Making Cherries Profitable.—The cherry tree needs a dry, but rich, deep soil, with enough potash in it to supply its enormous demands for this mineral in producing its crop of seeds. The cherry itself is mainly water, but if the stone cannot be perfected the cherry is apt to rot, especially if a few days of wet weather occur about the time it should ripen. But to make cherries pay it is not enough to grow them. A large amount of cheap help must be had, women and children working at this, and earning more than they could at any other work. Then there must be a nearness either to a canning factory or to a station where the fruit may be shipped. The fruit must be picked dry, not wet, with either rains or dew, and with stems on. All imperfect fruit or that which has been torn or cut in gathering must be kept out. It is better to be fully ripe, rather than under ripe. Cherries do not ripen up off the tree as will many other fruits. A fully ripe cherry will bear transportation longer than one not ripe. Where conditions are favorable the cherry crop always pays a fair price, and occasionally in seasons of scarcity it gives more profit per acre than almost any other—American Cultivator.

Care of the Orchard.—No one should set out a new orchard unless he is sure he can give it both manure and mellow cultivation. A small one of a few acres, bearing yearly rich and beautiful specimens, is better than a neglected one spreading over wide acres. There will be more profit in the small and perfect one than in the one extended and neglected. Until planters who have the means avoid this superficial practice, they will continue to set the unwholesome example to others, and perpetuate to a great degree the slipshod style of orcharding. It is well, therefore, for the planter to determine beforehand what special attention can be given to the trees, and fix on the size of the orchard accordingly. Cultivation alone, keeping the soil clean and mellow for several years, may answer while the trees are young; but when they come into heavy bearing, this large annual draft can be supplied by an annual or at least biennial top dressing in the autumn or winter, of rich barn manure.—Country Gentleman.

THE BOSC PEAR.



WANT to say "Amen" to the hearty recommendation The Rural has given to the Beurré Bosc pear. Downing gave it "unqualified praise" many years ago, and all he said of it then has been literally true ever since. The American Pomological Society has continued to shower "stars" upon it in 25 States and provinces, and yet The Rural's question, "Is this delightful pear known to all of our readers who raise pears?" is a pertinent one. My own observation answers, "No." There are hundreds of orchards in New York State alone where the variety cannot be found, and many of the growers do not seem to even know of its existence.

The Bosc (as it is now properly called) is a Belgian pear, having originated with Van Mons in 1807. It is most distinct in character, being wholly unlike any other of the pear family. In shape and size it is without a rival. Its handsome pyriform always seems like an ideal pear to me, and it is uniformly large, smooth and regular. Compared with Downing's outline, my fruit is always broader at the base. An obovate, elongated pyriform would perhaps describe the shape better than nearly "pyriform," which is at best an ambiguous term in the absence of any typical pear form. I think on the whole Downing's outline is slightly inaccurate in the respect indicated as applied to the Bosc as generally grown in America. The quality is indeed delicious and excellent as described. The cinnamon-russet exterior is without knots, and covers the firm, rich, melting, perfumed flesh inside. The fruit keeps well and is devoid of any strong peculiarity in flavor requiring an education of the palate to appreciate. The tree is healthy and productive, though not a very early bearer with me. The wood is strong and handsome, and the habit of the tree excellent. It does, however, grow in clusters to some extent on my trees, often two or three together, as I find now on some grafts I have, and then the three long specimens are beautiful indeed. Another valuable feature of the Bosc is it does not scab, crack or mildew. This season it is growing in my garden grafted on Flemish Beauty stock with the cracked and scabby "Beautys," hanging around it, but the Bosc are all without a blemish. Why yes, everybody ought to plant the Bosc. It has not the flavoring and deceptive cheek of the Clairgeau, but it has positive merit and is one of the best of all pears.—H. H., in R. N. Y.

"Apple Trees do not require the constant nursing and coddling that orange trees must have to secure good crops. We have to grub the soil two or three times during the summer to keep down weeds; we have to sprinkle the foliage to kill insects, and we have to scrape and wash the trunk and twigs for the same object. We manure once or twice a year, and then we have frosts to contend with, and our fruit goes a long way to find a market." And this is the story many orange growers tell. Apple culture in New England promises quite as well to those who will learn the requisites to success as orange growing in Florida or elsewhere.—New England Farmer.

PACKING PEARS.

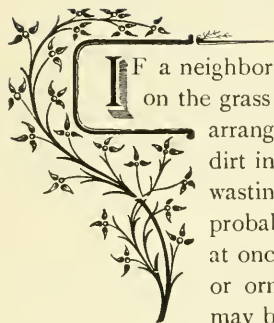


IN a paper on Pears, read by J. J. Black before the Peninsular (De .) Horticultural Society, the essayist said : " We believe that pears should be packed in new bright packages, half barrels, quarter barrels, boxes, crates, down to very small packages. We must take lessons from the California growers. The day has gone by when we can shovel fruit of any kind into five-eights baskets with a corn shovel and then expect the business to pay. In an average season it would be better that never a pear in the nature of a cull went to market. Feed such to hogs and you save freight and then commission, and avoid breaking down the market for good fruit. If a glut comes keep even your primes at home. It is suicidal to break the market ; or avoid it any risk.

" Devote time to the marketing of pears. Wrap each pear in tissue paper and pack in layer boxes. Then you won't bother with your inferior specimens. you will please the eye of the dealer and consumer and never overstock the market. Why is California fruit looked upon as choice in the market ? We all know it is not from its flavor. The fruit of the Delaware and Chesapeake peninsula probably excels in flavor the fruit of any other part of the world, and this advantage should work a fortune to our growers. The California fruit is looked upon in the market as choice simply because the specimens are all choice specimens, wrapped in tissue paper and packed in layer boxes generally, and is pleasing to every sense except taste. Peninsula fruit is pleasing to all our senses, provided we handle it carefully. This proper handling means the discarding in seasons of scarcity of probably one-fifth of the crop, and in seasons of plenty one-third should go to the hogs. Such a course, honestly carried out by the growers will rehabilitate our fruit business ; indeed, at present it is one of the great things lacking to general prosperity."

Be Not Afraid to Thin.—The fruits especially benefited by thinning are the plum, apple, pear, grape and peach. The amount of thinning required is a matter of judgment in each case. The best time to thin fruits is as early as the work can be done with ease and satisfaction. In thinning grapes it is usual to cut out a portion of the bunches ; but those who raise Black Hamburgs or other hothouse grapes are in the habit of cutting out about half the berries from each bunch when they are about the size of peas, using sharp-pointed scissors for the work. After such thinning the grapes grow very large, and present a very attractive appearance in the bunch. It is in this way that the wonderful fruit exhibited at our horticultural shows is grown. It is not customary to thin small-fruits, though there is reason to believe that they would be better for it ; but it is not likely that it would pay, unless for specimens for competition at the horticultural shows.—Mass. Ploughman.

ROCKERIES.



IF a neighbor should dump, without orders, a pile of stones and dirt on the grass in your front lawn, you would be offended; if he should arrange these rocks in a circular well-like mound with the dirt in the centre, you would wonder at his stupidity in thus wasting his time. Under such circumstances, you would probably consider the affair a blemish, and order its removal at once. Are the rockeries we ordinarily see any more useful or ornamental than what has just been described? They may be small and of common stones, or they may be large with many curious stones, and they may have some plants, but, if so, they are such wretched dried-up, burned-out, starved specimens that one only approaches them as they would a half-famished and ragged child of the city—out of pity and curiosity, not to admire. The same plants may be thriving in other parts of the grounds, and with the exception of the rockery the whole place may be in an attractive and thriving condition. You may say that these are misplaced and poorly constructed examples, and this may be true; but it is also true that the best constructed and most carefully cared-for rockeries, in all kinds of soil, do not begin to be as attractive as those that are seen, and that we read about, in European gardens. You will surmise that there is something in our climate responsible for this. If you compare the meagre flora, of a distinctly Alpine character, of the White Mountains of New Hampshire, with the extremely rich and varied flora of the Swiss Alps, you will have striking evidence of this.

In England, owing to the great amount of moisture, delicate rock plants can not be grown successfully in the open border, so the rockery is provided to give suitable conditions as regards drainage, exposure, etc. A large number of these same plants can be grown, with little trouble, in a well-drained open border here, and the only advantage that rocks can give is to raise them a little above the surface to make the drainage more perfect. In a rockery they would be burned and dried out in summer, or thrown, or frozen, out in winter.

It is hardly advisable to construct a rockery in any case merely for the sake of having one; the only reason for it would be that there was a spot on the grounds on which the conditions were favorable, that could not be used to advantage for anything else—like a steep, moist, rocky slope, a broken ledge, or a worked-out bit of quarry, or a cool, shady glen in the woods.

A rockery never should be placed in the centre of the lawn, and seldom where it is fully exposed to view across the lawn from important windows of the house. In the construction of a rockery, the most favorable conditions should be provided for the growth of the plants to be used in it. Good deep pockets of soil should be made, and advantage should be taken of any naturally moist

spot, or water should be provided. A variety of exposures should be secured, as well as soils. Of course, if it is intended to display a lot of curious rocks, soil will not be required, for such a display can be made to better advantage without plants to interfere.

In planting a rockery the greatest care should be taken not to introduce very weedy plants with underground stems, for if such a plant once gets a foothold the chances are that the rockery will have to be pulled down to exterminate them. Probably ferns, as a class, are better adapted to a rockery in shade than any other; but in a more open situation such plants as the following will be found to succeed without being too weedy:

Phlox subulata and vars. *P. stellaria* *P. amoena*, *achillea tomentosa*, *æthionema grandiflorum*, *alyssum saxatile*, *Arabis albida*, *armerias*, *asperula*, *campanula carpathica*, *cerastiums*, *dianthus*, *erysimum pulchellum*, *geraniums*, *gypsophilla repens*, *iberis*, *lotus corniculatus*, *myosotis*, *papaver alpinum*, *sedums*, *sempervivums*, *silene*, *stellaria*, *thymus*, *tiarella*, *tunica*, *veronica rupestris*. *V. amethystina*, *vinca minor*, *violas*.

Of shrubs the following are excellent:

Daphne oneorum, *juniperus procumbens*, *cytissus purpureus*, *berberis thunbergii*, *lonicera Albertii*.

It is probable that in this list are some kinds not hardy in Canada, and this should be kept in mind in selecting from it.

Brookline, Mass.

WARREN H. MANNING.

THE PURPLE BEECH.

All thoughtful planters know that the Copper beech is one of the principal pigments upon the landscape gardener's palette, with which to paint the landscape, and as artists are always careful in the use of their high colors, so, in like manner, does a judicious planter take care how he distributes his few precious high tones which are so important and telling in true ornamental planting, and so productive of bad results if thoughtlessly planted.

The grouping of Copper beeches with other trees requires much thought to do it well. Sometimes one sees happy combinations result from hap hazard planting, but it is always best to well consider where to place such important trees. There can be no rule, but there is a principle to act on. A Copper beech never produces the best effect if any heavy green tree is close to it, neither must it jar with a tree of similar color, like that of the Purple sycamore, or Purple birch, though a group of Silver birches could not have a finer setting than the Copper beech. It never looks well if planted out in the open, where its full outline can be seen against the horizon. I should always seek for it a background of larger trees.—Vick's Magazine.

NOTES ON SOME GOOD RUSSIAN APPLES.

The Arabka—Here is another “family” of Russian apples, the so-called Arab family, variously named “Arab,” “Arabian,” “Arabskøe” and “Arabka.” The one of these introduced some years ago by the nursery firm of Ellwanger & Barry, of Rochester, N. Y., has been approved by them, and is really in some respects quite a remarkable apple. As shown at the meeting of the Montreal Horticultural Society, in January, by Mr. Chas. Gibb, the Arabka is a large, dark red fruit, near the size of Alexander, but less even in form, being roundish, a little flattened, and somewhat “probulgent,” or irregular. The tree is very vigorous, and an early and profuse bearer; the fruit is fair and even in size, a good keeper until midwinter, in Canada. Mr. Gibbs’ trees, four or five years set, gave him nearly a barrel each. The flesh of this apple is coarse and not above the culinary grade, but its showiness and productiveness will make it quite as profitable to grow as Alexander, at least. In some respects it is preferable, as it is a better keeper, and apparently far less frequently injured by the codlin worm.

The Switzer.—The Switzer apple, one of the “Government Russians,” imported by the United States Department of Agriculture in 1869-70, shows itself a thoroughly iron-clad and a remarkably fine grower, both in nursery and orchard. It is a large and handsome red apple, and the tree is a heavy bearer. On a light soil, it drops a good deal of its fruit in the course of the season, but carries a fair crop to maturity. Grown in Northern Vermont and Quebec, it keeps until the holidays, or later. At the last winter fruit meeting of the Montreal Horticultural Society, Mr. Charles Gibb said of the Switzer, “It is not an acid apple; it has no weak points about it, and it has the special merit that it is not quickly perishable. It is of good, fair, even size. It has what is called ‘reINETTE’ flavor.” Mr. R. W. Shepherd, Jr., said, “I agree with Mr. Gibb. The Switzer is in quality much more like Fameuse than any Russian I have ever tasted.” To compare any apple to Fameuse is a rare compliment from a Canadian. The Switzer is much larger than Fameuse, and entirely free from that apple’s chief fault, spotting.

The Antonovka.—In the Antonovka (or Antony) apple from Russia, we plainly have a valuable and serviceable fruit, though not so long a keeper as was hoped. This variety is a true ironclad and a free grower in the nursery, forming a neat, upright tree, that in tree-agent language will “deliver well.” It is easily transplanted, grows off freely, even in moderately fertile soil, and requires but little pruning; in all these points resembling the popular

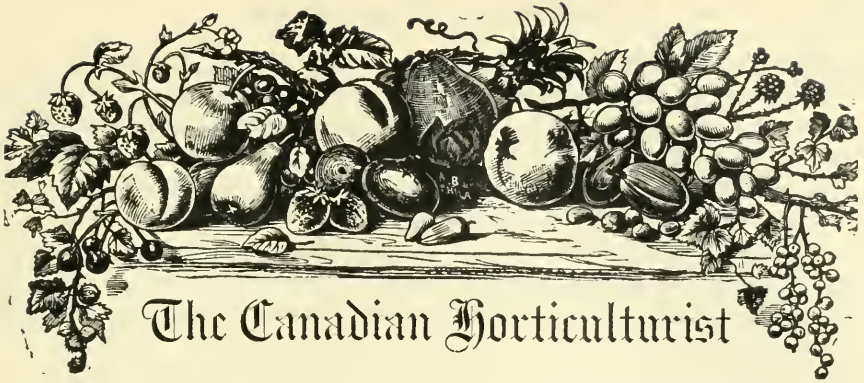
Oldenburg. It comes to bearing quite soon enough, though it does not fruit in the nursery, like Wealthy and Yellow Transparent. Young trees, four years set, usually begin to show some fruit, and they are well loaded by the sixth season. The apple resembles Grimes' Golden, though with a slightly coarser appearance, and a little roughness of skin. In size it is a full medium. The form is ovate. As to its quality, it is a very good eating apple—not particularly fine flavored nor the reverse, moderately soft fleshed and palatable, but not very juicy. It is plainly a good shipping apple, and will sell as well as any yellow apple of its season, which is about that of Fameuse, or a little later. This is what Prof. Budd calls the "King Apple of the Steppes," in allusion to its abundance and popularity in Central and Eastern Russia.

The Longfield.—Though rather disappointed in the size of Longfield, I am very well satisfied with its quality, which, without any resemblance, is quite as good as that of Fameuse, while the tree is much hardier, and an even earlier and freer producer. The fruit on my trees is just about the size of Fameuse, but more conical, with a greenish white skin, and a blushed cheek.—a pretty little apple that is even better than it looks. It is possible that high culture, or increased age of tree, will give us larger fruit, such as I have had specimens of from the West. The Longfield, like the Yellow Transparent, seems to belong to a family having very close resemblances. English Pippin is much like it, but rather handsomer, the red cheek being brighter, but the quality is hardly distinguishable, nor does the fruit keep better. Good Peasant is another close cousin, which has not yet fruited with me, but which I am told, while otherwise much the same, is by several weeks a better keeper. The tree is a good grower, but rather irregular, with slightly deflexed branches, growing closely, and needing care in forming a head. With this, they make a good nursery tree, which bears young and profusely. Season about with Fameuse, or somewhat later.

THERE will be no difficulty in telling when the pods of the radish are in proper condition to remove; this will be known by their yellowish and ripe appearance. Do not wait for them to burst open but gather them carefully and lay them away in the shade in a ventilated room to dry.

PANSIES to bloom well require a low temperature, and the greatest difficulty in blooming the plants in the house would be the warm dry air. If the plants could have a cool room there should be no trouble in blooming them.

GIVE the young folks a share of the products for their very own, and it will go a long way toward solving the vexed question with some as to how to keep them on the farm when grown up and ready to go out and do for themselves.—
E. W. MARLATT.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

NOVA SCOTIA APPLES.—The probabilities of the fruit crop of *Annapolis* and *Round Hill* are as follows:—Nonpareil, 75 per cent. of a full crop; Baldwin, 50; Gravensteins, 100; Kings, 100; Greening, 100; Ribston Pippin, 80. *Paradise*.—Nonpareil, 50 per cent.; Ribston, 60; Baldwin, 90; Bishop Pippin, 115. *Lower Horton*.—Cherries 100 per cent.; plums, 65; apples, 75. *Cornwallis*.—Gravensteins, 90 per cent.

THE LUBSK QUEEN.—Mr. Hoxie, Secretary of the Wisconsin Horticultural Society, has returned to his post as Supt. of the exhibit for that State. He shows a large number of fine Russian varieties, prominent among which thus far is the Lubsk Queen—a perfectly beautiful apple—even prettier than Red Astracan, and of better quality, though not quite so large. He believes this apple will be very profitable.

THAT EACH VARIETY OF APPLE HAS ITS HOME seems well proved by this World's Fair; and in its proper habitat it is *the* apple to grow. Thus the Baldwin of Maine and the Northern Spy of Canada, are famous apples, while in Illinois these apples are poor, and little grown. Here and in Idaho and Missouri the Ben Davis is at home, and grows to a large size, and takes on a fine color. The Ben Davis is the great market variety for export from these States.

THE VARIATIONS in the same varieties grown under different conditions of soil and climate, are wonderful. The Newton Pippin of New York State, for example, is scarcely recognizable as grown in the State of Iowa, where the slight

irregularities about the calyx are prolonged into great humps. These lines of study can nowhere be pursued with the same success as here, where the fruits of the whole continent are placed side by side. The Red Gravenstein, a variation from the Gravenstein, but prettier, and well suited for dessert, is an apple of great promise, sent forward by the Nova Scotia Fruit Growers' Association.

DUCHESS APPLES have come to hand from British Columbia. They are large, clean and good, though not yet very high colored. The same variety has come from Quebec, and in addition the Blushed Calville, the Montreal Peach, Alexander, St. Lawrence, Winter St. Lawrence, etc. There are also immense Alexanders and Gravensteins from the famous Annapolis Valley, Nova Scotia, which attract much attention. The Province of Ontario has had quite a variety of fresh fruits daily for a month past, and the high standing of this banner province among the exhibiting States is well assured.

TWO GENTLEMEN FROM ITALY called at the Canadian Horticultural Court on the 5th of September, viz., Chevalier Celso Capacci, Royal Italian Commissioner from Florence, and Baron Giovanni de Riseis, from Naples. An arrangement was made for the exchange of reports of the Tuscan Society of Horticulture, for those of the Fruit Growers' Association of Canada. These gentlemen are very intelligent and highly educated. They are large land owners in Italy, the latter in the classic lands of Horace, Calabria and Apulia, where, he says, not only grapes and peaches, but apples also are grown with success. Fruit culture is rapidly extending in that country.

EXPERIMENT STATION.—We have a kind letter from Mr. W. C. Archibald, Earnscliffe Gardens, N. S., in which he describes the vigorous effort being put forth by the Nova Scotia Fruit Growers' Association for the establishment of a fruit experiment station in that province, in connection with a school of horticulture. A promise was made them by the Provincial Government of \$50 for each student, to the maximum of \$2,000, and the intention is to ask the Dominion for assistance toward the conducting of the experimental work. He proposes that the Ontario Association act in concert with the Nova Scotians, in seeking for the extension of experimental horticulture in both provinces at the same time.

A WORLD'S HORTICULTURAL SOCIETY has been formed by the world's representatives at the World's Fair. Mr. P. S. Berckmans of Florida was chosen President, and Mr. Geo. Nicholson of London, Secretary. In addition there is to be a Vice-President and Secretary for each country represented. The chief object will be the interchange of information between the various countries of the world. This Society has official correspondents in every country, and will form a most reliable bureau of information.

It is also proposed to publish a periodical, free to all members, giving the names of all the officers in each country, and such other information as is considered of general interest.

There were present such men as Prof. Bailey, of Cornell University ; Chief Samuels, of Kentucky ; Pres. Berckmans, of Florida ; Geo. W. Campbell, of Ohio ; A. G. Asdikian, of the Imperial Ottoman Commission ; Romulo Escobar, Commissioner from Mexico ; A. B. King, Liberian Commissioner from West Coast of Africa ; T. Minami, Professor of Agriculture, Imperial Agricultural College, Hokkaido, Japan ; Ernest Krelage, of Holland ; Henry Vilmorin, of France ; and numerous others.

SEPTEMBER 28TH.

THE GREAT FRUIT EXHIBIT of the season, at the World's Fair, will be during the month of October. In a few days Mr. Bigelow, the President of the Nova Scotia Fruit Growers' Association, is expected with a large collection of apples from the Annapolis Valley ; the Hon. John McIntosh, Commissioner for Quebec, has made arrangements for a very large assortment of fine apples from that Province, some of which are already on the tables, while Mr. Pettit, the indefatigable Superintendent of the Ontario exhibit, is surpassing all others in extent and variety of collection.

IF A CONTEST were permitted for the first prize in apples for color and quality, surely Canada would win it. We have been giving samples of Canadian Fameuse apples to Americans and Europeans, in such cases as it seemed desirable, and comments were so highly flattering, and so honest, as to afford much gratification. "The best eating apple we ever tasted." "Delicious." "Better than any apple grown in the United States," and other similar statements were freely made. This giving of samples to interested persons for tasting is one of the best plans yet adopted ; it makes a better impression than simply the sense of sight, besides affording a fine opportunity to talk about one's country.

A PLEASANT RIVALRY over the biggest apple has caused considerable excitement of late. Arkansas boasted she had the biggest apple at the World's Fair ; but British Columbia soon came along with one bigger. It measured $15\frac{1}{4}$ inches in circumference and weighed $24\frac{1}{4}$ ounces. But she was only permitted to lead the world a short time, for Idaho soon won the championship with one 25 inches in circumference. Will British Columbia, not try once more to regain her lost laurels ?

THE WINTER MEETING of our Association will probably open in the City Hall, Peterboro', on Tuesday the 12th of December. We shall be pleased to receive suggestions of topics to be discussed, or questions to be answered.

❖ Question Drawer. ❖

Muck and other Fertilizers.

582. **STR.**—I think I wrote you some months ago, that I had a large quantity of swamp muck close to my orchard. I am now drawing it into my barnyard, to put the winter's make of manure on it, and as I have thousands of loads of it, I would like to haul it direct from the swamp to the orchard (which is much nearer than to the barn), and as I cannot compost it all, I want to put a quantity on my thirty acre orchard this fall and winter. Will the muck give off its nitrogen and other plant food in time, and nothing be lost, by putting it direct on the land, and nothing else for a year or more?

I am going to compost a hundred or more loads of muck with unleached wood ashes and ground bones, which I can get here. Are the ground as good as dissolved bones? In putting the muck direct on the land, I put one load to four trees, and a part of it I will put about two bushels of unleached wood ashes to the load of muck, and one hundred pounds of ground bones to the acre, broadcast, as far as the limbs extend. As the muck is spread as it is hauled, I then run a cultivator or drag it over at once. I cannot put ashes and bones this fall on all that I haul into my orchard, but I can in the spring, at least on the most of it. Will the bones give me the same benefit next year if they are not put on the land before spring, as they would if put on this fall? Yours truly,

J. K. FULLER.

Reply by Prof. Craig, of the Central Experimental Farm, Ottawa.

1. Muck is chiefly valuable for its nitrogen contained in the organic matter, or elements of semi-decomposed plants. Under favorable circumstances, this nitrogen is available as food for farm crops; but in addition to its value as a nitrogenous food, its mechanical effect is beneficial to most soils, by improving their tilth and texture. A soil which is too heavy may be made light and more porous by an application of muck. Muck without fermentation does not readily give up its nitrogen to growing plants, and if applied to a soil without fermenting, the immediate result will not be very apparent or marked. Nothing will be lost by applying it direct to the soil without composting, but, as already stated, the returns will be much slower than if the elements of plant food in it have been freed by the chemical action which takes place during the process of fermentation. Very small results might be expected the first year from an application of muck which had been unfermented or uncomposted.

2. The difference between ground bones and dissolved bones is simply that the elements of fertility in dissolved bones are more immediately available to plants; whereas, in ground bones they only become available by the process of decay and fermentation, and, therefore, results come much more slowly. As in the case of muck, little result might be expected the same year from an application of ground bones, this fertilizer not being readily soluble. A compost made of unleached wood ashes, ground bones and muck would be a most valuable fertilizer, and one from which immediate and desirable results might be expected. The whole question is, whether the fertilizer is desired for immediate use or not. Ground bone undissolved, like muck, is slow in giving up its fertilizing constituents. Dissolved in sulphuric acid, or acted upon by ferments,

it becomes readily soluble. In the same way the nitrogen contained in muck, when composted with wood ashes and manure, is rendered more immediately available for plant food.

Strawberries.

583. SIR,—Do you think the ever-bearing varieties of strawberries grown in California could be grown here?

What do you know about the Williams strawberry, would you recommend it? I would like to find someone, who has no axe to grind, who has tried it. I want to set two acres more, and I want the best.

I. JOHNSTON, *Warkworth.*

The California ever-bearing strawberries would probably be of little or no use for market purposes, in Canada.

The Williams is a fine commercial berry. We grow it at Maplehurst, and find it a good cropper, of good size, firm for shipping, and hardy. It is a cross between Crescent and Sharpless.

Land Plaster, Rock Phosphate and Superphosphate of Lime.

584. SIR,—What is the difference, if any, between land plaster, rock phosphate and superphosphate of lime? Would the latter take the place of bone meal in mixing fertilizer? Reply through your paper and oblige

St. Thomas, Ont.

A. W. GRAHAM.

Reply by Prof. J. H. Payton, Guelph.

Land plaster is sulphate of lime, a compound consisting of sulphuric acid and lime. It is obtained from grinding gypsum rock.

Rock phosphate is ground up phosphate of lime (apatite). Sometimes it is acted upon with sulphuric acid; the result is mineral superphosphate. Rock phosphate will consist of phosphoric acid and lime; but, as a superphosphate, will contain in addition, sulphuric acid.

Superphosphate of lime likely refers to bone superphosphate, which results from acting upon bones with sulphuric acid, and is more active than the mineral superphosphate referred to. Bone superphosphate is usually preferred to bone meal, on account of its being more ready for plant use, and thus more available in the plant economy. Nature, by means of the carbonic acid in the soil, renders in time the phosphoric acid of the bones active; but man, artificially, reaches more quickly the same results, by using a stronger acid upon the bone, viz., sulphuric acid. Bone superphosphate may thus be used instead of bone meal.

Novel Spraying Apparatus.

Sir,—Three years ago, while driving in the northern part of Terrebonne Co., Que., I stopped at a farm house to feed my horse and have something to eat ; while conversing with the farmer, I asked him how his fruit trees paid him ; his reply was that he could not raise enough fruit to satisfy the insects. I asked him why he did not spray his trees ; he said he could not afford to buy spraying pumps, etc , and had not much confidence in spraying, anyway ; he thought it a waste of money. Just as he was saying this, I espied an iron steampipe, about twenty inches long and one and one-half inch inside, crossways. I told him he could do with this for a while : he laughed (as much as to say, you are from town and don't know much about farming). Taking the pipe, I asked him for a small piece of tin, a file and a pair of shears. I cut the tin round, the same size as the end of the pipe, pierced small holes (as small as possible) through it, as at 2 ; I then filed the rough edges around the hole nice and smooth. Then, with a broomstick, I made an arm for the sucker, about twenty-two inches long ; on one end I nailed a piece five inches long, as at 5, for a handle ; on the other end I screwed the washer, as at 6, made of a piece of

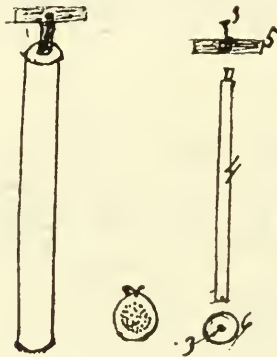


FIG. 387.—CHEAP SPRAYER.

I screwed on the end of the stick, see 4, Fig. 000, in centre, as shown at 3. To stiffen the leather washer, you may place two iron washers a little smaller than the leather one, one on each side of it, before screwing it (leather washer) on end of stick (or arm), 4. He had no soldering iron, so I told him to go to a tinsmith and have the tin, 2, soldered on end of pipe, and the sprayer was complete. I then told him to start spraying as soon as the buds would come and every fifteen days or so after, but not when in full bloom ; and to use Paris green, one-quarter pound to fifty gallons of water. I said nothing about other insecticides, in order to make things look as simple as possible. A few days ago, I was driving by his house, not thinking of him at all, when he hailed me and I stopped, although I had little time to spare. He thanked me for my device of three years ago, and told me he had bought a spraying pump for \$18 ; he looked very jolly and happy, his trees and vines looked nice and healthy. The use of that little primitive style of spraying-pump had fully convinced him of benefits of spraying.

O. GAGNON, *Montreal, Que.*

The Fruit Crop in Germany.

Mr. Aug. Steer, Fruit Broker, Hamburg, Germany, writes on August 19th : "Our fruit crop in all parts of Germany is very abundant ; we have enormous quantities of apples, pears and plums ; and though prices are very low, they are nearly unsalable. Onions in Germany have suffered by the constant dry weather. They will be rather small and not very abundant."

✱ Our Book Table. ✱

CATALOGUES.

REID'S HANDY POCKET PRICE LIST of everything for the Fruit Grower. E. W. Reid, Bridgeport, O.

WHOLESALE TRADE LIST OF GEORGE ACHELIS, Morris Nurseries, West Chester, Pa., U. S., for the fall of 1893.

PRICE LIST OF THE SARCOXIA NURSERIES. James B. Wild & Bros., proprietors, Sarcocoxia, Missouri. Fall, 1893; spring, 1894.

ILLUSTRATED CATALOGUE OF FLOWERING BULBS, Autumn, 1893. James A. Simmers, 147-151 King St. E., Toronto, Ont.

THE BRITISH APPLE MARKET.

LIVERPOOL.

Messrs. Simons, Shuttleworth & Co., Liverpool, cable:—"The few Canadian apples here this week have been sold at low prices, averaging 4/ to 6/ per barrel. New York fruit doing 1/ to 2/ better. We do not advise the shipment of early fruit; home and continental supplies are very heavy." My early advices of an abundant fruit crop throughout Europe are being confirmed by every mail; I must therefore strongly impress upon our shippers' minds the necessity of exercising great caution this season. Not only is there a very large apple crop in Europe, but all kinds of fruit will be very abundant and cheap. The Almeira grape and the Mediterranean orange crops will be unusually large, all contributing to force and keep down the price for Canadian apples. It will also be well to bear in mind that trade, generally, is in a very unsatisfactory state; the colliers' strike can only be looked upon with apprehension; without a good supply of cheap coal, every industry will be disorganized. I need but refer to the effect which the cotton operatives' strike, last year, had upon the price of fruit in the British markets, to show that this is not an imaginary danger. Great Britain requires but limited quantities of the very best apples, and these at moderate prices this season.

Yours truly,

Toronto, Sept. 9, 1893.

J. M. SHUTTLEWORTH.



Autumn.

MOOONS wane and wax, and wax and wane,
And Time reveals perpetual round ;
The Summers go and come again,
And Spring-times out of Winters bound.

Again we hail the Autumnal times,
When fields and woods are growing sere ;
And Nature's music faintly chimes
In this grey twilight of the year.

Unnumbered tokens of decay—
Of Summer's verdure—round us spread,
Remind us that we pass away,
Shortly to mingle with the dead.

And shall the lesson not inspire
With strong intent, and firm resolves,
To kindle up the smouldering fire,
While yet the day of life revolves ;

To labor for the weal or woe,
To lighten labor, lessen grief,
To soothe and cheer, where'er we go,
And lend the sorrowing relief.

Oh, let us rouse from shameful sleep,
Ere Death's cold winter drifts its snows,
And, thrusting in the sickle, reap
The whitened harvest—then repose.

Brantford, Ont.

W. H. PORTER.



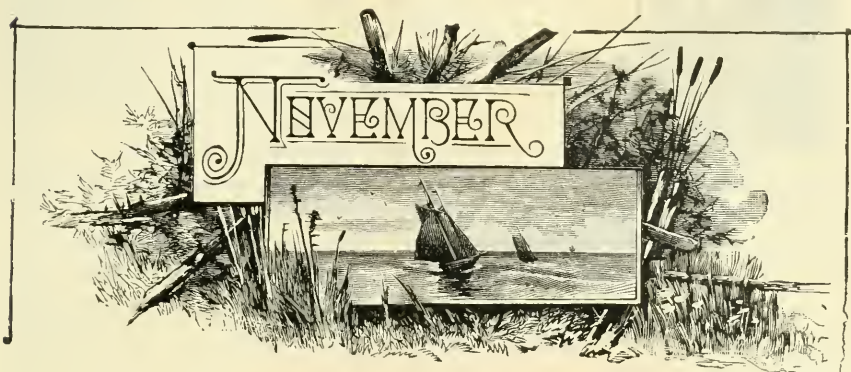
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No. 11.



THE McINTOSH RED.

THIS is a Canadian seedling of great value, not only for the north, for which section its great hardiness is a valuable characteristic, but also for the southern portions of Ontario, on account of its gorgeous coloring and excellent quality. The Fameuse has usually held the first place as a dessert apple, but the McIntosh Red, a winter apple which resembles it in texture of flesh, even surpasses it in coloring, size and quality. In its perfection, it may be described as being magnificent in coloring, a sort of rosewood red with a heavy blue bloom.

Dr. Hoskins, the best authority we have on hardy apples, speaks of the McIntosh Red as the best and most beautiful apple of its season, and, on account of its thick skin, an excellent shipper.

How unfortunate that it should have two serious faults: one, in that it scabs almost as badly as the Fameuse, and another, in the fact that, while its wood is as hardy as the Fameuse, or Wealthy, its fruit-buds are more tender, so that in cold sections it becomes a shy bearer!

Our committee on apples have only given it six marks for dessert and seven for market. Possibly they would have ranked it higher, were it not for the fact that it is a new and comparatively little tested variety.

The apple takes its name from a Mr. McIntosh, who lived at Dundela, forty-five degrees north latitude, in the county of Dundas. The original tree still stands. It is eighty years of age, and still in a vigorous condition.

NORTHERN SPY APPLES.



NO kind of apple varies so much in quality as does the Northern Spy. Ever since it began to be disseminated, about forty years ago, it has required more thorough manuring and more care in pruning than other varieties. Because it is naturally an exceedingly thrifty-growing variety there is a popular belief that it succeeds best on poor soil so as to stint growth and induce early bearing. But the Spy thus grown is not of the best quality. It blossoms too freely, sets too much fruit, and unless the inside of the tree has been pruned, most of this will be shaded and never be well colored. There is so much difference between these poor immature specimens and the highly-colored, large and delicious fruit grown on well manured and well pruned trees as can be imagined. A stranger to the fruit seeing these different specimens can hardly be persuaded that they are of the same variety.

The erect habit of the Northern Spy is probably the cause of its delay in bearing. If while the tree is young its limbs are weighted at the ends so as to cause them to bend down, the obstruction of sap will cause fruit buds to form and fruit to set the following season. We once saw a curious illustration of this. A young Northern Spy tree was located in a corner near a barn, where a snow-drift piled over it, bending down many of its lower branches. So flexible were they that they did not break; but after the snow went off these branches continued to grow horizontally with their ends bent down. Two years later these branches fruited and continued to bear fruit regularly, though it was several years before the upper part of the tree came into bearing.

For re-grafting old orchards lacking in vigor, there is no variety better than the Northern Spy. It comes into bearing quickly under such conditions, and bears large, well-colored fruit of the best quality. Such trees have, however, a habit of bearing a very full crop one season and a light crop the next. Probably this might be remedied by thinning the crop the years when the trees set the fullest.—American Cultivator.

Pickled Pears and Peaches.—Seven pounds of pears, $2\frac{1}{2}$ pounds of sugar, one quart of vinegar, one cupful of water, one ounce of cloves and one of cinnamon. Boil vinegar, water, spice and sugar a few minutes, then put in the fruit and cook till done. I use the same recipe for pickled peaches. Last summer just before the peaches began to ripen, we had a quantity of wind-falls. I made sweet pickles of the green fruit. We thought them fully as good for pickles as ripe ones.—N. L. P.

FRUIT GROWING IN ANNAPOLIS VALLEY.

IN the western part of Nova Scotia is a valley of uncommon beauty and fertility. It is formed by two mountain ranges, one called the North Mountain and the other the South. It begins at Hantsport on the east, and extends to Bear River on the west. The North Mountain begins at the celebrated promontory of Blomidon, which is the easternmost point, and runs to Victoria Beach, where it is terminated with equal abruptness by Digby Gut, an outlet of the Annapolis River and basin, into the Bay of Fundy. The South Mountain is first seen at Horton, and it extends to Bear River, where for the most part it is either lost or merged in a chain of hills which extend throughout Digby county. At its easternmost point the valley is several miles in width, but towards the west it grows continually narrower.

This valley is drained by the Annapolis River, which begins about midway and runs westwardly, developing gradually from a mere rivulet into a large navigable river, which flows into the Annapolis basin, a fine sheet of water which empties through the narrow Digby Gut into the Bay of Fundy. At a point in Aylesford where this Annapolis River begins and flows westwardly, the Cornwallis River takes its rise and flows eastwardly, emptying into the Basin of



FIG. 388,—THE ANNAPOLIS VALLEY.

Minas. Both of these rivers are under the influence of the Bay of Fundy tides, and are consequently tidal rivers, each flow bringing enormous deposits of alluvial mud which has created the soil, and given it superior fertility.

This Valley, so-called, is the fruit-growing belt of Nova Scotia. In almost every other county in Nova Scotia fruit can be grown and is grown. Especially is this the case in Lunenburg, Yarmouth, Inverness and Cape Breton, and in consequence of the fine qualities of the fruit which are grown in other parts of the province, the impression has been formed that these other parts could compete successfully with the Annapolis Valley in fruit culture. But the history of the fruit growing of the world indicates that while fruit can be grown in many places there are certain special belts where fruit can be grown prolifically and at permanent profits. The State of Michigan is a fruit growing State, but the fruit belt there in which fruit is grown permanently with large profit, occupies but a comparatively small portion of the area of the State. The same statement is true of Ontario and the State of New York, and other fruit growing sections. The Annapolis Valley seems to be the natural home of all kinds of fruit. The

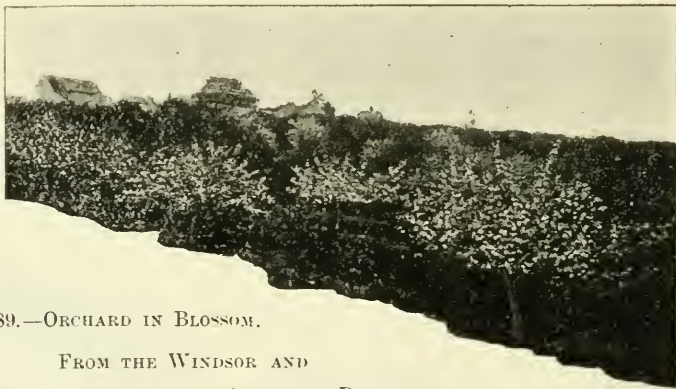


FIG. 389.—ORCHARD IN BLOSSOM.

FROM THE WINDSOR AND
ANNAPOLIS RAILWAY.

great staple fruit grown now for export is the apple, but pears, plums, cherries, and even grapes, are grown luxuriantly, and in the domain of small fruit, such as strawberries, raspberries, gooseberries, currants, and cranberries, the capacity for production is practically unlimited.

A few years ago the fruit industry was scarcely appreciated in the Annapolis Valley. Its qualities as a fruit raising country were comprehended by the French in their early settlements. Annapolis Town, old "Port Royal," one of the oldest and most interesting historical points in North America, is in the very centre of the fruit garden, and in this settlement, during its occupancy by the French, as well as in other sections of the Valley, including Grand Pré, apple trees had been planted by them, and many of these trees are still living, though

considerably more than one hundred years old. The land being fertile, all sorts of agriculture can be profitably carried on, and during the period of Reciprocity potatoes sold at high prices, very often as much as one dollar per bushel being obtained.

Potatoes can be produced with very great ease in the Valley, and were for a time a source of large profit, many farmers growing wealthy from their production and export. The splendid marshes along the banks of the rivers make it also a cattle-raising country, and excellent specimens of fat beef have for years been sent out of the Valley for market. It was not until the year 1863 that any genuine interest was taken in fruit-growing. Most of the farmers had some apple trees on their farms, which supplied their own wants and afforded the means of supplying the Halifax and St. John markets. In 1863 the Fruit Growers' Association was formed, with Mr. R. G. Haliburton, a son of Judge Haliburton—"Sam Slick"—as President, and Mr. D. H. Starr, as Secretary. This society had a very small beginning, but its avowed aim was to stir up the farming population to a sense of the importance of the fruit industry, and to show that it could be carried on to a much greater degree. That Association has continued ever since, and during the whole period of its history there has been a steady and marked increase in the production of fruit in the Valley, as a few statistics which I shall give amply demonstrate. It must be understood that in most cases the figures that are given are only approximate, but they may be relied upon as being very nearly accurate, and have been verified by the highest fruit authorities in the Province. The probable acreage in fruit culture in the whole Valley in 1860 was about 2,500 acres. Most of these orchards, however, were old and not properly cared for, and were producing in a very limited way and only a few varieties, and an inferior quality of fruit. The total acreage at present is estimated at 12,800 acres, with at least 8,000 acres covered with young trees which have not yet begun to bear. The product in barrels in 1860, as nearly as can be estimated, would not exceed 30,000. The product for the year 1893 will be at least 300,000 barrels, and is necessarily increasing at a

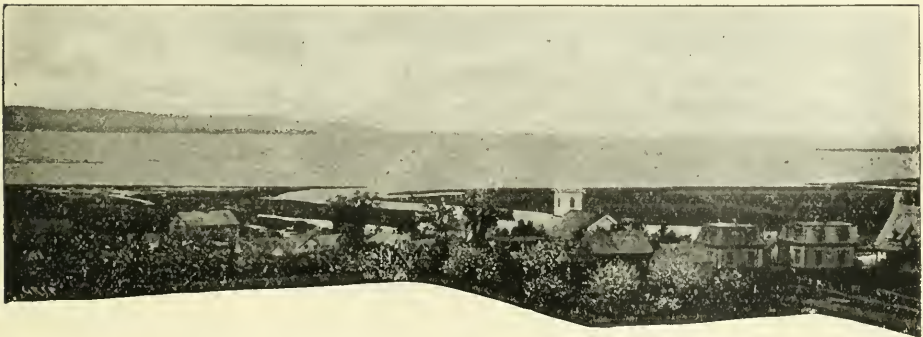


FIG. 390.—BLOMIDON AND MINAS BASIN, FROM WOLFVILLE.

rapid rate each year. As the product began to increase after the formation of the Fruit Growers' Association, the necessity for a market, permanent and unlimited in its scope, was felt. In 1871 the first effort was made to place Nova Scotia apples in the English market. Of course, many difficulties had to be overcome. Nova Scotia apples were unknown, and the English people could not discriminate between them and Canadian, or even American, apples. The farmers were not accustomed to packing them in a form that entirely suited the English market. All these things had to be met, and have been met, and, to a very great extent, overcome, until now there is a large and increasing export.



FIG. 391.—AN APPLE ORCHARD, ANNAPOLIS VALLEY.

To show the development of this English trade, I may state that the estimated export to Great Britain in 1873 was less than 10,000 barrels; the export last year was over 130,000 barrels. It is estimated that the total export to Great Britain from 1871 to the present year would not be less than 1,400,000 barrels. Formerly the export to the United States was very large. Latterly, however, the competition of American fruit was so keen in the United States that the Nova Scotia producers had scarcely a fair chance, except in certain special lines. Besides, under the McKinley Bill, a heavy duty on apples was imposed, which still further interfered with the trade. For the past twenty years however, it is likely that the total export to the United States has not been less than 400,000 barrels, an average of 20,000 barrels a year. The product during the past twenty years has not been less than two and one-half million barrels—which indicates a considerable local market.—HON. J. W. LONGLEY, Attorney-General of Nova Scotia, in *The Canadian Magazine*.

(To be continued.)

FRUIT GROWING COMPARED WITH GRAIN GROWING.



Y own experience has taught me that the fruit-raiser finds plenty of hard work to do. He often fails to produce a good crop, and prices are not always what he thinks even moderately good. But if he will candidly compare notes with the grain-raiser he will feel like "thanking his stars" that he is a fruit-grower.

Although the underlying reason may not be apparent, it is in most cases because the fruit-grower sells water chiefly instead of starch and potash. Water is cheap, except in rare cases, and what the market demands is, that it be put up in attractive and delicately flavored packages, for which a good price will be paid.

Wheat, corn, oats and all the grains are largely composed of materials that are costly to produce and contain but little water. They take from the soil fully 90 per cent. more of its costly elements than do fruits. It does not require very deep reasoning to convince a thoughtful person that if he sells water from the soil of his farm he is not drawing heavily on its resources.

Who does not know that the grain-grower is each year making heavy drafts upon the bank deposit in his farm, and that only by frequent replenishing can it be kept up. This is, in a measure, true of the fruit-farmer, but in a far less degree. He must keep his soil rich, but it requires far less manure to keep it in condition to yield a big crop of fruit than a medium crop of grain. If anyone does not believe this let him try it.

I never knew a farmer who sold the grain off his farm year after year who did not so deplete his soil that he could not make it profitable even for a single crop. In fact, observation has taught me that, with few exceptions, such farmers are on the road to failure. If not financial failure, it is absolutely certain that their farms are being impoverished. Thousands of abandoned farms all over the country are the silent and solemn witnesses of this truth. Some of them are so from other causes, but excessive grain farming is the one most common.

Many cases have come under my personal observation in which rich and valuable farms have been literally robbed of their native wealth by grain growing. It is true that if the grain fodder and hay be fed to stock and the manure saved and returned to the fields, their fertility will be preserved, or possibly increased. Even in such a case, is it true that the fat stock sold (and no other should be) is largely composed of water.

When we think of it, there is nothing the human system needs and craves so much as good water. If it is inside beautifully tinted wrappers, the skins of strawberries, peaches, plums, pears, apples, oranges, lemons, etc., combined with nutritious food and healthful acids, it is the more relished. Think of the price

we pay for what is little else than water colored and flavored by nature so as to be pleasing to the eye and the palate.

To the fruit-grower let me give encouragement to go on supplying the public demand. Try to make your fruit as large and luscious as possible, and be assured that it will be appreciated, and, in most cases, well paid for. Keep your land as rich as possible and you will thus produce fruit at the least cost. The most expensive fruit to the grower is the poorest he raises.—H. E. VAN DEMAN, in *G. Fruit Farm*.

House Flies.—Prof. A. J. Cook, in the *New York Weekly Tribune* for July 30th, says: “If wire-gauze window-screens are hinged at the top so as to readily swing outward, it is very easy to drive the flies out of the window of a darkened room. With such screens supplemented by an occasional use of fresh and good insect powder (bubach or California pyrethrum) it is not difficult to keep the house almost entirely free of these pests. The only possible objection to the powder is that if much be used it leaves a fine dust on the furniture and about the room; this however, is certainly a minor disadvantage.” I may add to this by saying that if the powder is used the rooms should be darkened with one exception. The flies will congregate in this room. In the evening throw some of the powder in, as a dust, and close the room tightly. In the morning when the husband builds the fire, as all true husbands do, he should sweep up the flies and burn them, or they will revive and be as great a nuisance as ever.

In Setting a Grindstone.—It is no use to have rickety frames or to have them out of doors uncovered and with water in the trough.

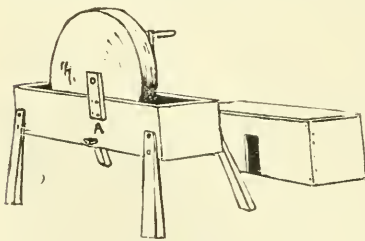


FIG. 392.

That part of the stone standing in the water becomes soft and is easily worn away, while that exposed to the snow is continually hardened and wears out of a true circle so that no tool can be properly ground upon it. The cut shows a well-seasoned piece of timber 1 ft. square and 3 ft. or more long with a trough cut in the top, 8 or 10 in. deep, and thoroughly coated with hot oil or coal oil several times before using. Make the legs of 3 x 4 in. scantling beveled at the top and firmly nailed on. The shaft can be supported by wooden boxes attached or friction wheels that often come with the stone. Make a good solid cover and keep it on the stone when not in use. A plug at A fills the hole used to run the water off.

FRUIT HOUSES AND FRUIT ROOMS.



FRUIT houses may be constructed at moderate expense, which, with properly selected varieties, will afford fruit through nearly the whole year, if the circle is completed by early cherries and early strawberries. It is not necessary to employ ice for maintaining a low temperature in hot weather, such houses being adapted to large establishments and requiring constant care and much skill in their management. For the smaller and cheaper structure the essential requisites are non-conducting walls and ventilating windows, provision being made for the admission of cool air on cool nights, to maintain a temperature slightly above freezing, and thus preventing decay during warm seasons. With such a provision we have found no difficulty in keeping such apples as the Baldwin and Newton Pippin, through winter and into the middle of June, and such winter pears as Nelis, Lawrence and Malines into February and March. A common practice is to erect a frame of six-inch studs, and cover both sides of these with boards, filling the space between the boards with sawdust; but a better way is to nail on the building-paper studs before the boards are applied, the studs being placed just far enough apart to give a slight lap to the paper as the rolls are successively applied. The sawdust is omitted, as it is liable to cause crevices by setting, and to be attacked by rats and mice. If this air space and the two covers with boards and building-paper are not sufficient to make a good non-conducting wall, nail vertical strips on each lath and add another covering of paper and another boarding. The roof is to be made non-conducting in a similar way, and the room is to be protected with double doors and double windows. The natural heat from the earth floor, with these protecting walls, will prevent the room from freezing. Fig. 393 in illustration represents the cross-section of a fruit-room, showing the ventilation. The dotted lines and arrows show the entrance of the cold air at a side window, and

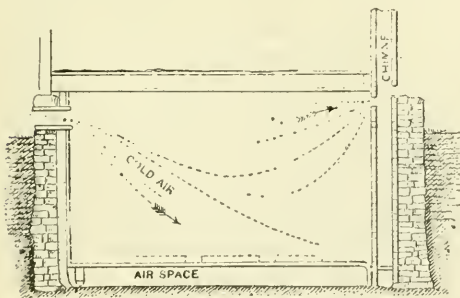


FIG. 393.

FRUIT HOUSE AND FRUIT ROOM.

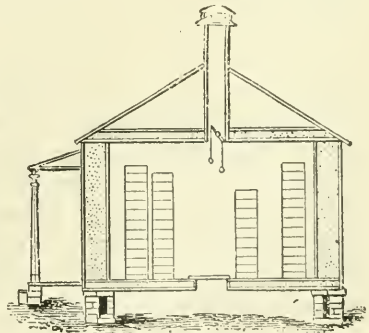


FIG. 394.

the escape of the warmer air into a vertical chimney in which some upward current is kept by a stove above, or by the ventilator cap at the top. This window is closed as soon as enough air is admitted. The air space beneath the slatted floor receives the warmth of the earth during cold weather in winter. This figure more particularly represents a fruit-room in the dwelling; the floor is double to prevent the passage of heat. Fig. 394 is the cross-section of a fruit-house built wholly above ground. The under-pinning is double, with an air-space as a non-conductor of heat, and with a free connection with the earth below through board registers or through slatted work. The ventilator is readily controlled by the hanging buttons. The piles of fruit boxes are filled with fruit, and being placed one above another, operate as separate covers for each other, and whenever assorting is necessary for removing decayed specimens, they are successively lifted off and new piles thus formed.—Country Gentleman.

ROADS AND WALKS.



DRIVES and walks leading from the street to the house and outbuildings are things of utility and necessity, and are not primarily intended as ornamentations to the grounds. This idea seems to be lost sight of in studying how to make these walks and drives graceful and attractive. Landscape gardeners have made quite a hobby of this work, and the consequence is, that in many cases the driveways and the walks form altogether too prominent a feature to the lawn and grounds. To be sure we would not have these indispensable accomplishments made in any way crude, awkward or ungraceful. So long as they must form a part of the grounds, they should be so constructed that they will not mar the general effect of the whole. But in laying them out we should not fail to bear in mind the fact that they are simply a necessity, and, as such, should be made as nearly in harmony with their surroundings as is possible in their nature to be. Many walks and drives are laid out with no especial destination in view. They seem to have no particular starting point, and no definite object, destination or terminus ahead. They usually terminate at the starting point without accomplishing anything more than a mass of serpentine twistings and crawlings that weary the eye and puzzle the understanding. Such walks and drives are worse than superfluous; they are positively in bad taste. When we consider the province of the walk or road, common sense will tell us that the most direct course to the point in view is most natural and pleasing. Straight dead lines, without a blink or a turn, are not always agreeable to the eye, and should usually be avoided in landscape gardening.—Wis. Farmer.

ICE AND COLD STORAGE ON THE FARM.



HANDLING of fresh meat is directly dependent upon artificial refrigeration, and in no other direction are its benefits more marked or widespread. The cattle of the Western plains have become the daily food of those living at the antipodes. In ten years, from 1880 to 1891, the imports of fresh beef and mutton into Great Britain increased from 400 to nearly 3,300,000 carcasses. During the same period the beef exports alone from the United States advanced from 50,500 to 101,500 tons. Not only are meats carried in refrigerator vessels from America and the antipodes to England, but within a year Australian milk has been shipped in frozen blocks in such quantities as to be retailed in the streets of London for four cents per quart. Butter, cheese, eggs, fruits and other perishable products are likewise transported enormous distances by rail or water, without injury to the quality and at a low cost for freight.

It is well known that cellars which are dry, cool and well ventilated, are of great service in preserving fruit and vegetables, and storage cellars without ice have been in use for years with profit and convenience to their owners. A convenient place is to locate them in the side of a slight hill, as shown in the following figure.

An excavation the width of the cellar is made, the earth being thrown up against the outside of the stone wall, which is built on the lower hillside. The opposite wall is formed by the cut face of the hill. The rear end is constructed in the same manner as the lower hillside. The front wall and doors are made of a double thickness of boards, with six inches inclosed space filled with sawdust. For a cellar one hundred feet deep the estimated cost is \$100, no skilled labor being required. Large storage room is provided in such a cellar; 50,000 celery plants have been accommodated, and hundreds of bushels of vegetables, apples and other fruits have been held during the fall and winter. On large fruit farms, such a building designed to properly care for fruit during shipping and packing, and as a storehouse for temporary use, is a necessity. It is at times of great market gluts that the cold storage shed is of the greatest value. Oftentimes, by saving a crop for a week, the prices realized will be double what would otherwise be obtained.—Farm and Home.

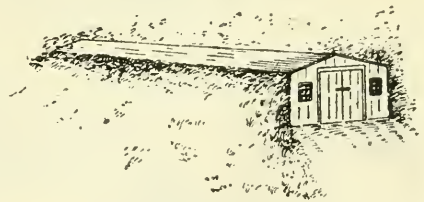


FIG. 395.

CHEAP STORAGE FOR APPLES.



ONE of the easiest and most rapid profits that a horticulturist and farmer can take advantage of is in the proper storage of the apple crop. The October and November price of good winter keepers is seldom more than one-third to one-half what the same fruit commands in the latter part of the winter and early spring, so that a moderate amount of shrinkage from rotting, etc., may easily be met in the largely increased profit of late selling. In earlier times quantities of apples were preserved for the spring market by simply burying them in conical heaps, first placing straw over the heaps, then enough earth to prevent freezing; and even at the present time some of the choicest apples that reach our late spring market are preserved in this well-known manner. Simply a modification of this old and well-tried process is the method that I make the heading of this article. Down a hillside an excavation (see Fig. 396) is made,

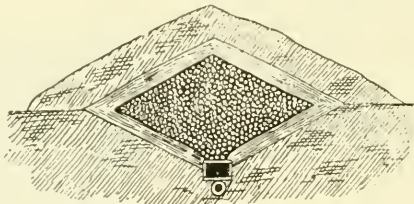


FIG. 396.—APPLE STORAGE: CROSS SECTION.

which may be several feet deep, and 8 or more feet wide at the top and in the bottom, extending its full length, a trough is placed,

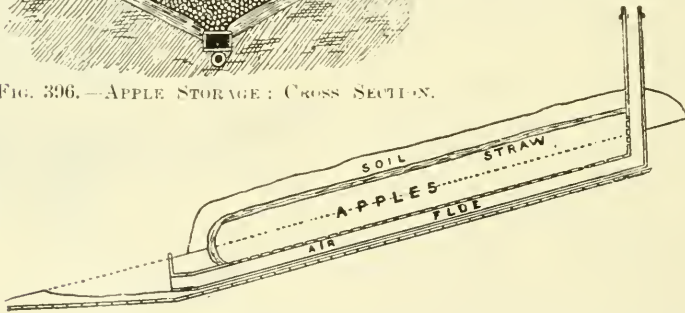


FIG. 397.—APPLE STORAGE: THE SIDE HILL OF IT SEEN LENGTHWISE.

made of a board one foot wide for the bottom, and boards 8 inches wide for the sides, with a little drain immediately below.

This trough, extending up the full length, and in the bottom of the excavation, is covered with slats 1 or 2 inches wide, nailed across not over 1 inch apart. The sloping sides are then covered with rye straw, and apples by the wagon load are placed therein and covered with straw and earth from above to prevent frost from reaching them, as is done in the old way of burying fruits.

The trough below gives a circulation of cold air through all the apples stored above it, and ends in a draught chimney at the upper end. In the very coldest weather the mouth at the lower end of the excavation may be closed, though while the thermometer remains 12° or 15° above zero it has proved an advantage to let the cold air circulate through. But in warm weather it is an

advantage to keep the draught closed, thus retaining the cold that is already there. This simple and inexpensive arrangement has preserved apples until late in the spring, with scarcely any loss, and they come out for market bright, crisp and fresh, with no appreciable loss of flavor, and brought often treble the price they would have commanded in the best fall or early winter market.—MR. J. JENKINS, before the Ohio State Horticultural Society.

HOW TO RAISE RASPBERRIES SUCCESSFULLY.

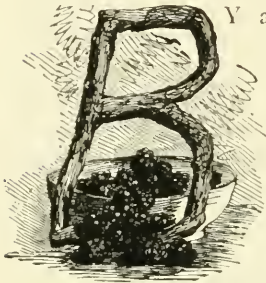
Plow the ground in the fall, and haul all the manure one can get during the winter and leave in small piles all over the ground. In early spring, spread the manure evenly all over the soil. This may be done just before time for plowing. It should then be plowed in deep with a two-horse plow and thoroughly harrowed and planked. I have a planker about 8 feet long, made from 2-inch plank, three planks being lapped and spiked together. Hitch on the horses, stand on it and work the soil into a fine condition. A one-horse plow may then be used for plowing out rows 7 feet apart. Care should be taken not to plow too deep. Set the plants in the rows $3\frac{1}{2}$ feet apart and cultivate the season through. I find the Planet, Jr., the best machine to use for this purpose. When the plants are 2 feet high, nip the tops, to cause lateral growth and stockiness. In the fall, with the one-horse plow throw a couple of furrows toward the plants to prevent their heaving out of position by frost the next spring. In early spring, the rows thrown up should be leveled back.

For early fruiting, I have found the Souhegan to be the best; these I have set on a hillside sloping to the south. For a late variety, I have found none to excel the Gregg. Planted on a northern slope, these will be retarded considerably so that when the Souhegan are past, the Gregg will be just about coming into bearing. During the first season, vegetables may be put in between the rows, such as cabbage and potatoes. I find potatoes yield well and force cultivation to about the desired amount for the good of the young raspberry canes.—Farm and Home.

PROPAGATING GOOSEBERRIES from cuttings has a decided advantage over the process of layering. In the former case the suckers can be entirely done away with, while in the latter, they cannot be prevented. Layering is a sure mode and may be resorted to when any particular variety is required to be speedily obtained, though the plants will not be as handsome as those raised from cuttings. The best time to put in cuttings is in the fall; vigorous, firm wood should be selected. If the cuttings can be taken off close to the branches from which they spring, so much the better. The joints should be cut off so as to leave from 10 inches to 1 foot in length. The buds on the lower end of the cuttings must all be removed. This disbudding should be carried to a height of 6 or 8 inches from the base. By so doing, suckers may be prevented. If cuttings are inserted early in the fall success is almost certain.—Farm and Home

ABOUT FRUIT CELLARS.

A subscriber writes: I have a fruit cellar under my bank barn size 39x44, about 8 feet high with solid clay bottom. What kind of a floor will be best? I use it for nothing but fruit. Will pine planks on sleepers or joists be best for fruit keeping, or a grouting cement floor. If the latter, how made—coarse stone first and gravel and cement, or put the cement directly on the clay bottom?

Reply.

Y all means put in a grout floor. Plank would be objectionable on several accounts. They would take up unnecessary room; would harbor vermin; would by absorbing moisture generate mold; would soon decay and through this unfavorably affect the fruit. Put in first a grout made of coarse gravel mixed with one-fourth fine sand. If these can be got from the border of some lake or stream where they have been washed, the better. Mix with 1-7th to 1.6th good water-lime and put on two inches thick at least. Finish with one inch of grout made of a finer gravel and the same of sand mixed with water-lime, one part of lime to two of sand. Put on the clay bottom, if all is hard and firm. If any places are soft, pound in stones for foundation.

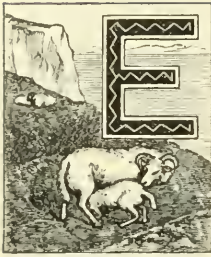
As this cellar is designed for a fruit cellar especially, it may be to the advantage of the proprietor, and also to others who hold their fruit over, if I make some suggestions as to the further equipment of such a cellar; also as to the best method for handling the fruit in it, as gathered from an extended experience of many years in handling and keeping fruit in a cellar of my own. It has, probably, not occurred to the fruit grower in general that he can, to a large extent at least, take advantage of the same principles which are so successfully used in the large cold storage establishments in the preservation of his own apple crop.

It is probable that both the theory and its practical application will be more readily grasped if I simply describe my own cellar, with my method of handling the fruit, than by any more extended description. This cellar is under my home dwelling house. It is 26x24 feet, with an L, nearly as large. This cellar has an elevation of over two feet. It has six windows of six lights each which are hung on hinges, with shutters on the inside and blinds on the outside. Not only is the floor cemented, but the whole cellar is lathed and plastered overhead to shut out the heat from the rooms above, and promote an even temperature. The object sought is to give the fruit all possible conditions favorable to its keeping. These are: Dead air, dry air, and as low and equal a temperature as is possible, above freezing. So much for the appointments of the cellar. Now for the handling of the fruit.

Barrels, while suitable to keep such kinds as the Baldwin, are not the best packages to hold the majority of kinds. I use crates made on purpose. These are three feet long by 14 inches deep and wide, and hold $2\frac{1}{2}$ bushels each. I put my apples in them when taken from the trees, drawing them near the cellar and packing them three to five high, covering securely from the storms. Here they go through the sweating process. Being in the crates, the vapor generated passes off and does the fruit no harm, as often happens when in barrels. I hold the fruit out doors as long as is safe; then assort with care, and run them into my cellar. To facilitate this work, I have a small tram which I put on a light movable track, that extends into the cellar and out to the pile of crates. I attach a small rope to the tram, and run it through a one-wheel tackle-block, and fasten the tackle-block to end of track. On this tram I place two crates of apples and by giving the tram a push it runs into the cellar. There I have two men to unload and put up the fruit. In this way I can fill my cellar full in less than ten hours. And I have often taken out of this cellar in spring five hundred barrels of sound apples. After the cellar is full, it is shut up until the condition of the atmosphere is favorable,—dry and cold. Then it is opened up, and the cold air let in. It is no unusual thing to leave the windows or some of them, open for a week, when the thermometer is down to zero or below. It is quite remarkable how much cold a cellar full of apples requires to keep the fruit down to the degree most suitable for their keeping. When this point is reached I shut the cellar again, and hold it until the thermometer indicates that more cold is needed, when it is opened again. In this way I have been very successful in keeping my apples for a spring market, especially such kinds as the Northern Spy, which has been my only profitable apple for the last fifteen years. It is a good keeper, when well grown, in this manner, but not a good keeper in barrels, as usually kept. In closing I will say: A cellar to keep fruit well, should be devoted to fruit alone. There should be another cellar for kitchen purposes.—Orange Judd Farmer.

Cultivate the Orchard.—Plow the orchard, but be careful of the trees. Plows and whiffletrees cause more damage to the trunks of young fruit trees in one cultivation than months of care and growth can cure. A device in successful use at Rochester, N. Y., is made as follows: Take the plow where it is wanted with least danger from the teams. To the front of a bob-sled is lashed an arm which projects a foot and a-half on either side, and is heavily wrapped with an old blanket. To one end of this arm the plow is attached by a clevis, and before the main plowing of the orchard is attempted, two bouts are made for each row of trees. When back furrowing from the trees, two furrows are left and finished with the plow attached as before to the bob. This permits thorough plowing and close and safe cultivation, which does not leave over one square foot of unplowed earth about each trunk. This saves a great deal of hand labor, as well as broken bark and limbs, while the equipment can be arranged in ten minutes from materials always at hand.—Farm and Home.

APPLES IN NOVA SCOTIA.



L. WAKEMAN, in a letter to the Cincinnati Times, during a trip through Nova Scotia, says of the famous Nova Scotian orchards: I have more faith, however, in Nova Scotia apples than in her gold. The Annapolis and Gasperau valleys contain about 600 square miles of cultivable land. At the present time one-tenth of the area, or nearly 40,000 acres is planted with apple trees. Almost a half-million barrels of Gravenstein, Baldwin, King of Tompkins, Nonpareil, Russets, Ribston Pippins, and other varieties of apples are now annually yielded and exported. Over three-fourths of the area is yet in young trees. From 5,000,000 to 10,000,000 barrels of apples will certainly be raised annually in these two valleys within ten years' time. They are proven to be the finest and hardiest varieties in the world, and the demand is never met. In the fall, American buyers fill the region, purchasing in 1,000 barrel lots. Experience has proved that the European markets are just beginning to know this fruit region, and, as every barrel which can now be secured is taken there, the competition between American and English buyers will always insure the Annapolis Valley apples raisers from \$3 to \$5 per barrel in gold. The method of English shipment is highly interesting and is additional good luck to the Nova Scotia apple farmer. He has only to pack his apples carefully, stencil and brand his name upon it, mark it "John Doe," or "John Roe, London," and deliver it at any depot of the valley railway. If he send 100 or 1,000 in this way he has no further trouble or anxiety. His apples go direct to Halifax. There steamship agents, who are practically agents of London buyers, care for them. In three weeks' time the apple grower receives by mail exchange on London for the apples he has left at the station platform, and the price is the highest paid in the world. These conditions are giving a great impetus to the apple culture in this wonderful valley. About forty trees are planted to the acre, and at maturity yield from three to seven barrels of apples, for which never less than \$3, and often more than \$5 per barrel is secured. The whole valley is a vast orchard and every farmer is rich, or rapidly getting rich.

THE APPLE CROP is acknowledged to be almost a universal failure in the Continent of North America; possibly reaching about quarter of the average quantity. Surely apples will be very high priced this winter. The Commercial Circular speak discouragingly of the prospect of the English market; but when England's crop is exhausted, where then will apples be had, but from Canadian sources.

RHUBARB.



THE garden rhubarb, or pie-plant, is a perennial of the same natural family as the common dock. The varieties now cultivated are hybrids and have supplanted the original species, *Rheum rhabonticum*, *palmatum*, and *undulatum*, excelling them in size, earliness and delicacy of flavor. The best sorts are the Early, which is of but medium size; Myatt's Linnæus, rather early, and yielding large crops of large leaves, and the best flavored of all, Myatt's Victoria, which is two weeks later; stalks very large and good; Downing's Colossal, and Cahoon's Mammoth, very large varieties of good flavor.

Rhubarb is remarkable for the quantity of phosphates and soda it extracts from the earth. Crude soda might be added to the soil. Guano and bone dust are very beneficial. Rhubarb succeeds best in a rich, deep, rather light loam and in a situation open to the air and light. It may be raised from seed, but thus grown, sports into new varieties. It is best propagated by dividing the roots, reserving a bud to each piece. These may be set about two inches deep, in rows three feet apart, and from eighteen to thirty inches (according to the sort) in the row. All the culture required is to keep the surface soil light and free from weeds. The plantation may be made in the fall, after the leaves are killed by frost, and protected by litter, or as early in the spring as the weather and soil permit. It should not be disturbed after growth commences. Pluck no leaves the first year, after which the crop will be abundant. Make a new plantation about once in five years. If a plant or two in summer dies out, as it is apt to do in the South, it is best to remove next autumn the old plant, together with the soil in which it grew, and supply fresh soil. New plants to reset the vacancy can be obtained by uncovering an old crown and cutting from it a bud with a piece of root attached.

To obtain the largest product, the flower-stems should be broken off when they appear, for the plant is weakened by permitting it to seed. A yearly surface dressing of well-rotted manure should be given, for the stalks to be good must be quickly grown.

This plant is forced by placing a large flower-pot over the roots, and covering with stable manure. The more common way is to surround the plant with a small barrel without a head; a cover is placed over it at night and in cold days, and it is then surrounded with a pile of stable manure built up in as sharp a cone as it can be made to form. If the root is good, it will soon fill the barrel with shoots. The plant should be permitted to rest after this crop through the season, and others be selected for the purpose next year. This operation at the North, is common enough, but at the South it is generally death to the plant.—White's Gardening.

PROMINENT CANADIAN HORTICULTURISTS.—XXIII.



J. K. McMichael, of Waterford. Ont.

THOUGH more widely known as a successful stock farmer than as a fruit grower, yet Mr. J. S. McMichael grows more fruit, and that of a finer quality, than some whose names are prominent before our readers. It was in recognition of his experience in this direction, that in the year 1889 he was chosen director of the Ontario Fruit Growers' Association for his electoral district, a position which he held until December, 1892.

The old homestead, of which Mr. McMichael is still the occupant, was purchased by his grandfather in 1797, who had just come from old Scotland. The first orchard was planted by his father, Mr. George McMichael; and the trees were seedlings of his own raising. He planted an acre of ground with apple seeds, and so raised a sufficient number of trees not only to plant an orchard for himself, but also to supply many neighboring farmers with their first apple trees. These were afterwards top-grafted, and are now the old orchards of the township.

On the death of his father in 1856, Mr. J. S. McMichael came into possession of the farm, and having a fancy for the cultivation of fruit, he soon enlarged the orchard from four acres to twenty five. In his planting, he included about twelve hundred pear trees, and nine hundred apple trees, besides plum, cherry, peach trees, and small fruit plants.

His success as a farmer is shown by the fact that, in the year 1887, he received the first silver medal for the best kept farm, from the Agricultural and Arts Association of Ontario, his orchards being especially commended.

He has also contributed to our meetings some valuable experiences, in his papers on spraying fruit trees for apple scab, and other subjects; all of which were helpful in encouraging others to aim at the same success in the use of fungicides achieved by himself.

A Remedy for Cabbage Worms.—Insect Life credits Mr. A. S. Fuller with the following treatment as a means of deterring the cabbage worm: Two quarts of coal-tar are put into an open vessel, which is set in the bottom of a barrel, and the barrel is filled with water. In forty-eight hours the water is impregnated with the odor of tar, although tar is not dissolved in it. The water is then sprinkled abundantly on the cabbages, and the odor penetrates every portion of the head, killing or driving away the worms. As the water evaporates, no stain or odor remains on the cabbage. The same quantity of coal-tar can be made to impregnate several successive barrels of water.



J. K. McMICHAEL, Esq.

CANNING AND EVAPORATING FRUIT.



AS this paper is prepared partly from experience, I trust you will bear with me while I make mention of a little of my experience in connection with canning fruit in glass jars. Spending the winter of 1891 in one of the best fruit regions of Ontario, and having opportunity for observation as well as mental reflection, my mind would wander back to this valley, and the favorable opportunities we possessed in comparison to other portions of the Dominion for fruit growing. I felt confident then if the fruit growers had a factory such as I have alluded to, it would be a great boon to them. So sanguine was I in the belief, that after a careful study of the subject, together with some practical and well tested information (which I was so fortunate to obtain), I decided upon arrival home to try the experiment on a small scale. I put up about one thousand jars. The results I am pleased to say far exceeded my fondest hopes. My stock is disposed of and orders turned away.

Frequently I am asked will your goods keep in glass jars? I think they have been well tested on that point, as they have stood a journey to India, and at last accounts were keeping perfectly. It takes time as well as skill to reach perfection. I see where I can make improvements next season, when I know I can put on the market an article equal to any, and superior to many. I mention this simply to show that they are all possibilities. People are daily becoming more particular with regard to this line of fruit, and are willing to pay the price if the article suits. It is only a matter of time when all lines of fruit, to find a ready sale, will have to be prepared in glass jars.

From the following prepared table I shall endeavor to substantiate the fact, that canning and evaporating should go hand in hand, one is incomplete without the other. 1st, we will take the apple. I have already stated that the time has passed for flooding our market with inferior fruits. I also emphatically state that they should not find a market at the canning factories. How can a factory place upon the market a first-class article from refuse fruit? I contend it cannot be done.

The line of thought I take with reference to this is, place nothing but No. 1 fruit on the market in its natural state; and the No. 2, which by the way should equal the No. 1 in every respect but size, to the canning factory, and the balance to the evaporator. If this uniform system was carefully followed I feel confident we would realize greater prices for good fruit, and dispose of our inferior to better satisfaction than filling our markets with a general mixture. Here the canning and evaporating department each have their own work to perform, with the apple, the "King of Fruits."

2nd, we will take the different kinds of small fruits that are extensively cultivated within the Province. In the following table I have taken as my standard 100 quarts, with the evaporator as my first illustration :

Kind of Fruit.	No. of Quarts.	Average Fresh value.	Yield in lbs. evaporated.	Cost to prepare per 100 qts.	Market value.	Net Profit.
Raspberry.....	100	\$8 00	35	40c.	30c. lb.	\$2 10
Blackberry.....	100	3 00	30	15	15	1 35
Cherry	100	5 00	23 pitted.	50	30	2 00
Strawberry.....	.....	same	proportion.	.....	.....	.....
Gooseberry.....	.....	"	"	.....	.....	.....

We will now take 100 quarts of the same fruit canned.

Canned Rasp- berry	100	8 00	No. qt. jars when canned, 66.	10 00	34c. per jar.	4 44

A single glance will be sufficient to see that the canning is far more profitable than evaporation of small fruits, as other lines run in about the same proportion as the raspberry. Plums, which by the way are receiving a great deal of attention at the present time, are undoubtedly more profitable canned, and when we see orchards all the way from one hundred to three thousand of this choice fruit being planted, does it not stand us in hand to make the preparation for seasons of overproduction? They are sure to come, then why not as intelligent men make preparations for the same.—J. E. SHAEFFNER, before Nova Scotia Fruit Growers.

COLORING WHITEWASH FOR INTERIOR WALLS.

Please publish directions for coloring whitewash to be applied upon rough plastered interior walls. The special colors desired are pale blue, red, green, light gray, light pink and cream.

R. A. M., *Rutlgeway, S. C.*

Reply.

Coloring matter may be stirred into whitewash to make any desired shade. Spanish brown will make a red-pink, more or less deep according to quantity used. Finely pulverized common clay mixed with Spanish brown makes a reddish-stone color. Chrome yellow for yellow color, and if small quantity is used, a cream. Use indigo for different shades of blue, and indigo and chrome-yellow for green. Green pigments cannot be safely used with lime, as the lime will injure the color and the green will cause the wash to peel off. For different shades of red mix Venetian red and Spanish brown in various proportions. Lampblack will give a pretty gray if used in proper proportions with the whitewash.—Atlanta, Ga., Southern Cultivator.

FRUIT AND INSECTS.



THE Maine Report, containing in one compact volume the many essays, reports and addresses on the various departments of farming, the proceedings of the Agricultural Experiment Station, and the annual report of the Maine Pomological Society, is a volume of much value, and replete with important matter. We can only notice briefly some portions.

The Apple Maggot (*Trypeta*) receives a large share of attention, and the statement of the observations and experiments made at the Maine Experiment Station by Prof. F. L. Harvey, the entomologist, occupy over fifty pages, with some twenty engraved figures or more. This insect is properly regarded as a worse enemy to the apple crop than the codling moth inasmuch as it perforates the whole interior of the fruit, while the codling worm is mostly confined to the core. It cannot be reached by spraying, coming too late in the season, and being shielded under the skin. It has been known to entomologists more than twenty years, was introduced into Maine from adjoining States eight or ten years ago, and its ravages have gradually increased, so that it has spread over most of the counties of the State. From careful observations, it appears that the fly deposits its eggs early in July and so on into August, and early in September the worms are found in abundance. When the infested fruit drops they go into the ground, but not over an inch in depth. They have little power to penetrate hard soil, and prefer sandy ground. Prof. Harvey examined them in connection with more than sixty named varieties of the apple, and found that such early apples and autumn varieties as Benoni, Oldenburg, Early Harvest, Porter Red Astrachan, Gravenstein, Golden Sweet, and, in fact, all the early varieties were badly infested by them, while most but not all the winter varieties were more sparingly attacked. Hence the remedy proposed by some entomologists, to cut down all the early trees and thus avoid them, is objected to, and would still leave enough of the winter apples for their increase, among which Tolman's Sweet, Wagener, Esopus Spitzenburg and Northern Spy are mentioned.

The insects have sharp ovipositors, and penetrate the tough skin of the fruit, placing the eggs beyond the reach of any sprayed insecticide. Prof. Harvey remarks that "there is no lazy way to check trypeta," and that it will have to be done by a direct, squarely fought battle. He places the chief reliance on *destroying the windfalls*. The larvæ do not leave the apples till they drop, and if these are daily gathered and fed to animals, or still better if sheep run in the orchard, they promptly gather the windfalls as soon as they drop. This method is strongly recommended by other entomologists. Prof. Harvey also suggests "that the making of cider from maggoty apples might

be profitable, and would afford those who drink it both meat and drink at the same time."

We also suggest the importance of giving a hard and smooth surface to the ground under the trees, as the insects appear to have little power to penetrate a hard crust. A loose sandy soil favors their transformation; a clayey soil has a retarding effect. The growth of grass in the orchard, making a tough soil, increases the difficulty of their penetrating the soil, and when the grass becomes dry it may be burned with them. As they enter the earth only an inch, some systematic mode of turning them under half a foot may be the means of placing them where they will stay.—Country Gentleman.

SOME JOTTINGS IN PEAR CULTURE.

This season we have secured a fine crop of pears, grown in two small orchards of about two hundred trees. Each year the ground is tilled and enriched by the liberal application of wood ashes. The trees were sprayed three times with copper carbonate and Paris green. In August, about one-third of the fruit was thinned out. In these orchards there is more or less blight every year, but in an orchard of ten acres, standing in sod for two years, there is not any blight this year and scarcely any fruit. Five years ago this orchard was coated with barnyard manure and thoroughly tilled. For two or three years following the trees were so injured from blight that a number of them were completely killed, and the others averaged the loss of half of their branches.

A very successful remedy for pear blight is to seed down the orchard and to watch closely for the first appearance of blight, and remove the diseased branches and burn them, coating the wounds with raw linseed oil; and be very careful not to injure the buds or bark on the healthy branches, and do the least possible pruning during the seasons of blight.

Waterford, Ont.

J. K. McMICHAEL.

Pruning Peach Trees.—Peach growers are gradually learning that the peach tree will not only stand very severe pruning, but that it does best under such treatment. Where this is not practiced, long, slender branches form, and these produce fruit mainly at their outer extremities. This overloads the branches and causes them to break down even when the tree is producing no more fruit than it could easily carry if properly distributed. If the branches were cut back to within two feet of the trunk, they would throw out numerous fruit spurs and produce fruit close to the trunk and main branches, where it could be easily supported. Trees handled in this way will also produce more perfect fruit. Such severe cutting back may be done without any injury whatever, if performed while the tree is dormant. Although peaches are reckoned an uncertain crop, it is still one of the most profitable fruits that can be grown in localities adapted to it. Select the finest varieties and give high culture, and it will require but little fruit to give you a good money return.—Am. Farm News.



❖ The Garden and Lawn. ❖

CANADIAN WILDFLOWERS.—IV.

The Buttercup Family—(Continued).

THE MARSH MARIGOLD—*Caltha Palustris*.



HIS showy, marsh-loving plant is very common in Ontario, growing in wet places and often so abundantly that the ground is fairly a sheet of gold during the time that it is in bloom, which is usually in the month of May. It has no petals, but the sepals, which vary in number from five to nine, and are broad oval in form, are of a brilliant yellow. The pistils also vary from five to ten, and the stamens are numerous. Its leaves are large and kidney-shaped or round, smooth and shining, and are often cooked as greens. It can be easily transplanted into any low, marshy ground. Whether it will flourish in common garden soil, the writer cannot say, not having tested it in such a situation long enough to decide the question.

THE THREE-LEAVED GOLDTHREAD, *Coptis trifolia*. This pretty, little, white-flowered, May-blooming plant, loves the cool shade and damp, mossy places. It is doubtful if we can coax it to grow in any other situation or soil, yet the writer is making the experiment of transplanting it to a shady border possessing conditions of soil and moisture approximating those of its native haunts, with what success time will show. Its three leaflets are sharply toothed and obscurely three-lobed, evergreen, but often in the spring with an almost purplish hue. The sepals are from five to seven in number, and there is the same number of small, club shaped petals. It has numerous stamens, and from three to seven pistils. The root is a long, bright yellow thread, very bitter, which is often used to make a wash for sore mouths, with good effect.

THE COLUMBINE, *Aquilegia Canadensis*. Of all the varieties of columbine in cultivation we know of none more beautiful than our own wild Canadian species. The combination of scarlet and yellow in the flowers, nodding so gracefully on their slender stalks, is just charming. It is by no means particular as to soil or situation, and when once established continues to flourish for many years. Its five sepals are colored like the petals, which are also five, the latter being lengthened backwards into hollow spurs which are nearly straight. The

flowers are about two inches long, nodding, scarlet on the outside and yellow within. In bloom in May and June.

THE RED COHOSH, *Actæa spicata*, var. *rubra*, also called Red Baneberry. The flowers are white, borne in a short raceme or cluster, on slender pedicels, having from four to ten small, flat petals; the sepals, which are four or five in number, drop off when the flower opens. There are numerous stamens, having slender, white filaments or stalks, but only one pistil. The leaves are twice and some thrice divided into threes, the leaflets sharply cleft and toothed. It grows about two feet high, blooms in May, and bears berries that become a bright cherry-red, in which are many smooth, flattened seeds.

THE WHITE COHOSH, *Actæa alba*, also called White Baneberry. This much resembles the Red Cohosh, growing somewhat taller, petals more slender, and usually the pedicels become as thick as the peduncle, or main flower stalk, and of a red color, while the berries are white. Sometimes the pedicels are slender, like those of the Red. It blooms about two weeks later.

These plants are more ornamental when in fruit than when in flower, the showy berries remaining a long time. The berries are unwholesome, if not actively poisonous.

D. W. BEADLE.

450 Markham Street, Toronto.

Where and How to Prune.—The time to prune deciduous trees is when the sap is down and leaves off the tree. Plums are generally the first ready and are followed by pears, apricots, peaches and lastly apples.

Close pruning when the tree is dormant induces tree growth. Hence if a tree is feeble, or has not grown as could be wished, it should be closely trimmed in the winter season, always cutting just above a healthy bud. A severe shock to the tree, while the sap is flowing freely, causes the tree to throw out fruit buds and spurs for the next season, and pruning while the tree is in blossom will cause that crop to set. When tree growth is desired, prune while the tree is dormant; but if fruit is desired, prune either root or top while the sap is flowing.

For plums, prunes and apricots, leave all the small spurs growing along the branches, no matter whether the tree is young or old, for on them the bulk of the fruit is grown. Head in well from the outside, which tends to develop these spurs, and also strengthens the tree, and the fruit will grow where the tree is best able to bear it. Apples, peaches and pears are inclined to bear nearer the tips, and young trees should be well headed in during the winter season, both to give the tree symmetry and strength, and also to induce a more vigorous wood growth, and prevent a premature bearing of fruit, a fault that fruit-growers do not seem to appreciate, but which is, nevertheless, a very serious one.—Farm and Home.

THE AMERICAN LINDEN, OR, LIME TREE —(Basswood).

(Tilia Americana.)



If a person were to order lime trees from some nurseryman he would certainly receive trees of the sour lemon (*Citrus medica*), generally known as limes. Other nurserymen would send lindens (*Tilia Americana*), or, perhaps some of the European varieties of lime, while others would return the query: "What kind of lime trees are wanted?"

This confusion of names is unfortunate, and should be rectified. However, the tree I wish to mention particularly just now, is that commonly known in Canada as the Basswood. There is no doubt the tree was given this name in Russia, where bast-mats are extensively made from the inner bark or fiber.

In England, and some other countries, the basswood bark has long been used for making ropes, not of the strongest quality, but which serves many useful purposes.

Basswood strings are peculiarly suited for tying up plants which need stakes, or trellises, and for tying buds; and I have handled tons of it for those purposes.

This bark is easily separated by a process of maceration, when it comes apart in thin layers, which, when properly dried and cared for, can be kept in good order for a long time.

In Europe there are several varieties of the lime or linden, the chief difference, however, being in the size and smoothness of the leaves. I have seen many trees of the European varieties growing in America, but for symmetrical form and beauty of foliage, they do not compare favorably with our own native linden. Its large, green, glossy leaves, and the fragrancy of its flowers, which furnish nectar for the honey-bee, make it an elegant detached object, when planted singly in open lawns or pleasure-grounds. It has also this advantage, that it is hardier than any of the European varieties; therefore I decry the assumed wisdom of some importers who continue to recommend foreign trees, which are in many respects inferior to those which we can easily have in abundance.

This valuable tree will grow and thrive in almost any soil or situation, but in thin soils in dry seasons, the leaves drop early in autumn.

Propagation.—In Germany the linden is propagated largely from layers and cuttings, as well as from seed. Of the different methods in Canada I have found that of raising from seed to be the more economical and satisfactory.

The seeds should be sown soon after it ripens, or early in autumn, because if allowed to dry for the winter and sown in spring they will not germinate until

the following spring. The soil in which the seed is to be sown should be light and porous, kept moist and partially shadowed. Linden seeds will never push up through a hard crust of clay.

After growing one year in the seed-bed, the seedlings should be set out in nursery row to grow for two years, after which they should be planted where they are to remain.

When transplanted quite young and of small size, the linden grows and thrives much better than large-sized trees partly deprived of their fibrous roots when being lifted.

Cataraqui, Ont.

D. NICOL.

REPUTATION AND VALUE.



THE way to sell good grapes for what they are worth, is to so put them up and brand them that anyone may know at a glance that they are good grapes. For a good, honest article the consumer is not only willing to pay a price based upon the value of the goods, but also a considerable margin for the assurance that the commodity is all right. This fact is proven by the history of hundreds of well-known brands of various commodities. Brands that have become household words. In the case of grapes, what does this involve? It simply requires that the brand placed upon good fruit never be allowed upon any but good fruit, that the trade mark be sufficiently conspicuous to tell its own story, and sufficiently familiar to consumers to be recognized and understood at a glance. No one doubts that the first requirement is good, well-packed fruit, that will pass a rigid, impartial inspection. But such grapes may knock about the market and sell for third-rate price, if they are not so branded as to assure the buyer of their quality. Each package must vouch for its contents, and tell a story so plain that no one can fail to understand it. When it is generally known that only good grapes are packed under a certain brand, that brand will bring several cents per basket more than equally good fruit, sold under an unknown brand. If this is true—and anyone can confirm it who will closely observe the marketing of commodities sold under special brand—it is a very significant fact to grape growers. But how may the millions who consume Concord grapes be made to know that only good fruit is packed under a certain brand? It would be practically impossible for a single grower, even though he produced several carloads, to make his product familiar in all markets. But through a union controlling the product of thousands of acres it is a comparatively simple matter. It requires only the exercise of such business sense as dictates the management of hundreds of enterprises, where special brands of goods are produced.—Fruit Trade Journal.

THE HOP IN GARDENS.



HERE are few things more beautiful than the common hop, which, even when seen climbing over the straight poles in the hop fields, has a gracefulness and picturesqueness inexpressibly charming. We can take some of this beauty to the garden, and use the hop for covering bowers, arbors, trellis-work, and odd nooks, especially if evergreen vegetation is not required. A good use for it is as a climber permitted to ramble at will over dead trees, amongst shrubs and stumps, as any soil is suitable. We lose much picturesque



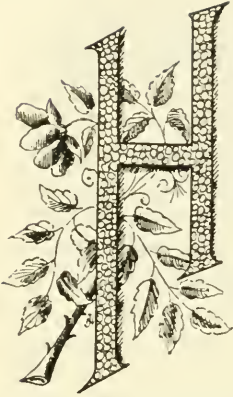
FIG. 398.—A HOP-COVERED ARCHWAY.

beauty in gardens by ignoring things like the hop because they are "common." Nothing is common if it is capable of giving the delight the hop of the field will when set in a place it can clothe with a luxuriant and rich green vegetation. I remember a gnarled apple tree on the fringe of a beautiful pleasure-ground, over which the hop had spread its vigorous shoots, and it would have been difficult to discover a prettier bit of free and picturesque growth. As with the ivy, it makes a happy contrast to clematis Jackmanni and its varieties, the mass of deep green leaves intensifying the color of the rich abundance of deep blue flowers. Nor is its charm confined merely to summer, but as autumn approaches the plant then carries its rich clusters of golden yellow hops, and receives additional beauty of no mean kind. We can judge of the rich beauty that a common climber can give when once it has become established by a glance at the illustration. There is another kind called the Japanese hop, which has been much used for covering arbors and trellises. The growth made is surprisingly rapid. Those who have not yet heard of it should give it a trial, and though resembling the common type, it has no commercial value whatever. The bunches of flowers are larger, and, therefore, the plant has an advantage for the garden.

Money in Plums. — It is beginning to pay to raise plums where the improved varieties are set and cared for. The Japanese plums are especially attracting attention. I have examined specimens of the Abundance plum from several localities, some as far north as Connecticut, where it seems hardy. It matures well, and nurserymen should give it a fair test. The Ogon has been sent me from Connecticut, also from the West, and I believe it will prove hardy all over the United States. Kelsey is large, sometimes three inches in diameter, but it is not hardy north of Tennessee. Burbank is a Japanese plum well worth attention. It is not much larger than the Wild Goose, but brilliant crimson-purple in color and rich in flavor. Satsuma is hardy in the Middle States, and, together with Ogon, grows well in New York. The latter is generally a poor grower, but Abundance is a good one. Simoni, Wolf and Pottawattamic are of little value and seem like wild plums. Satsuma is nearly round, dark without and cherry-red within and has a very small stone. Clyman originated in California and ripens as early as Wild Goose. It is an excellent shipper, reddish-purple, covered with a rich blue bloom, is a free stone and the size of the Peach plum. The tree is an enormous bearer, and planted in early localities nothing could be more profitable.—Green's Fruit Grower.

PROUD FATHER: "Welcome back to the old farm, my boy. So you got through college all right?" Farmer's Son: "Yes, father." Proud Father: "Ye know I told ye to study up on chemistry and things so you'd know best what to do with different kinds of lands. What do you think of that flat medder there, for instance?" Farmer's Son (joyfully): "Cracky, what a place for a ball game!"—Vermont Watchman.

FRUIT AS FOOD.



HORTICULTURISTS, it seems to me, are doubly interested in the subject of fruit as food. If it can be shown that the substitution of fruits for bread, cereals, and vegetables results in an increase of health, it is of course a matter of great interest to everyone; and to the horticulturist and fruit-dealer this problem becomes important in a business sense.

Scientists and physicians are in substantial agreement as to the different elements of food needed by the human organism, and also as to the relative amounts of same. It has been deduced from experiments made on soldiers, and with inmates of public institutions, that, for an average adult performing healthful but not excessive labor, about 21 or 22 ounces of dried food in the twenty-four hours are requisite to keep up weight and strength. Of this nearly 17 ounces must be carbonaceous, or heat-giving, about 4 ounces nitrogenous, or that which is intended for the support of muscular action, and less than an ounce of the phosphatic to support the brain and nervous system, and a small percentage of salts for the bony structure.

If bread be analysed, after its water has been evaporated, it is found that nearly 70 per cent. is composed of starch; and the purpose that this subserves in the system is to keep up the heat of the body. It is well-known to physiologists that while it remains in the condition of starch it is non-absorbable, and non-assimilable by the system; it only becomes food when it is converted by the digestive process, first into dextrin, and then into glucose. If fruit be analysed it will be found that a large portion is carbonaceous, like the starch in bread, and is used in sustaining the heat of the body. In the dried figs of commerce there is about 68 per cent. of glucose, which is nearly the amount of starch contained in wheat flour, and nearly twice as much of glucose is contained in a pound of such figs as bread contains of starch—since bread is about half water. Dates and bananas are similarly rich in this carbonaceous element. Fruits growing in more northern regions are usually much more watery and possess a much smaller proportion of the heat-giving nourishment; but many readers will be surprised to learn that substantially all the fruits usually grown in more northern latitudes are still—when allowance is made for the great preponderance of water—quite rich in heat-giving food. The following is quoted from “Eating for Strength,” a work by M. L. Holbrook, M.D., Professor of Hygiene in the New York Medical College, and Hospital for Women:

“An important part of the grape is its sugar, which may be as high as 30 per cent., or as low as 10 per cent. The warmer and drier the weather at the

time of ripening, the more sugar in the grape, and the less acid it is found to contain. There is a small quantity of albuminous matter in the grape, similar to the albumen in the blood, also some gum and dextrin. The mineral constituents are tartrate of potash, soda, phosphoric acid, lime, magnesia, and iron. From 70 to 80 per cent. of the grape is water. The physiological effect of the grape is significant. Eaten with other suitable food in quantities from one to two pounds daily, they increase nutrition, promote secretion and excretion, improve the action of the liver, kidneys, and bowels, and add to the health. The sugar of the grape requires no digestion, but is taken at once into the blood, where it renders up its force as required; so, also, of the water. Eaten moderately with a suitable diet, they will not produce cathartic effects but a more natural action of the bowels, so important to health; or, if eaten in large quantities, they are gently laxative. As soon as this occurs, obstructions disappear, and a feeling of comfort arises which is very gratifying to the sufferer."

It will be seen, since grapes have as high as 30 per cent. of glucose, and the poorer sorts as low as 10 per cent., that it is not an extravagant estimate to regard them as containing on the average 15 to 18 per cent. of this heat-giving nourishment. With a requisite amount of fish, flesh, or animal products with oil, from one to one and a-half pounds of bread daily, may be considered a liberal allowance; and a pound to a pound and a-half of grapes to each of three meals, will yield an equal amount of carbonaceous food. It will be noticed that when eating bread, one must be furnished with some fluid for drink; whereas when grapes are used instead of bread, nature provides a distilled water manifestly more wholesome than any other drink which the human being can take.

In England, unfortunately, the climate is not well adapted to grape culture, except by artificial aids; but, fortunately, the blackberry, the raspberry, strawberry, and gooseberry give bounteous yearly returns. Professor Church credits the gooseberry with being only half as nutritious as the grape. I am, however, inclined to think that if analysed when perfectly ripe, it will be found to contain a larger proportion of sugar than is at present credited to it. Blackberries and raspberries, are rich in sugar, and all these fruits may be plentifully and cheaply produced in England, and by bottling may be kept substantially fresh the year round. The fruitarian has only to add a small quantity of dried figs, dates, or bananas—and some one of these fruits is always obtainable at a low price—to obtain all the nourishing elements contained in bread, and to have, in addition, a food much more easily digested, rich in aperient and health-giving acids, and filled with the most wholesome drink known.—EMMET DENS-MORE. M.D., in Hort. Times.

RUPERT: "I hope, mamma, that I wasn't impertinent to Mrs. Thatcher to-day?" Mamma: "Indeed, I hope not, Rupert. What did you do?" Rupert: "Why, she said I was growing like a bean-pole, and I told her bean-poles don't grow."—Harper's Young People.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE FRUIT DISPLAY made by the Nova Scotia Fruit Growers' Association during the month of October at the World's Fair, in charge of the excellent President of that Association, Mr. J. W. Bigelow, was most creditable to that province. An excellent plan was the massing of varieties. At a world's fair little attention is given a single plate or two of a variety, however fine, but when Nova Scotia set out a hundred plates of attractive Gravenstein apples alone, and erected an elegant monument of magnificent Kings, from the Annapolis Valley, it was no wonder that people stopped and admired, asked many questions of Mr. Bigelow, and then passed on saying that it was the finest exhibit they had seen in the Building.

BRITISH COLUMBIA showed some immense samples of apples during October, so that if last, she is by no means the least among our fruit growing provinces. One red Bietigheimer, from A. Clemes, Spences Bridge, weighed $24\frac{1}{4}$ ounces, and measured $15\frac{1}{4}$ inches in circumference. This was for some time the largest apple shown at the World's Fair. Her Baldwins and Greenings are enormous; her Ben Davis are as large as those of Oregon and Idaho, and will make a most attractive market apple, in spite of its poor quality.

But one of the most noticeable apples in the collection was the fine samples of that high flavored old favorite, the Esopus Spitzenberg, which can no longer be grown in Ontario and New York State with satisfaction. These were not only of a fine size, but of a high color and perfectly clean. The Fameuse and the Swazie Pomme Gris too were excellent. Surely there is a wonderful future for the Fraser Valley in the line of commercial orcharding; and now that Lord Aberdeen has set so good an example by planting in it a very extensive orchard, no doubt the great possibilities of that section will soon be appreciated.

British Columbia plums, both fresh and in solution, have also been a most prominent feature of the exhibit from that country; one lot of Yellow Egg being the largest plums on exhibition.

QUEBEC has been quite to the front all through the Fair with her fine collections of Fameuse and Alexander apples, and the numerous excellent hardy varieties not shown by any other country. We have noticed her fine collection of bottled fruits in a former issue.

ONTARIO surpasses every other exhibitor in the number of varieties and collections of fruit shown. Although occupying one-half of the space allotted the Dominion, the amount was entirely too limited to accommodate the fruit sent in from all parts of this fair province, and it was necessary to secure an extension to receive the overflow. Through the faithful services of the President of our Association the fruits of Ontario have been shown to the best advantage, and numerous awards made to the province, and to the individuals contributing to the exhibits.

EVEN PRINCE EDWARD ISLAND puts in an appearance with about twenty varieties of well formed, clean looking apples, much smaller in size, of course, than the same varieties grown in Ontario.

THE CENTRAL EXPERIMENTAL FARM at Ottawa makes a fine exhibit of grapes, embracing about 133 varieties, and forming one of the most complete collections shown. It includes some valuable hybrid seedlings raised by Prof. Saunders, and a variety called the Emerald, which was pronounced of very high quality by the jurors at the Colonial and Indian Exhibition.

Another interesting collection is that of New York State, containing two hundred and ninety-seven varieties. Among these later is the Barbarossa, a sample of which, grown by D. M. Dunning, of Auburn, N.Y., weighs $9\frac{1}{2}$ lbs.

THE PRINCESS LOUISE (or Woolverton) according to Prof. Budd is hardier than the Duchess which it resembles in wood and in bud. It is perfectly hardy in Iowa. Some fine samples were shown at the Chicago Exposition by Mr. A. M. Smith, of St. Catharines. The excellent quality of this apple and their extreme beauty as grown on the original tree at Maplehurst, make it a most promising variety. The question is—What effect will grafting, and environment have upon it. So many differences are brought about by varying conditions, that one can never predict with any certainty the future of any variety if removed from its natural habitat.

STOCK ALSO INFLUENCES THE SCION greatly in some cases. Prof. Budd told us at Chicago that he knew a case of the Bethlehemite being grafted on a wild Crab in which the variety retained its distinctive quality for five years, but

after that it began to take of the flavor and acidity of the wild Crab, until it became almost valueless.

IS THERE A GOOD WINTER RUSSIAN APPLE, is a question often asked. Certainly, said Prof. Budd, the Boiken is a Russian apple about the size of the Greening or larger, is a better keeper, and the tree is as productive as the Willow Twig. Even small trees early begin bearing loads of fruit.

THE DEMPSEY PEAR, one of the good things bequeathed this country by the late P. C. Dempsey, is a cross between the Bartlett and Duchess. A fine sample was forwarded us at the World's Fair for exhibition and testing the flavor, and we are persuaded it is a valuable variety.

THE "News" of St. Johns, Que., says: "Efforts for some years past have been made at Clarenceville, Que., to test under cultivation the New England wild mammoth red grape of Connecticut (one of the parents of Rogers' finest hybrid varieties), and they have been so far successful that this grape can now be seen at the vinery of Wm. Mead Pattison, those measuring one inch in diameter, and fully ripe October 1st. Its strong foxiness, however, precludes its use for table or wine, though it is useful for other domestic purposes.'

THE RECUMBENT apple, shown in quantity by the State of Washington Oct. 16th, was pointed out to us by Professor Budd, of Ames, Iowa, as one of the most promising Russian apples for the cold North. Mr. W. B. Harlay, of Como, Montana, is growing the apple on a large scale for commercial purposes. It has been fully tested in Minnesota, in Northern Iowa, and has even been fruited at Winnipeg, and reported quite hardy there. It is hardier than the Duchess, and in quality is excellent. Mr. T. T. Lyon, on visiting Prof. Budd, and eating the apple served up in pies and sauce, said of it, "I have tasted a good many apples in my time, prepared in various ways, but this is the richest I have ever tried." So much for its cooking qualities; while even as a dessert apple it is passable. It is larger than the R. I. Greening, of a lighter green, and much russeted about the stem. Mr. Budd thinks this apple will be of great value to us in Northern Canada.

PROF. BUDD also recommends for the North a trial of the *Ostrakof Glass* (4 M). It is hardy, a good keeper, iron-clad, above medium size and an annual bearer. Also the *Red Aport*, of the Alexander family, an apple that succeeds well everywhere. It surpasses the Alexander in size and beauty, and it keeps a month longer than that variety. The tree is free from blight, and succeeds well almost everywhere.

OF THE LARGE LIST OF GRAPES shown by the Central Experimental Farm, Prof. Saunders, who arrived on the 17th of October, pointed out several

which he considers worthy of trial in Ontario, and among them *Kensington*, *Emerald*, *Peabody*, *Canada*, and *Black Elvira*.

The *Emerald* was shown at the Colonial and Indian Exhibition, and pronounced the best grape in our exhibit for quality.

The *Kensington* is a white grape, a cross between the Clinton and the Buckland Sweetwater. It is about equal to the Niagara in productiveness, and fully earlier.

THE VISIT OF LORD AND LADY ABERDEEN to the various Canadian Courts will long be cherished as a pleasant reminiscence by the Superintendents of the various departments. Their Excellencies were especially interested in the Horticultural Department, because Lord Aberdeen has a large fruit ranch in the vicinity of the Fraser river in British Columbia. It was, therefore, a pleasure to him to see the fine size and clear skin of the apples from that province. In the evening two baskets of characteristic samples of fruit from the various provinces were sent to him to the Virginia hotel, in care of his A. D. C., and in response the following letter was received :

Virginia Hotel, 19th Oct., 1893.

TO L. WOOLVERTON, *Superintendent Horticulture, Canadian Section.*

DEAR SIR,—I am commanded by His Excellency the Governor General, to convey his thanks to you and the Provincial Superintendents for the baskets of magnificent Canadian apples and grapes which you have had the kindness to send him.

I remain, yours faithfully

DAVID E. ERSKIN, A. D. C.

THE ANNUAL AND WINTER MEETING of the Fruit Growers Association of Ontario will be held in the Town Council Chamber, Peterboro, beginning on Tuesday, the 19th of December, at 1 p.m., and continuing two or three days. All the meetings are public, and everyone interested in the orchard or garden is invited to take part. Questions will be answered by expert fruit growers, and every effort made to encourage the practice of the best methods of cultivation in order to bring about the best success, and thus increase the wealth of our country.

Samples of all kinds of winter apples grown in various districts may be placed on the table for comparison.

“Papers to be read and discussed :—(1) Fruit Growing in Ontario in the Future, and How to Make it Pay,” A. M. Smith, St. Catharines. (2) “Peterboro’ as a Fruit Growing Country,” E. B. Edwards, Peterboro’. (3) “The Necessity of a Change in our Methods of Obtaining and Introducing New Varieties of Fruits,” Thos. Beall, Lindsay, Ont. (4) “A Trip Through the Fruit Section of Western Ontario,” Prof. Hutt, Horticulturist at the O. A. C., Guelph. (5) “Some Desirable Ornamental Trees, Shrubs, and Plants for Planting in Ontario,” Mr Wm. Saunders, Director Experimental Farm, Ottawa.

Papers will also be contributed by Prof. Craig and Prof. Fletcher, Ottawa, by representatives of affiliated associations and others.

OUR FRUIT EXHIBIT.

The accompanying tables showing the number of varieties of fruits shown by Canada's Provinces at the World's Fair, are now for the first time given to the public. Similar tables of the vegetable exhibit are being prepared.

Every Canadian visiting these exhibits tells us that he is proud of his country; and when one considers that the total attendance to date, at the World's Fair, has now reached about 25,000,000, it is evident that much good must result.

FRUITS OF 1892.

Number of varieties shown by Canada and her Provinces, at the World's.
Columbian Exposition.

	Ontario.	Quebec.	Nova Scotia.	British Columbia.	Prince Edward Island.	North West Territory.	Central Experimental Farm.	Nappaw.	Indian Head.	Brandon.	Total by Canada.
Apples	52	140	86	27	27						292*
Pears	59	12	13		2						73
Peaches.....	19		1								19
Plums.....	55	14	17	20	12		13		1		86
Cherries.....	16	3	10				22				39
Grapes.....	53	30	10				111				139
Strawberries	59				4					1	61
Currants.....	16	3	4		1	8			5	9	25
Gooseberries.....	19		7		3		13	1	1	1	37
Raspberries.....	13		1				13		5	3	18
Blackberries.....	4										4
Total of all kinds.	365	199	142	47	49	8	182	1	12	14	793

FRUITS OF 1893.

Number of varieties shown by Canada and her Provinces at the World's
Columbian Exposition.

	Ontario.	Quebec.	Nova Scotia.	British Columbia.	Prince Edward Island.	North West Territories.	Experimental Farm, Cent., at Ottawa.	Experimental Farm at Nappaw.	Exp. Farm at Indian Head.	Exp Farm at Brandon.	Total from Canada.
Apples.....	144	119	144	51							308
Pears.....	67	2	23								82
Peaches.....	42										42
Plums.....	75		10	17							99
Cherries.....	24										24
Grapes.....	79	7					133				188
Strawberries.....	40								1		41
Currants.....	10								9		12
Gooseberries.....	24		9						2		30
Raspberries.....	7	5							5		13
Blackberries.....	5										5
Total number of varieties.....	517	142	177	68			133		17		843

*These are not the totals of the figures given, for there are many duplicates.

❧ Question Drawer. ❧

How to Make a Rockery.

Answer to H. H. Bradfield, Esq., by Mr. John Craig, of Ottawa.

The ground space at the disposal of your correspondent is so limited that it will be quite difficult to construct a rockery which will be effective without being formal. Having a space 5x18 feet, and with a tree in the centre of it, the ends only of this become available for constructing a rockery.

Rockeries are built by throwing up a mound of good, friable earth, to the height and size which the situation calls for. In this case it would necessarily need to be small. Upon this mound the stones are imbedded, leaving spaces between them large enough to receive roots of plants or flower-pots, as the case may be. The openings between the stones should be so arranged as to admit of water without allowing the soil to wash away. Larger spaces should be left at the top for some goodly sized plants which are designed to crown the mass, such as ferns.

If water pipes can be run through the centre with a tap at the top, screened by plants, so that a liberal amount of water can be supplied as often as desired, it will add much to the ease with which the plants may be retained in a healthy and vigorous condition.

I am furnished with the following list of plants suitable for such work, or for shady positions, by Mr. Fletcher, Botanist to the Experimental Farms at Ottawa.

Plants Suitable for Growing on a Rock Work and in Shady Positions.—Aquilegia Canadensis, Saxifraga Virginiensis, Sedum acre, Arctostaphilos uva ursi, Linnæa borealis, Mimulus moschatus (musk), Ferns—natives. Begonias, Crassulas and Sedums, English violets, lily of the valley, periwinkle (vinca) variegated, Lysimachia nummularia, tradescantia, Linaria cymbalaria, bulbs in pots.

Climbers for Back Ground.—Adlumia cirrhosa, apios tuberosa, amphicarpia monoica (this delicate creeper will also do for the front).

Bingham and Beauty of Naples Plums.

585. SIR,—Would you kindly give me an idea of the respective merits of Bingham and Beauty of Naples plums. Also, is there an apple by name of Indian Rareripe? Is it known by any other name?

DAVID A. BLACKADDER, *Windsor, Ont.*

Reply by G. W. Chin, Winona, Ont.

I would recommend the planting of the Bingham as a worthy plum for the orchard, but would not plant Beauty of Naples, except for trial, as it does not succeed in all soils or parts of the country. We have so many choice varieties of plums that it is hardly necessary to try all the varieties catalogued, unless as sample trees, an experiment which is well enough for those who can afford it.

The Wagener and other Apples.

586. SIR,—I intend setting out an orchard of winter fruit next spring, and have been advised to consult you with reference to the best varieties. I am in the County York, north of the Ridges, where all kinds will not thrive. Our soil is sandy loam, well protected with trees. What do you think of the Wagener apple? Could you send me a copy of the latest Fruit Growers' Report?

A. RAMSDEN, *Mount Albert.*

The Wagener is a variety of high quality, valuable for both dessert and cooking. It does not, however, succeed everywhere. It is an abundant bearer every alternate year, and is inclined to overload, when the fruit is small. Perhaps some of our readers in York County have tried it there and will give us the benefit of their experience. If Gravenstein, Blenheim, Wealthy, King, Ontario and Golden Russet succeed in your district, they are excellent varieties.

Various Questions Answered.

587. SIR,—What are the best size fruit trees for planting, also black raspberry bushes, two-year-old stock or tips (prices considered)? Are the roots of the Crawford peach more penetrating than other varieties? If so, would not the pits of the same be good to plant to bud upon? And is there better seed to plant than the Talman sweet apple?

Some say that the Sheldon pear is not a good bearer. It is with me. Soil, rich clay loam surface; at a depth of about three feet there is a stratum of sand about one foot, then clay. Yours truly,

NORRIS MALLOY, *Guilds, Ont.*

Apple trees are easily moved at three and four years of age; after that age there is too much loss of roots in the digging. Tip plants of raspberries are quite satisfactory; the first year no crop is expected, even if two-year stock is planted.

We have never observed that the roots of the Crawford peaches are more penetrating than other varieties; and for stock we usually count it less vigorous than pits of natural fruit.

For raising apple stock probably nothing is better than the seeds of the Talman Sweet. Some varieties bear more freely when this stock is used.

The Sheldon is a scant bearer at Maplehurst.

The "Woolverton" and Fruit Ripening.

588. SIR,—You will be glad to learn that the "Woolverton" strawberry plants I received from the Society have been very successful. It is a fine berry. I prefer it decidedly to the "Williams," or, indeed, to any other strawberry that I have. It is symmetrical in shape, firm in flesh, and good in color. It is also strong and vigorous in growth and a profuse bearer. I have now a large number and am propagating only from them.

All my fruit crops have been very large this year, especially grapes. I have also been very successful in ripening my pears in the house under woollens, and I wish to ask you if this mode of treatment could not be applied on a large scale to this most delicious of fruits, so that it might be sent to the U.S. and the British markets? Mine were gathered green, and were in perfect condition in ten or twelve days, and if carefully handled and packed in

very large cases, they might reach the British market in good condition. Suppose this were practicable, what a boon it would be to our fruit growers. What think you of the suggestion?

Another question I wish to have an answer to is this: Can apples, or any other fruit, be ripened in the same way? Perhaps some of your correspondents may have tried it. If so, would they oblige me with their experience through the columns of THE CANADIAN HORTICULTURIST? Yours very truly,

J. L. THOMPSON, 86 Howard St., Toronto.

October 9th, 1893.

❖ Question Budget ❖

1. What apples should we grow for the British market?
2. Are there any other good markets for Canadian apples beside Great Britain; and what varieties are wanted?
3. How should apples be packed and shipped to foreign markets? Experiences of some present.
4. What is the value of apples as cattle food, compared with turnips at 8c. per bushel?
5. Why are so many persons injured by eating foreign canned vegetables and fruits?
6. Has the color and quality of our fruit during the past season been as good as usual? If not, why?
7. How may better results be obtained for the time and money expended in getting and advertising new varieties of fruit, than has been realized during the last ten or fifteen years?

❖ Our Book Table. ❖

CATALOGUES.

WHOLESALE PRICE LIST, FALL, 1893. Stark Bros.' Nurseries and Orchards Co., Louisiana, Mo., U.S.

ILLUSTRATED FLORAL CATALOGUE—Fall and Winter Bulbs, Roses, Plants. Champion City Greenhouses, Springfield, Ohio. The Good & Reese Co., Proprietors.

LOVETT'S ILLUSTRATED CATALOGUE OF TREES AND PLANTS, Autumn, 1893. J. T. Lovett Co., Little Silver, N.J.

CATALOGUE OF J. V. MUNSON'S NURSERIES, Denison, Texas, U.S.

ANNUAL FALL CATALOGUE OF BULBS AND PLANTS, Autumn, 1893. Illustrated. Webster Bros., Hamilton, Ont.

SPECIAL TRADE LIST, Roses, Peonias, Fruit Trees, etc. Louis Paillet, Nurseryman, Vallée de Chatenay (Seine), near Paris, France.

PLANTING TIME, FALL, 1893—A Reminder. Ellwanger & Barry.

FALL, 1893. American Grape Vines, grown and for sale by Bush & Son & Meissener, Bushberg, Jefferson Co., Mo., U.S.

BOOKS.

ANNUAL REPORT OF THE BUREAU OF INDUSTRIES FOR THE PROVINCE OF ONTARIO, 1893. Parts I, II and III.

BIRDS OF MICHIGAN. By A. J. Cook. Issued by the Michigan Agricultural College.

JOURNAL AND PROCEEDINGS OF THE HAMILTON ASSOCIATION for Session 1892-93. Secretaries—Thos. Morris, jr., Hamilton, and C. R. McCullough, Hamilton.

SECOND BIENNIAL REPORT of the Oregon State Board of Horticulture, 1893. George I. Sargeant, Chamber of Commerce, Portland, Oregon, U.S.



AUTUMN THOUGHTS.



GONE hath the Spring, with all its flowers,
And gone the Summer's pomp and show,
And Autumn, in his leafless bowers,
Is waiting for the Winter's snow.

I said to earth, so cold and grey,
"An emblem of myself thou art."
"Not so," the Earth did seem to say,
"For Spring shall warm my frozen heart.

"I soothe my wintry sleep with dreams
Of warmer sun and softer rain,
And wait to hear the sound of streams,
And songs of merry birds again.

"But thou, from whom the Spring hath gone,
For whom the flowers no longer blow,
Who standest blighted and forlorn,
Like Autumn waiting for the snow :

"No hope is thine of sunnier hours,
Thy Winter shall no more depart :
No Spring revive thy wasted flowers,
Nor Summer warm thy frozen heart.' — *Whittier.*





WEAVER.

THE
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WEAVER PLUM.

UP to the present very little attention has been given in Canada to the cultivation and improvement of our native plums. Few lines in horticulture, offer greater inducements, however. Comparatively little has been accomplished in the United States by systematic effort, yet since the introduction of the Wild Goose plum about forty years ago, more than 150 varieties have been named and disseminated. This remarkable increase in number of varieties is only surpassed by the marvellous progress made in the development of the American grape. The value of the native plum has not yet been recognized to any extent, except in sections where the severity of the climate precludes the easy or profitable culture of varieties belonging to the *Prunus domestica* class. Without doubt, however, there are improved varieties of our native plums which may be profitably grown in all portions of the Dominion, including the most favored localities. There is a wide variation in regard to the hardiness of these varieties, due principally to climatic conditions prevailing in the place of origin. Thus De Soto, belonging to the *Americana* group and originating in Wisconsin, may be taken as the type of hardiness, while Pottawattamie of the *Chickasaw* family, and introduced from Tennessee, is not hardy at Ottawa.

The Weaver plum belongs to the same American family of plums as that which includes the De Soto and Wolf, and seems to inherit all the hardiness of

the type. It originated in northern Iowa, and was introduced by Ennis & Patten, of Charles City, Iowa, in 1875. Its merits seem to have been unduly lauded by dealers in nursery stock, who sold single trees as high as a dollar and a half. A reaction took place when growers found that it was simply an improved variety of the native plum, and we find this feeling recorded in the report of the Iowa State Association for 1878, when the Weaver was stricken from the list of recommended plums.

At the last meeting of our Society, during the course of a discussion on native plums, the fact was brought out that another variety has been introduced under the same name, which has been grown and has borne fruit in the vicinity of Grimsby. This variety ripens early in August, whereas the true Weaver is one of the latest of the *Prunus Americana* family. Three trees of Weaver planted at the Experimental Farm at Ottawa, in 1888, have borne heavy crops the last four seasons. During '92 and '93 the crop has been so heavy as to require thinning to prevent the branches from breaking down. Fruit large for a native, oblong, somewhat flattened. Skin yellow, partly covered with a mottling of dark red, and overlaid with a purplish bloom, suture well marked, stone long, narrow and flat, semi-cling, ripens at Ottawa about Sept. 20th.

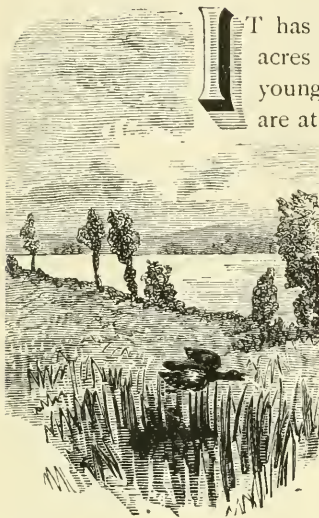
This variety is not equal in quality to De Soto, but is well worthy of cultivation where blue plums and members of that variety are not sufficiently hardy.

Ottawa.

J. CRAIG.

Melons with Strawberries. — Jacob Smith, Lockport, Illinois, has a novel method of caring for his strawberry plants during the first summer. Thorough cultivation of the plants during the first season is practised by successful fruit-growers generally. Keeping them free from weeds and the soil loose requires frequent cultivation and is quite an expense for which, ordinarily, the next year's crop of berries are the compensation. As an experiment several years ago, Mr. Smith tried planting watermelon vines among the rows of one plot of strawberries, cultivating an adjoining plot in the usual way. He found that the plot with the melon vines did better than the other, both in this and subsequent trials, and the melons paid for the cultivation of the plot. After satisfying himself that watermelon vines did not injure the strawberries, or, as he declares, helps by serving as a green mulch, he tried planting muskmelons among them, and reports even better results from this practice, the vines making a thicker covering and a better mulch. He has a nice field of strawberries growing this season with a good crop of muskmelons among them, which are doing well considering the dry weather. Small fruit-growers should remember this plan and try it next season, for it is certainly a great waste not to grow melons among the strawberries the first year, if it improves them and pays for cultivation.—Orange Judd Farmer.

FRUIT GROWING IN ANNAPOLIS VALLEY.

(Concluded.)

IT has been already stated that there are about 12,800 acres now bearing apples, with 800 more planted with young trees. But this is only the beginning. There are at least 250,000 acres in this valley capable of producing fruit, and sooner or later the whole valley will be covered with apple trees or other varieties of fruit, including the small fruits. Only a few farmers have ventured on an extensive planting. It is usual for the farmers to have from one to five acres covered with trees. Scarcely any of the established orchards cover more than ten or twelve acres, whereas it is maintained by those qualified to form an opinion, that splendid profits would be obtained by covering hundreds of acres with trees. Judge Weatherbe, who has bought a fruit farm in the valley, has covered 50 acres with young trees, which are now five or six years old, and will presently be bearing. It is contended, and not without reason, that if there are large profits in one acre of fruit, there will be proportionally larger profits from 100 acres. The reason that more men of speculative temperament do not engage in fruit-growing in the valley, as an investment, is to be found in the absence of the gambling element. Ten years at least must elapse before the trees begin to bear, and at least twenty years must pass before they are in full bearing. Most men who are seeking wealth prefer some enterprise in which, coupled with greater risks, there are chances of more immediate profits. Fifteen or twenty years seems a long time to wait for large returns from even small investments. Nevertheless, fruit companies have already been incorporated in the valley, the object of which is to purchase large tracts of land and cover them with fruit, and by cultivating plums and other varieties which bear earlier, it is hoped to pay dividends in two or three years after the formation of the company, though not relying upon larger dividends until the apple trees get in full bearing.

The scenery in the valley is extremely beautiful. Numerous roads extend over the mountains, both north and south, and from the top of the mountain the view is simply magnificent. Long ranges of farm houses can be seen, with villages here and there dotting the valley. Farming in the Annapolis Valley is far less toilsome than in other parts of the Province, or indeed in most parts of the Dominion, and, as a consequence, there is much comfort and considerable

style in the methods of living among the people. Young men drive fast horses in handsome carriages, and in most of the houses throughout this valley a piano or organ is found, and in many of the farm houses the methods of living from day to day are what would be called more than comfortable.

In addition to the Fruit Growers' Association, there has been a separate organization formed, entitled the Annapolis Valley Small Fruit Association, which is devoting itself to the growth of strawberries, cranberries, gooseberries, currants, grapes, etc., and very satisfactory progress is being made in this direction, the only difficulty, in reality, being in connection with the market. If the United States market were open to the small fruits of the Valley, there is no doubt that the industry would develop enormous proportions.

Mr. R. G. Haliburton has been mentioned as the first president of the Fruit Growers' Association. The next year, Dr. C. C. Hamilton, of Canard, was elected, and he held the position without interruption until 1880, when he died. He was most enthusiastic and indefatigable in the work of the Association. Among his coadjutors in this work may be mentioned the names of Mr. Richard Starr and Mr. R. W. Starr. In 1880, Avar Longley, M. P., filled the office of president. The other presidents of the Association since then have been Rev. J. R. Hart, of Bridgetown'; Henry Chipman, M.D., of Grand Pré, and the present incumbent, Mr. J. W. Bigelow, of Wolfville. Mr. C. R. H. Starr was secretary for many years, and, indeed, until last year, when Mr. S. C. Parker, of Berwick, an enthusiastic fruit grower, was appointed to the office.

The Annapolis Valley has other resources besides that of agriculture. Splendid deposits of iron have been discovered in two or three places, and one

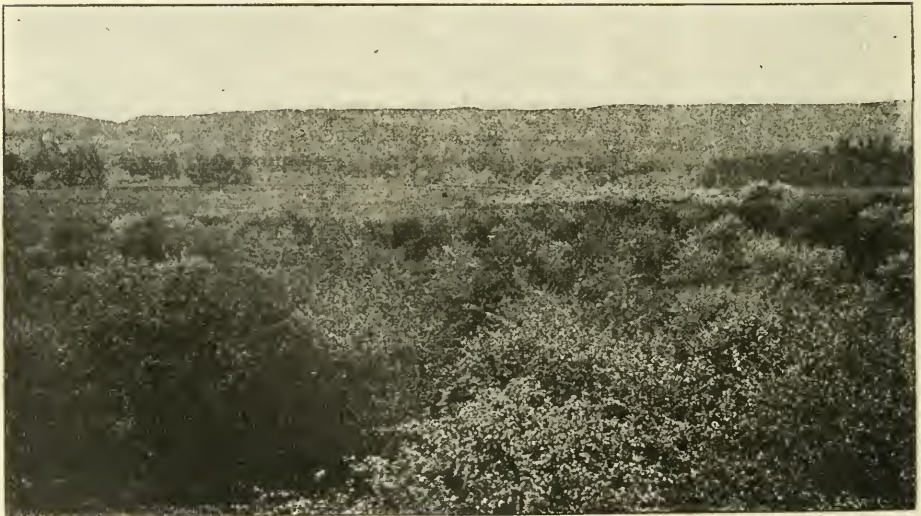


FIG. 399—AN ORCHARD IN BLOOM.

of the veins at Torbrook, Annapolis County, is being extensively worked by Mr. R. G. Leckie, and is supplying ore for the Londonderry Iron and Steel Works. It is quite possible that in the event of reciprocity a considerable export of iron ore may be had to the United States.

The Dominion Government has established an experimental farm at Nappan, in Cumberland County, and the Provincial Government has established an agricultural school and model farm at Truro. Both of these, more or less, deal with the growth and care of fruit, but neither of these institutions seems to be entirely satisfactory to the fruit growers, who are anxious to have a special school of their own in the vicinity of Wolfville, where special attention can be given to the development of fruit culture, the care of trees, the destruction of caterpillars and other insects, the best method of securing rapid growth of wood, and the proper methods and times for grafting. The Provincial Legislature voted a subsidy towards the establishment of such a school at its last session and it is understood that the Fruit Growers' Association are making special efforts to create such a school.

Reference has been made to the fact that old Port Royal, now called Annapolis, is situated in this Valley. It must not be overlooked that Grand Pré, the place made famous by the expulsion of the Acadians, is also situated in the heart of the Valley. These points of historical interest, with the beauty and fertility of this part of the country, combine to make the Annapolis Valley in summer a favorite resort for visitors, and many thousands pass to and fro on the



FIG. 400—APPLE BLOSSOMS.

Windsor and Annapolis Railway, which intersects the Valley from beginning to end.

The last census indicates that, notwithstanding all these natural advantages, there has been in reality a decrease in the population of the Valley. It is situated so near to the United States, and the means of access are so numerous, that there is an overwhelming tendency, on the part of the young people, to go to Boston and vicinity rather than to remain and take care of the farms. The result is a scarcity of farm labor, and a development less pronounced than could be desired. It is undoubtedly one of the sections of the Dominion that would profit enormously by free trade relations with the United States, and with its great resources—natural beauties, and numerous advantages as a place of residence, and with a soil and climate so favored by nature—there can scarcely be a doubt that in the course of time, with proper energy and enterprise on the part of its people, it will be the happy home of very many thousands of prosperous and progressive people.



FIG. 401.—APPLE PICKING, ANNAPOLIS VALLEY.

CANADA'S NUMEROUS AWARD IN HORTICULTURE.



HE prominent position taken by Canada at the World's Fair, and her many awards in all departments, must surely disarm all criticism concerning our expenditure in pushing forward such a great enterprise. In all, Canada has taken 69 awards in fruits and vegetables; more than half of which were taken by Ontario.

LIST OF AWARDS.

1. Department of Agriculture, Ottawa, General Collection of vegetables from Experimental Farms.
2. Central Experimental Farm, Ottawa, grapes.
3. " " " " collection of vegetables.
4. Experimental Farm, Brandon, Man. " "
5. " " " vegetables in solution.
6. " " Nappan, N. S. collection of vegetables.
7. " " " N. B. Farmers, collection of vegetables.
8. " " at Indian Head, collection of vegetables.
9. " " Agassiz, collection of apples.
10. Mrs. Tinling, Winnipeg, mixed pickles.
11. Ontario Canning Co., Hamilton, Ont., canned fruits.
12. W. Boulter & Son, Picton, Ont., canned fruits.
13. W. D. Kitchen, Grimsby Ont., unfermented grape juice, for sacramental use.
14. Ontario Fruit Growers' Association, fourteen volumes of THE CANADIAN HORTICULTURIST.
15. Province of Ontario, Toronto, grapes.
16. " " " apples of 1892.
17. " " " apples of 1893.
18. " " " pears and quinces.
19. " " " stone fruits.
20. " " " cherries.
21. " " " currants.
22. " " " gooseberries.
23. " " " blackberries.
24. " " " fruits in solution.
25. " " " (Niagara District), grapes.
26. " " " (Burlington District), grapes.
27. " " " (Wentworth District), grapes.
28. " " " (Wentworth Dist.), apples and peaches.
29. " " " (Wentworth District), pears.
30. " " " (Burlington district), apples.
31. " " " (Burlington district), pears

32. Province of Ontario, Toronto (Niagara district), apples.
 33. " " " (Niagara district), pears and peaches.
 34. " " " (Essex district), apples.
 35. " " " (Belleville and Eastern district), apples.
 36. " " " (Grey district), apples.
 37. " " " (Huron district), apples.
 38. " " " (Simcoe district), apples and pears.
 39. " " " (Jas. Shepherd & Sons, Queenston),
 peaches.
 40. " " " (W. R. Read, Port Dalhousie), peaches.
 41. " " " (C. Atkins, Port Dalhousie), peaches.
 42. " " " (W. Kottmeier, St. Catharines), peaches.
 43. " " " (E. Tyhurst, Leamington), peaches.
 44. " " " (Geo. W. Cline, Winona), plums.
 45. " " " (Wm. Stewart, Goderich), plums.
 46. " " " (Wm. Warnock, Goderich), plums.
 47. " " " (W. M. Orr, Stoney Creek), plums.
 48. " " " (R. Trotter, Owen Sound), plums.
 49. Province of Quebec (Missisquoi Horticultural Society), grapes,
 50. " " (Missisquoi Horticultural Society), apples.
 51. " " (G. B. Edwards, Covey Hill), apples.
 52. " " apples of 1892.
 53. " " fruits in solution.
 54. Province of British Columbia, collection of vegetables.
 55. " " " apples.
 56. " " " plums.
 57. Province of Prince Edward Island, collection of vegetables.
 58. " " " " apples.
 59. " Nova Scotia (Fruit Growers' Association), apples of 1892.
 60. " " " (Fruit Growers' Association), apples and
 pears of 1893.
 61. " " " (J. W. Bigelow), apples.
 62. Province of Ontario, collection of vegetables.
 63. " " (Wm. Rennie, Toronto), turnips and mangels.
 64. Department of Agriculture, Ottawa, General Collection of vegetables
 from Experimental Farms.
 65. Mrs. A. M. Croly, Tilsonburg, botanical collection.
 66. Province of Ontario, Toronto, collection of plants.
 67. " " " (names not yet published) wine.
 68. " " " " " "
 69. " " " " " "

PARKER EARLE ON THE STRAWBERRY.



E grow our berries in matted rows and cultivate them well. We have always had strong, thrifty plants, and get a good yield of berries except when they are destroyed by insects. Our berry farm is in Southern Illinois. We pick our berries every day in the berry season; there is no other way to do it. You can't pick a strawberry that is two days old and send it to market. It must be picked when it is exactly at the right stage for picking, and if you take care to do that you can ship them 1,000 miles, if you want to. The condition to which I refer is that which the berry has reached when it just begins to color. It is largely a question of variety, as some varieties will continue to change color and ripen after they are picked, while others will not. Of course, the ones for shipping purposes are the ones that will thus continue to change. We ship entirely in quart packages, using the Illinois form, and not the Michigan form of box, and these are packed in 24-quart crates. We ship in refrigerator cars, and try to maintain a temperature of about 50 degrees. We pack the crates very carefully in the car in such a manner that there will be perfect circulation of air. Each crate is by itself and does not touch the next crate beside it. If the berries have been well handled, you can pack them in a car as you want to. I have shipped more Crescents than of all other varieties together, though they are hard berries to ship. I market many of my berries in Detroit. That is 600 miles from the place where they are grown. Some of them are sent beyond that city, and even get as far as Montreal and Cleveland. They arrive in those cities in good condition. They are sent by express for 24 hours after leaving the cars at Detroit, and when arriving at their destination they are yet in good condition. Strawberries are something that you can transport for three or four days if you carry them right.

Q.—Does it make any difference whether or not the berry is on its stem when it is packed for shipping? A.—Those that are shipped are always on the stem. A berry that is off its stem is ruined for marketing purposes, and is ready to be eaten.

Q.—How many crops do you pick from one bed? A.—Usually two. Sometimes we have picked more, but on the whole it does not pay. I have sometimes thought that it did not pay to pick the second crop, but I guess it does.—*The Farmer's Review.*

“TOMMY, who was Joan of Arc?” asked the teacher. “Noah's wife,” said Tommy, who is great at guessing.—*Harper's Bazar.*

FRIEND: “Well, Tommy, now that you've started to school, what do you like best?” Tommy: “Recess.”—*Chicago Inter-Ocean.*

LIME IN THE GARDEN.



THE present time of the year, together with early spring, being suitable for the application of lime, it may not be out of place to consider briefly what are its manurial properties, what classes of soils are likely to be benefited by its addition, and in what form it can be most advantageously used. This is the most desirable, as the usefulness of compounds of calcium seems somewhat liable to be overlooked or under-rated. It is well to remember, in the first place, that the function of lime in the soil is two-fold—it is a direct plant food, and it also possesses a remarkable power of rendering other inert matter suitable for the nourishment of plants. Besides this, it is capable of making considerable modifications in the physical condition of soils—a matter quite as important to the cultivator as its chemical composition.

It is scarcely necessary to point out here the fact that calcium is one of the elementary bodies that are absolutely necessary for the complete growth of plants; but it is not always borne in mind that some garden crops remove comparatively large quantities of this substance; and that, moreover, lime is a body which, to adopt the common phrase, “sinks” in the ground, thus rendering its application from time to time advisable. That leguminous crops such as peas and beans, need large quantities is fully recognized, as is indicated by their popular description as “lime” plants. But there are many vegetables, which from their marked preference for manures containing other elements, are rather liable to be starved in the matter of lime, although the latter may be no less necessary for their full development. Turnips, for instance, need much phosphoric acid and potash, but analysis of their ash shows about 49 per cent. of lime 13.024 per cent. in the roots, and 25.65 per cent. in leaves. Potatoes, again, show only 3 per cent. of lime in the ashes of their tubers, but their haulms contains about 17 per cent.; and it is upon the leaves, be it remembered, that the tubers have to depend for their supply of starch. Many other instances might be given of the importance of lime as a miner constituent.

It was stated above that lime sinks in the ground. The explanation of this is very simple. Rain-water holds in solution carbonic acid gas, which it has absorbed from the air, and thus charged, it has the power of dissolving the carbonate of calcium in the soil, and carrying it away off the surface and through the drains or porous subsoil. Moreover, the carbonic acid formed in the soil by the decomposition of organic matter dissolves the carbonate of calcium, which is carried away by drainage water. The nitrates and chlorides of calcium are likewise readily diffusible, and easily lost. It may be noted in passing that the alkaline base soda suffers from this washing-out process in common with lime, while most fertile soils are strongly retentive of ammonium and potash. Hence the reason why lime must be added in large quantities, and more frequently, than a calculation of the actual amount removed by any given crops would seem to warrant.

Briefly all soils deficient in calcareous matter, stiff clays, and sour peaty soils are particularly responsive to its application. Stiff clays are lightened and rendered warmer and more friable, and the soluble plant foods are increased by quicklime ; whilst, on the other hand, the retentive power of light sandy soils is increased by the addition of slaked lime (calcium hydrate), chalk (carbonate of calcium), or marl. On soils containing a large amount of peat, quick or slaked lime, it is of great value, counteracting the "sourness" due to excess of organic acids, and assisting the decomposition of woody fibre, etc. There is another case in which lime may be applied with very marked results, namely, to old garden ground which has year after year received heavy dressings of farmyard manure, and which have become sour and profitless. Mr. J. Wright, in a paper read before the Royal Horticultural Society in 1889, described a striking but by no means uncommon instance of this. When he took possession of the garden in question, he found it like a mass of humus, nothing would grow satisfactorily, the soil being "poisoned with humic acid." He gave it a good dose of lime (a bushel per rod), together with potash and bone-meal. "The effect," says Mr. Wright, "was magical, and the crops of potatoes and peas, where they would not grow before, were remarkable." The late Mr. Shirley Hibberd, on the conclusion of the above paper, remarked on the too frequent neglect of lime as a corrective of acidity ; and Mr. G. Wythes—than whom, perhaps, no one knows better how old garden soils should be treated—expressed himself in favor of lime, soot, and wood-ashes, where organic manures alone had been given for a long series of years.

As a general rule as indicated above, *quick-lime* (put on in its caustic condition, or slaked by adding water, or by leaving it exposed to the atmosphere for a time), is preferable for heavy soils, and may be applied at the rate of from two to nine tons per acre. It should never be applied with manure containing ammonia, the latter being liable to be driven off thereby.

Chalk is suitable for light sandy soils, and can be given in about twice as heavy dressings as caustic lime.

Marls, being variable mixtures of carbonate of lime and clay, are suited to light land, the dressing being regulated by the proportion of lime contained.

Gypsum, or sulphate of calcium can be used with ordinary manure, as it is a "fixer" of ammonia.

Gas Lime, is simply slaked lime which has been used in the purification of coal-gas. It contains, when fresh from the works, calcium sulphide and sulphite, and these substances are injurious to plants. After exposure to air, however, they are oxidised and form sulphate of lime (gypsum), and consequently become innocuous. Gas-lime is useful for mixing in the "rot-heap," hastening the decomposition of leaves, weeds, etc.

It should be remembered that bones, bone-meal, dissolved bones, and superphosphate all contain more or less calcium ; therefore, liming is not so necessary where any of these are applied in quantity. - Gardener's Chronicle.

BANK'S RED GRAVENSTEIN.



ROSSING and hybridization are playing such an important part in the production of the new fruits of to-day that we are frequently inclined to attribute to these agencies the credit of producing all the new and desirable varieties of fruit; but there is another agency to which the gardener owes much; it is that force in nature, the manifestation of which the horticultural student calls "sporting" or bud variation. The landscape gardener and florist is more deeply indebted to this peculiarity of plants than is

the fruit grower. We have but to look around us upon the numerous varieties of ornamental shrubs, and upon rapid multiplication of types of flowers varying from the original form, to see the confirmation of this statement.

The Moss rose appeared first as a sport on a bush of the Provence or Cabbage rose. The Pelargonium shows a remarkable tendency to bud variation, the many varieties of which are principally due to this tendency.

The large number of variegated plants now in cultivation have all appeared, at different times, as single shoots upon the parent tree, and their peculiarities are reproduced and multiplied by means of bud propagation. A striking example in pomological lines of this force or power was recently noted in the collection of apples exhibited at Chicago by the Province of Nova Scotia. Among them was a variety called the "Bank's Red Gravenstein," which the introducer, Mr. A. S. Banks, Waterville, N. S., claims, "appeared as a sport upon the common Gravenstein tree in the orchard owned by E. C. Banks, Waterville, and that this branch has for thirteen years always borne apples that were almost wholly red." In appearance it is rather rounder and possibly less ribbed than the average Gravenstein; not quite as large, with a much more brilliant color; many specimens being entirely covered with deep crimson. In quality there is little difference from the type. In season it is said to be two to four weeks later. Its brilliant color and greater keeping qualities should add much to its value. The following is a description made from a typical specimen taken from the tables at Chicago, and the cut illustrates the same specimen:—

Medium size, round, regular; calyx closed; basin shallow, obscurely ribbed.

Stem $\frac{1}{2}$ to $\frac{3}{4}$ of an inch long, set in deep narrow cavity. Color deep yellow, almost covered with splashes and blotches of brilliant crimson. Flesh white, moderately firm, juicy, rich, sub-acid, melting. Quality best. Core open. Same type of flesh and juice as Gravenstein.

As a sport from the old time favorite it is exceedingly interesting, and as a possible competitor it should receive careful attention.

Ottawa.

JOHN CRAIG

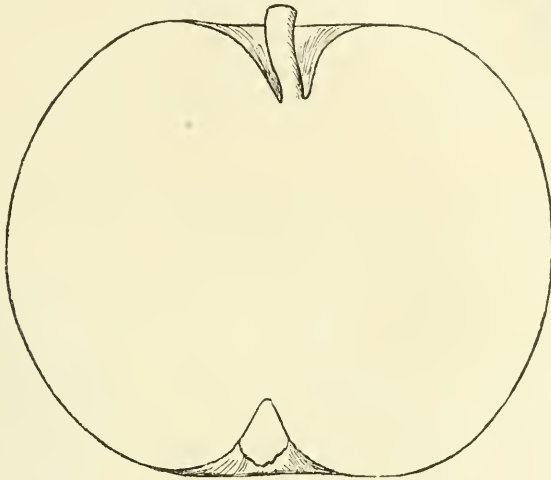


FIG. 402.

In addition to the fine exhibit of this apple at the World's Fair, from which Mr. Craig's notes were made, some samples were sent to our office by Mr. Chas. E. Brown, of Yarmouth, N. S., and from them the following description was prepared by Mr. A. McD. Allan, of Goderich, Ont. :

Bank's Red Gravenstein.—Fruit large, roundish ovate, irregularly ribbed. Skin yellow, covered with red, dotted and splashed, distinctly showing deep yellow skin in the shade, and the red covering in the sun being complete and of a darker hue. From the complexion of the specimen submitted, I would expect a covering of fine bloom when picked. Calyx closed, set in a shallow, uneven, corrugated basin. Stalk nearly an inch long, set in a narrow, fairly deep basin, smooth, with slight tinge of fine cinnamon russet in patches. Core large, long, and open, few seeds. Quality good, partaking somewhat of the texture and flavor of Gravenstein, but a longer keeper. Judging from the specimen seen, and the history given by Mr. Chas. E. Brown, I unhesitatingly consider this would be a decided acquisition, possessing as it does those leading essentials that command the highest prices in the British or any market.

ALEX. MCD. ALLAN.

MONEY IN RADISHES.



AMONG the various crops grown in the Ohio State University forcing houses the past winter, none have given greater satisfaction, with the possible exception of lettuce, than radishes. This crop is so easily grown, matures so rapidly, and is in such great demand, that for the time and labor expended the returns are most satisfactory. The production of radish seed is itself an immense industry, and a large part of the supply needed for this country comes from France and Germany. The production of good seed is quite laborious, and can only be carried on profitably where labor is cheap. In this country, radishes are largely grown in the South, whence come the main early supplies for the Northern markets. In addition to this, however, immense quantities are raised under glass in the vicinity of our large cities. As raised in the forcing houses of the University, a crop of radishes occupies the bench space little more than three weeks, so during one winter five or six crops can be grown. The seed is sown in flats, which are filled two inches deep with black muck. It is sown in drills one and one-half inches apart. The soil is thoroughly moistened by placing the flats in the water bench. After being watered by this sub-irrigation method, the flats are placed on the ground under the benches until the seed has germinated. In six to nine days they are transplanted to the bench. In midwinter, when there is likely to be much cloudy weather, it is not best to set them closer than six by two inches. This gives twelve to the square foot. When there is plenty of sunshine they may be planted as close as four by one and one-half inches, if all other conditions are favorable. This gives twenty-four to each square foot, or just double the number at the wider distance named above. As a rule, about eighteen is the average number grown on each square foot.

Repeated tests have shown that we gain all the time the radishes are in the flats before transplanting. Whenever seed has been sown in the benches and no transplanting done, it required just as much time for sowing the seed, and the labor of thinning was about equal to that of transplanting. If we can save a week on each crop, this enables us to increase the number of crops by at least one, during the season. Radishes are prepared for market by tying them into bunches containing six each. These bunches are sold at wholesale for 25 to 40 cents a dozen. Allowing a fair margin for waste and imperfect plants, this gives 6 cents per square foot for the bench space of the forcing house. Five crops would give 30 cents a square foot, which is a profitable return for capital invested.

Our success in growing radishes for market is largely due to the practice of sub-irrigation. In fact, we failed to raise them profitably where the plants were

surface watered. By this latter method we always got a much ranker growth of top and a proportionately smaller growth of root. When pulled for market the tops would frequently weigh more than the roots, and many plants with unusually large tops would have a small, tough, spindling root, which was worthless. Under sub-irrigation the tops are comparatively small and the roots large, the latter more than double the weight of the former, and well developed in almost every plant. At the very lowest estimate, our radishes yield fifty per cent. better in merchantable roots under sub-irrigation than they did by surface watering. The average weight of our radishes when marketed this year was a trifle over one-half ounce each. This would make three ounces per bunch, or two and one-quarter pounds per dozen bunches. The varieties grown in the forcing house were French Breakfast, Round Dark Red, Early Fame, and Red Forcing Turnip.—PROF. LAZENBY.

HOW I GREW THE MAMMOTH SQUASH FOR THE WORLD'S FAIR.



Y land is naturally well drained, being of a gravelly formation, with about sixteen inches of clay loam on top. It is kept in good condition by an annual application of manure. In order to grow a Mammoth Squash I prepared for each hill a compost of two barrow loads of hen manure, and four of good soil, mixed well together. This I did about the first of April, near the place intended for the hills. After two weeks I mixed the compost well again, and about the first of May I mixed thoroughly with four barrow loads of well-rotted manure, keeping all well covered from the rain. On the eighteenth of May I ploughed in a heavy coat of manure, and then dug out my hills seven feet in diameter and six inches deep. Then I mixed the best of the soil that was thrown out of the hill with the compost as it was thrown into the hill. In this way I made a hill about six inches above the level of the ground, and about ten feet in diameter.

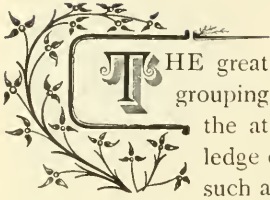
I planted three or four seeds in each hill, and when well started, I thinned out to one plant, always keeping the ground well worked up. When the vine had grown out three or four feet, I mulched it around, to a distance of ten feet from the root on all sides, with horse manure, about three inches deep. I kept the hills well watered, and I staked each vine down as they ran, so that they took root at every joint.

As soon as I had a good specimen on a vine, well started, I pruned off the others. I also nipped the ends of the vines, not allowing them to increase in length; and I kept all blossom buds carefully nipped out. In this way I grew the Mammoth Squash weighing 365 pounds, which was considered such a curiosity in the Canadian vegetable exhibit at the World's Fair.

Goderich, Ont.

WM. WARNOCK.

GROUPING TREES.



THE great secret of making the home grounds attractive is in so grouping the trees as to hide objectionable features and show the attractive ones to best advantage. An intimate knowledge of trees is also needed, in order that one may choose such as will best harmonize, with respect to habits of growth,

color of foliage, etc. Fig. 403, from American Gardening, is a good group for an entrance to one's private grounds. The trees selected are:—3 European linden, A; 3 American Linden, B; 3 European beech, C; 1 American chestnut, D; 2 English elm, E; 3 arborvitæ (Siberian), F; 2 Norway maple, G; 3 silver maple, H; 1 weeping willow, I.

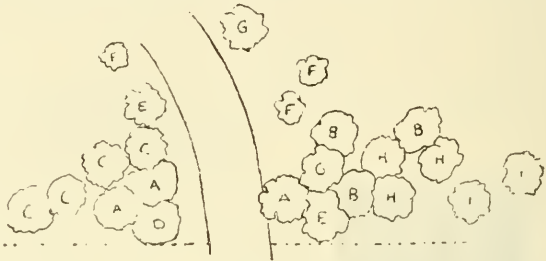


FIG. 403.

Another group (Fig. 403) is one for a curve in the roadway, near the house, which is composed of shrubs and smaller growing choice ornamental trees and shrubs, according to the following key:—1 English elm, A; 3 *Weigelia candida*, B; 1 rose acacia, C; 1 oak-leaved mountain ash, D; 9 Japan quince, E; 1 double-flowering thorn, F; 3 *Spiræa sorbifolia*, G; 6 variegated-leaved dwarf weigelias, H; 6 weigelias in assortment, I; 2 *Magnolia speciosa*, J; 3 kerria, silver-variegated, K; 12 spiræas in assortment, L; 1 Chinese double-flowering crab, M; 6 *Forsythia viridissima*, N; 1 European bird-cherry, O; 3 mock-oranges, P; 6 *Viburnum plicatum*, Q; 3 *Spiræa Billardii*, R; 6 *Tamarix Chinensis*, S; 3 dogwood, red-branched, T; 1 European larch, U.



FIG. 403.

Another good group, just by the carriage-house, and partially screening it from view, is given in Fig. 405, to which the following is the key:—2

Norway maples, A; 3 *Ailanthus glandulosa*, B; 3 *Spiraea sorbifolia*, C; 3 *Aralia Japonica*, D; 3 *Tamarix Africana*, E; 3 royal willows, F; 3 *Spiraea Billardii*, G; 2 cut-leaved elders, H; *Paulownia imperialis*, I; 3 hibiscus, or althæa, J; 3 *Eleagnus argentea*, K; *Clethra alnifolia*, L.

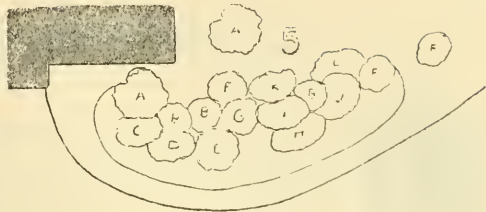


FIG. 405.

Perennial and other flowers should be used along the margins of this group or be mingled with the woody growths.

U. S. Fruit Products.—“Within a few years the foreign markets have taken from this country, in one season, between one and two million barrels of apples, and three thousand tons of evaporated fruit. The horticultural productions of the Mississippi Valley, consisting mainly of fruit, have been estimated at an annual value of one hundred thousand dollars, while more limited regions give corresponding returns. The Illinois Central Railway carried over four thousand tons of apples into the City of Chicago, besides two thousand tons of strawberries, the product of a single season. The Michigan Central conveyed fifteen thousand packages of peaches in a day. The City of Boston received from Norfolk, Va., during one year, sixteen thousand bushels of strawberries, and from plantations nearer home, ten thousand bushels more. A single county in Western New York (Orleans), furnished the market two hundred and sixty-nine thousand dollars' worth of fruit, besides the amount consumed at home, in one year, and other counties have occasionally exceeded this sum. Two hundred thousand bushels of peaches were canned at San Francisco in 1881, and the dried fruits of that State sold for over two million dollars, of which the raisin crop amounted to half a million.”

Importance of Drainage.—Some interesting facts are stated showing the great advantage of a well-drained soil for planting fruit trees or grapes. A vineyard on the Hudson was planted on sloping, wet ground and did not succeed well. A tile drain was then placed midway between the rows, the character of the vines was at once changed, and it became an excellent vineyard. An interesting case is mentioned in the Gardener's Chronicle. Apples, pears and cherries were planted on heavy clay, which was trenched down to the top of the hard pan. The trees made no growth, and were covered with lichens or moss. The orchard was then thoroughly drained. In a few months the lichens began to disappear, and the next year the trees became vigorous and made a large growth. The same benefit would result by draining wet orchards in the country, although moss does not infest trees as in the damp climate of England.—Country Gentleman.

A NORTHERN ORCHARD.

Dear Editor,—



WHEN I had the pleasure of meeting you at the World's Fair, at Chicago, I told you that I felt pretty queer to see almost every American who visited our Canadian fruit exhibit, showing their astonishment at the nice display that the Province of Quebec, "such a cold country," had sent there. Then you asked me to give you for the HORTICULTURIST a few notes on what we are doing in connection with fruit growing, hoping that, perchance, those astonished Americans would read and learn what we can really do in that line. This is to explain to your readers why a Quebec fruit grower trespasses on their ground.

To show you what are the possibilities of fruit culture in our far north, I cannot do better than to tell you what I have done myself in my experimental orchard, which is situated at St. Denis, Kamouraska County, Province of Quebec, 47° 30' north latitude.

This orchard is situated on ground composed of equal parts of clay and sand, gently sloping to the north. I planted it in the spring of the year 1889. All my trees have had to stand this year the coldest winter we have experienced for thirty years; the thermometer having marked as low as 30° F. It is then no bold assertion on my part to say that all the trees and shrubs which have fruited in my orchard this year are surely acclimatized here, and that probably many of those which gave no fruit, but made a good growth this last season, have a good chance to be useful to us, too.

With these preliminary remarks, I will now simply give you one list of the trees and shrubs which have fruited here this summer, and another of those which has made a healthy growth since they were planted, and specially this year, though not having yet given any fruit.

VARIETIES HAVING FRUITED IN THE SUMMER OF 1893.

Apples.—Antonovka, Arabka (summer), Arabka (winter), Duchess of Oldenburg, Fameuse, Hyslop, Longfield, Charlottenthaler, Trancendant, Wealthy, Whitney.

Plums.—Coe's Golden, Damson, Lombard, Reine Claude, Shropshire Damson, Smith, Orleans, Lombard.

Cherries.—Bessarabian, Early Richmond, Lutovka, Montmorency, Vladimir.

Gooseberries.—Downing, Houghton, Pearl, Smith's Improved, Yates.

Currants.—Black Naples, Fay's Prolific, Versailles, White Grape.

Raspberries.—Antwerp, Golden Queen, Marlboro, Reliance, Souhegan (blackcap), Stone's Hardy (blackberry), White (of French origin).

Strawberries.—Sharpless, White Alpine.

VARIETIES HAVING MADE HEALTHY GROWTH SINCE PLANTED, THOUGH NOT GIVING FRUIT YET.

Apples.—Alexander, Babushkino, Blush Calville, Bode, Gipsy Girl, Golden Russet, Golden White, Grand Duke Constantine, Hare Pipka, Louis Favorite, McIntosh Red, Peach, Princess Louise, Red Astrachan, Red Queen, St. Lawrence, Titovka, White St. Lawrence.

Pears.—Baba, Bessemianka.

Plums.—Bradshaw, John Trotter, Moore's Arctic.

For the sake of variety, I have also brought in my orchard from the forest some of our wild fruit bearing trees and shrubs, and these are great favorites with my children. I offer here a list of them :

Choke Cherry (*Cerasus Virginiana*).

Hazel (*Corylus Americana rostrata*.)

High Cranberry (*Viburnum opulus* or *edule*).

June Berry (*Amelanchier Canadensis*).

Mountain Ash (*Sorbus Canadensis*).

Mountain Currant (*Ribes prostratum*).

Wild Gooseberry (*Ribes rotundifolium*).

Wild Red or Bird Cherry (*Cerasus Canadensis*).

St. Denis, P. Q.

J. C. CHAPIAS.

THE QUINCE RUST.

It is important to know that the quince rust grows in one form upon another plant, for it is possible to check its ravages by diminishing the chances of its being able to find a cedar upon which to live. So far as we know it seems likely that if the cedars were absent the rust of the quinces would not be present. The quince stage of the rust is not confined to the quince, but thrives upon the apple, hawthorn and shad bush, in fact it was first found upon matters somewhat, for the shad bush and the hawthorn serve as breeders for the troublesome parasite in the hedgerow and wood lot. The rust that is now under consideration is quite different from the many molds, mildews and blights that prey upon our crop plants, and may be held in check with fungicides. The rusts proper, of which there are many hundred kinds, are deeply seated gross-feeding fungi, and usually have done a large portion of their mischief before observed. There is but little doubt, however, that spraying might be effective, if the time was known when to do it. This would mean the application of the fungicide to the quince trees at the time, or just before, the spores are mature upon the cedar nodules. A better way, however, seems to be found in the removal of cedars from the vicinity of quince trees. As another cedar gall fungus is associated with rust of the apple, it is all the more important to separate the cedars from our orchard fruits, to prevent these diseases.—*American Agriculturist*.

POISON IVY OR SUMACH.

Trailing Sumach.

(Rhus Toxicodendron.)

ALTHOUGH much has been said and written about this very noxious plant, only few persons seem to know the danger of approaching it, until they are taught by woeful experience. It is traditionally stated that at one time there existed a kind of animals called "Basilisks," whose breath blasted vegetation. But although I believe the statement, I cannot vouch for the truth of it.

I do know, however, that the venomous exhalations of this plant has caused great distress to some persons, and considerable suffering to many, who unknowingly would again lie down upon a clump of it as readily as they would on a bed of ferns.

Last fall I met a number of friends returning from camp on one of the Rideau Islands. One of them had been blind for three days, and her body was seemingly afflicted with exczema and erysipelas. She had been told it was the effects of poison ivy, but said she would not know the plant if she saw it.

Poison ivy is not the right name of this plant—it is no relation to the ivy, but is a member of the sumach family, of which there are about thirty species. It has probably been given the name of ivy on account of its somewhat trailing habit. It sends out root-stalks near the surface, whereby it multiplies and increases rapidly.

It is an unattractive plant, and is not readily distinguished from small plants of some of the other sumachs. It seldom grows more than $1\frac{1}{2}$ feet high unless supported by some other shrub. Even the smell of the poison which it emits can be detected only by persons of the keenest scent. The plant is sometimes mistaken for the Virginia creeper, but its growth is not nearly so vigorous and its leaves are ternate, *i.e.*, having only three leaflets on the leaf-stalk, whereas the leaf of the Virginia creeper, or Virgin's bower, are compound, having five leaflets on the leaf-stalk. The flowers are produced in loose clusters, nearly white, at the ends of the branches, in July.



FIG. 406.—POISON IVY, RHUS TOXICODENDRON.

The most remarkable fact in connection with this pernicious plant is that it affects different constitutions in a very different degree, or rather, it may be the state of the constitution, which renders some poisons more susceptible of poisoning than others. Some persons seem to be proof against this kind of poison. I have often handled the plant without gloves, and never felt any bad effects from it, while others passing a clump of plants on the windward side on a hot day, when in a state of perspiration, would thereby certainly have inflamed faces and necks the following day, after which small pustules arise and fill with watery matter, occasioning a burning sensation and intense itching. After a few days the eruptions suppurate, the inflammation subsides, and the damaged skin comes off in scales, leaving the new skin with a scalded appearance.

This kind of plant is common in Eastern Ontario, and is generally found growing on high and dry ground, with a seeming preference for partially shaded spots, although I have often seen it growing on poor ground where there was neither shade nor shelter.

I do not know of any good property this plant may possess, and yet, the time may come when in the medical profession it may be utilized as a cheap substitute for catharides.

Cataragui, Ont.



FIG. 407—VIRGINIA CREEPER,
(HARMLESS.)

D. NICOL.

THE CHINESE SACRED LILY

Is properly a *Narcissus* of the *Polyanthus* type. The bulbs are very large, and each one sends out from five to twelve spikes, which bear clusters of waxy white blossoms with a yellow centre, of a powerful and delicious fragrance not excelled by any other flowers. They grow well in pots of soil, but the best and most popular way of growing them is the Chinese method, as follows: Fill a bowl or some similar vessel with pebbles, in which place the bulb, setting it about one half its depth, so that it will be held firm, then fill with water to the top of the pebbles and place in a warm sunny window. Care should be taken to change the water once a week or oftener. The bulb will at once commence a rapid growth and bloom in three or four weeks. The bulbs are so large and have so much vitality that they can be kept perfectly dry all winter, and be planted any time when flowers are desired.

A. SIMMERS.

Toronto.

OUR RURAL CEMETERIES.



HERE is certainly much room for improvement in the laying out and planting of our rural cemeteries. The city of the dead is at best a mournful place, for it is so associated with the grief arising from the dear departed. But it is not good to give ourselves over to mourning, and the cemetery ought to be made bright and cheery by landscape art, so that its associations may be robbed of gloom, as far as the beauties of nature and art have charms to effect.

The following extracts from Rules and Regulations of a Western Cemetery, will be interesting to many of our readers :

The sub-division of lots by the lot owner is not allowed.

The joint purchase of a lot is not recommended, but when it occurs, the board of trustees, on application in writing if deemed expedient, may allow a transfer duly executed by either owner to the others, but to no other persons. No transfer is valid until entered on the cemetery records, and no transfer of a lot by sale or otherwise by a lot holder, without the consent of the board of trustees, will be recognized by the association.

To prevent the excessive and unsightly crowding of tombstones, not more than one monument, grave stone or mark exceeding two feet in height above the surface of the ground, shall be permitted in an entire lot.

Grave stones or marks must be placed at the head or foot of the grave, and must be placed upon foundations not less than four feet deep, and not less than twelve inches square, unless the stone be a single piece, in which case a depth of three feet below the ground will be sufficient. No grave stone or mark can be set in a socket.

No fence, coping or enclosure of any kind will be permitted on burial lots. Boxes, shells, toys and similar articles scattered upon the graves and lawn, are inconsistent with proper keeping of the ground and will not be permitted.

Every lot holder should have a diagram on the back of his deed, or convenient place for reference and mark every interment thereon. This method will enable them to point the precise location for each grave, without going to the grounds, and thus prevent misunderstanding and mistake, which occur from an imperfect description of location. One interment only should be made in the same grave, unless at a great depth or when necessity seems to require it.

The land marks or corner stones indicating the boundaries of the lots will be set even with the surface of the ground, by the superintendent at the expense of the lot owners.

No elevated mounds over graves will be permitted, as it is impossible to mow the grass and keep it alive and green on mounds. No lot shall be filled

above the established grade. All family burial lots and all single graves will be sodded and kept in good order by the association, and without charge.

The superintendent will plant trees and shrubs in accordance with the general plan for the ornamentation and embellishment of the grounds. No additional planting by the proprietors of lots will be permitted, except by consent of the superintendent.

All preparation of flower beds, planting and trimming, must be submitted to the superintendent, and all work done by the gardener of the cemetery, the charges for which will be as follows, payable in advance :

For digging up and planting flower beds, gardeners per hour	\$0 30
Teams, when hauling is necessary ; per hour	50
Care of flower beds after planting ; for the season	
Beds filled with geraniums, verbenas, etc., per square foot	10
Mixed beds of geraniums and foliage plants, per square foot	15
Fine foliage beds, per square foot	20

No flower beds to be dug up in the cemetery larger than the plants furnished will plant properly.

No horse must be left on the grounds unfastened. Drivers must remain on their seats or by their horses during funeral services. Carriages will not be allowed to turn upon any avenue.

Except in cases of emergency when lots are required for immediate use, the superintendent will not attend to the selection or sale of lots on Sunday.

THE RED SPIDER IN INDIA.



Looking over the HORTICULTURIST for Oct., I see an article on the Red Spider, and as this is an old acquaintance and enemy of mine in India among the tea plant, I thought it might interest some of your readers to know how we used to fight the pest there. We found that anything that would smother the eggs for a day or two had the effect of stopping the ravages, so we used to take ordinary swamp mud and mix it with water till about the consistency of cream and smear the bushes all over. The process was performed in this way. A number of *cooly* children were told off each armed with a small earthen pot and a brush or broom, made from some stiff grass. The pots being filled they took what they could of the mud on the broom, and shook it over the bush time after time till the whole was covered, and in a day or two (in the country where the growth is rapid) the new growth could be seen coming away entirely clear of red spider. Some parts of the plantation are usually more subject to this pest than others. A western slope invariable suffers more than one sloping in the other direction, and also where the land is shallow, more than where the soil is heavy and deep.

TOM WILSON.

Lisgar Farm, B. C., 30th Oct., 1893.

THE CYCLAMEN.



It pays well to buy large bulbs in the fall. They are not expensive and will yield so many flowers, and by having a variety of colors will render the window a very marvel of beauty. The bulbs should be planted in pots of well drained rich sandy soil, the crowns exposed, and after growth begins placed near the glass and kept constantly moist. They are moisture-loving plants and

will only thrive with such treatment. A strong bulb will have many flowers and will yield them from late fall until the next June, and each flower has the strange faculty of lasting for a number of weeks. When summer comes the bulb should have a season of rest. To insure this the pot may be set in some half shady place and given only just enough water to keep the ground from becoming dry and

dusty. A very good plan is to bury the tuber at the time in the pot in the open ground and thus the root when uncovered in the autumn is fresh and plump. In August or September the bulb should be got ready for its winter campaign by reducing the ball of earth about the roots, but with care, and placed in a larger pot with plenty of new rich soil. As to kinds, the *Cyclamen Persicum* is an old and well established variety of very beautiful and mottled foliage and great variety of coloring as to flower. *Giganteum* is a greatly improved and larger variety of *Persicum*, the flowers of great size and many-colored, the wealth of rich dark foliage with its



FIG. 408.—THE CYCLAMEN.

silver tracery is very beautiful. This variety is becoming better known; formerly it was a great rarity but is now more often seen, and bids fair to become quite as popular as the well known and much loved *Persicum*. It is well to cultivate both, as one variety enhances the beauty of the other.—*Vick's Magazine*.

“I dote upon oaks.” said the languishing maid,

“So noble, so stately, though few.

Tell me, now, Mr. Jones, what's your favorite tree?”

And he tenderly answered her, “Yew.”

—*Drake's Magazine*.

A FEW MISTAKES MADE IN THE GARDEN.



It is a mistake, in laying out walks, to get senseless curves in them, that look for all the world like a huge snake track. A curve is a line of beauty in the garden as elsewhere, but there should be a reason for the curve, or one artificially placed there. The more flowing the outline or the larger the radius, the better the effect. A straight walk to the front door is more effective than a curve in

most city lots.

It is a mistake, however small the grounds, to have walks a couple of feet wide, or so. Even a twenty-five-foot lot should have walks that are to be travelled on not less than four feet wide; the main one from the street to the house at least five feet in width. It is not pleasant to be obliged to go single file, like an Indian on trail, when approaching a house, or walking about enjoying the flowers in the garden.

It is a mistake often made by amateurs to sow seed broadcast (except for the lawn, of course) for the reason that quite often amateurs do not know the seed they have sown from the weeds that spring up. If in rows, the young plants show for themselves, and the hoe can easily be slid along to cut off weeds that are called plants out of place. Even seed sown in small patches, as in boxes or small beds, can by this means be easily observed.

It is a mistake to water plants by dribbles in the summer out of doors, or pot plants in the window. When watering pot plants see that the water goes through into the saucer, then withhold water until the soil becomes again dry. Fast-growing plants, or such as have a mass of leaves, require more than those not growing, or with but little leafage. A small plant in a large pot needs less than the reverse—a large plant in a small pot.

It is a mistake when transplanting new shrubs, trees, plants, etc., from the open ground, not to trim off a portion of the shoots, or, in case of small plants, a few of the leaves. The reason is, that in digging up many roots have been destroyed. Taking off some of the top growth equalizes things. A vigorous rose or grape vine, for example, cut back one-half, will make better growth and longer shoots in a summer than if left entire. Plants grown in pots, of course, have no mutilation of roots, and suffer no injury through transplanting.—*Prairie Farmer*.

BANANAS AND ORANGES.—Peel and slice six bananas, sprinkle with sugar and with a little orange juice between the layers, using one large or two small oranges for six bananas. Chill on the ice and serve with whipped cream.

PEDIGREE IN SEEDS.



ENRI L. DE VILMORIN, of the great seed house of Vilmorin, Andrieux & Co., of Paris, France, read a paper before the Seedsmen's Session of the World's Fair Horticultural Congress, Chicago. The entire address may be found in the *American Florist*, of August 17: "Let any one who doubts the high value of selection look at our fine

racers of cabbages, kales, cauliflowers, kohlrabi and rutabaga, and compare them with the wild cabbage of our western shores of Europe; let him compare our fine garden beets and our mangels to the wild beet of the Mediterranean shores; let him compare the tomatoes and potatoes of to-day with the wild South American plants, and he will see proof that only human thought and skill have brought about such wonderful changes. Where selection is done with skill and care the improvement of many kinds of cultivated plants effected by its means is invaluable. The large pansies, the huge hybrid gladioli, the large flowered cannas were all brought from the state of small flowers to their present excellence in our own days by careful observers, who, watching every variation and keeping an exact record of the descent of all their plants, turn to the best account the wonderful action of heredity. Most of the variations induced in our garden plants are not in favor of the plant in a 'free fight' with its kind in nature. All our improved roots, as carrots, turnips, beets, make an early and succulent growth for our own benefit, but not at all for their own good. If left to their fate to struggle with their own wild forms, they would soon have to take a 'back seat,' and very likely soon perish. It follows then that varieties improved from man's point of view must receive kind treatment and richer food than wild forms of the same plant. The cultivated plant, like the domesticated animal, yields in a measure its powers of self-defence to adapt itself to our service. Man must in return provide for its safety and nourishment."

To Prepare an Asparagus Bed.—The preparation of an asparagus bed should be made with more care than for most vegetables, as it is to be a permanent crop. The ground should be thoroughly drained, naturally or artificially and preferably of a rather light sandy loam. This should be trenched and a heavy coat of well-rotted manure applied. Either one or two-year-old plants are set, which may be raised from seed or bought of nurserymen. Set in rows not less than four feet apart, six is better, and three feet in the row. Set the roots from four to six inches below the surface so as to cultivate over the crowns. The beds will last longer and stand droth better when set deep. The plants may be set in either spring or fall. If in the spring, as soon as the ground is dry enough to work; and if in the fall, as soon as plants can be obtained, which is usually early in October. Fall setting, where possible, is preferable for the roots have a chance to form and start earlier the next spring.

SMITH'S CIDER APPLE.



AMONG the apples which have acquired extensive popularity in certain localities Smith's Cider is one of the most prominent. The name, however, is misleading, for while it is a valuable cooking apple on suitable soils it is by no means equal to Fink and many others as a cider apple. Indeed for making cider it may be said to be one of the poorest; not but there is an abundance of the juice—there is a superabundance rather—but it is not of high quality. Some think the name was not intended to indicate its value for cider. The original tree, it has been said, sprung up near the cider press of a farmer named Smith, in Bucks County, Pennsylvania, many years ago; and when it began to attract attention it was spoken of Smith's cider press apple which in the days before the establishment of pomological societies was naturally shortened to Smith's Cider. And yet if this be the same fruit that is mentioned by Coxe in his view of the cultivation of fruit trees, etc., (Philadelphia, 1817) as grown "in the county of Bucks and the contiguous parts of Pennsylvania," it was then "chiefly used for cider," although "a pleasant table fruit." And his description of both tree and fruit seems to suit. It is No. 52 in his list, and he calls it Cider apple—the same name applied to it by the well-informed agricultural editor of the Cincinnati Gazette, who has known it for over half a century; first in Bucks county, its original home, and afterwards in the West.

In certain portions of Ohio and Indiana it is a popular and profitable apple. On the uplands of the Central Ohio it is less valuable; not equal to Rome Beauty, Ben Davis, Kentucky Long Stem and several others, either in productiveness or appearance; and in quality there are many varieties that are much superior.

There is a red variety, known in the East by the name of Red Cider, or Red Smith's Cider, which some think is a sport from the above, but others consider it an original seedling. It is high colored without stripes, and some say of finer quality; and those who have tasted both say the red is the most popular.

On the whole, Smith's Cider may be recommended for planting wherever it has been tried and found to do well; which will not be in any of the colder regions, for the tree is not very hardy, even less so than Rambo.—Exchange.

PACKING PEARS IN SMALL CASES—Through a verbal mistake in November No., Mr. J. L. Thompson was made to say that for the British markets, pears should be handled with care and packed in very large cases; the reading should be "not too large cases," for as he writes:

"It is obvious to all who cultivate pears, which are among the very softest of the large fruits, that packing them in very large cases would cause them to heat, thus initiating and promoting decay, which, in "not too large cases," would be much less likely to occur, and perhaps, be altogether avoided."

✿ The Apiary ✿

THE TWENTY-FOURTH ANNUAL MEETING OF THE NORTH AMERICAN BEE-KEEPER'S ASSOCIATION.



BEE-KEEPERS as well as fruit growers have their calling advanced by means of conventions. Not only are those profited who attend in person, but the report of the proceedings finding its way into the press give readers some of the most advanced ideas upon the subject in hand. The North American Bee-Keepers Association takes in the largest territory of any bee-keeper's association in the world.

It is international in character, and certainly amongst its members may be found the most extensive and practical men engaged in the bee-keeping industry. The last convention has just been held in Chicago, the date being Oct. 11th, 12th and 13th. In reporting the proceedings, much of interest has, of course, transpired, which is not of practical value to those having a few colonies only. The best will be selected for the readers of the *HORTICULTURIST*.

An address was given by Prof. A. J. Cook upon the subject "Apiculture at our Experiment Stations." It would appear almost incredulous that in the United States \$705,000 are spent annually to develop new truths, and further the interests of agriculture. And out of that, barely \$2,000 thus far, of it spent for the development of truths and further the interest of apiculture; that means not one-three hundred and fiftieth. When we come to Canada the state of affairs is even worse. We have no government experimental work at all. For many reasons, some of them given in previous numbers of the *HORTICULTURIST*, bee-keeping is an important branch of agriculture, aside from the value of the honey produced. In Canada this is even more the case, the Dominion did not make an exhibit of honey; this is to be regretted. She has lost a rare opportunity of showing what her resources are in this direction. For nothing will prove to a foreigner more quickly a country's adaptability to agriculture than an exhibit of her fruit and honey.

Ontario has, however, acquitted herself well. The quality of honey is excellent, and there is no doubt that she will secure quite a large proportion of awards. Her comb honey is the best, only one sample from Michigan even approaching the best Ontario sample. It is with some pride that I say even Americans admit the best comb honey is from Brantford. At the World's Fair were samples of honey from many foreign countries, and rarely indeed could even an individual sample be found equal to Canadian, and none superior. Again from foreigners I found that the honey which we produce in largest quantity, is the honey which the British consumer has a liking for, and the British import from year to year, yes, month to month, large quantities of honey.

Under these circumstances, bee-keepers would expect to find that in Canada at least, a fair proportion of the public money would be spent in the advancement of apiculture, experimentally and otherwise. But the contrary is the condition; not only is the proportion not greater, but absolutely not one dollar has been spent in experimental work. Prof. Cook very ably suggests that bee-keepers insist on their rights. It is a trifle to the country as far as expenditure is concerned, and means much to the individual bee-keeper, and much directly and indirectly to the development of the country.

The North American then placed itself on record as follows: "That we recognize the value of experiments and experiment stations, and firmly believe that bee-keeping would be greatly aided in each State and province where bee-keeping is a leading or important industry, if the experiment stations in each State and province should secure an able apiarist to give his full time and energies to the work of experimentation, and if these apiarists should work together to advance the general apiarian interests."

The resolution closed urging bee-keepers to act in this direction.

The question "What experience has taught us in the past few years," then received attention. Mrs. L. C. Axcell, who opened the discussion, found that bees were more liable to swarm with a small brood chamber. The tone of the communication was in the direction of attempting to keep bees without care and attention. In the discussion which followed, this idea was condemned; one member going so far as to say if the experience of the past five or ten years had taught us anything, it had taught us that bee-keeping could not be entered into without proper care and attention, and to fully succeed in it experience was required. The opinion was also expressed that whilst a large brood chamber might answer for extracted honey, for comb honey its capacity should be no greater than what a good average queen could fill. Another ably expressed himself thus: "The question is not what system will allow us to give the least attention, but what hive and system will give us the best results."

Upon a vote being taken sixteen favored the ten frame Langstroth hive. Forty-two the eight frame. Only one had changed from the eight to ten frame, twenty-four had changed from the ten to the eight frame hive.

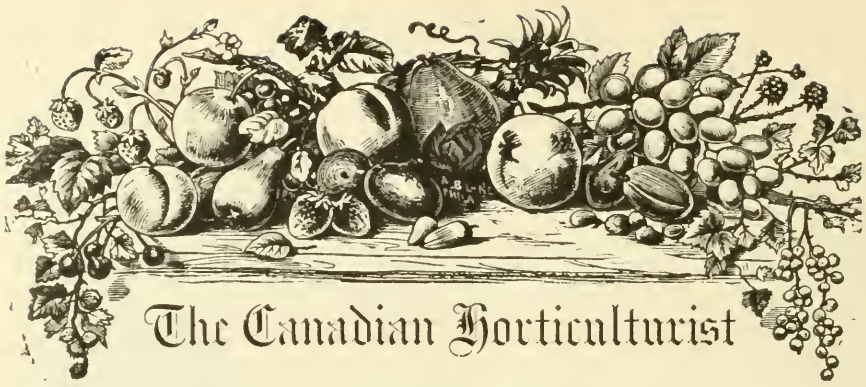
The rule advised was to crowd a few queens in the brood chamber rather than give a good many queens too much room. Next, to avoid giving the queen much space at a time when the young bees produced are likely to be of no use for the honey flow.

(To be continued.)

Brantford, Ont.

R. J. HOLTERMAN.

FOR OLD BUILDINGS.—A cheap and a very useful article to paint old buildings with is crude petroleum, especially for the priming coat; and any of the cheap dry paints may be mixed with it in order to give a satisfactory color.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

ERRATA.—On page 404 in Ontario's apple exhibit for 1892, read III instead of 52.

OUR WINTER MEETING, will be held in Peterboro', beginning Tuesday, 5th December, at noon. The change of date was made after carefully consulting the Association at Peterboro'. Write for programme.

THE EDITOR of this Journal will be at his office at Grimsby early this month, where he will be able to give better attention to the subject matter of this Journal than he could do in the evenings of busy days of duty at the World's Fair.

STORING IMPLEMENTS.—Some sensible hints on this point are made by the American Agriculturist, who advises not only putting tools away carefully under cover for the winter, but cleaning them thoroughly, and oiling all metallic parts with kerosene or melted beef-tallow. For the wood part boiled linseed with some mineral paint is recommended.

THE BUSINESS OF FRUIT GROWING.

It is a remarkable fact that most people not engaged in fruit growing, think that no previous training, either of a practical or theoretical nature is required, for success in it. They would not for a moment expect success in the dry goods business, or in any trade or profession without years of preparation, but they seem to think that any man who fails at other things may at once step into the growing of fruit, and make money. Others again, who have some knowledge of

fruit growing in England, or some other foreign country, think they can at once enter into the successful pursuit of this business in Canada. A subscriber writes :

“A friend of mine in England, who has been in Australia, and has some knowledge of gardening, wishes to engage in fruit growing in this country. What could a small fruit farm of five or ten acres, partly planted, be purchased for?”

Now there is so much difference between fruit growing in Canada and in Australia or England, the methods, conditions, suitable varieties are so unlike, that should such a person purchase a fruit farm in Canada, and begin planting and running it, without first spending at least a couple of years studying the business in Canada, he would be almost certain to make a conspicuous failure. Why the most experienced fruit grower in the Niagara district find seasons when, with all their knowledge of their business, the income from the fruit farms does not meet expenses ; what then would be the loss to an inexperienced man in such a season? The probability is he would become bankrupt. There are good profits from all well managed fruit farms, most seasons, but good management is most essential nowadays, when prices of fruits are so much lower than formerly. Twenty years ago, we seldom sold a quart of strawberries below ten cents, now we often sell two quarts for that sum. Grapes then were worth eight and ten cents a pound ; now two cents is an average price, and tons are sold even as low as one cent a pound. In noticing the low prices the Vineyardist says :

“Grapes of good quality, packed in baskets, that sell in the cities for less than two cents per lb return no profit, and are sold at an actual loss to the producer. Four and one-half pound baskets, sold at ten cents each, or \$10 for a hundred baskets containing 450 pounds of grapes. These would cost for baskets \$2, for transportation about \$1.50, commission not less than forty cents ; total \$3.20, which, deducted from \$10, leaves the pitiful sum of \$6.10—less than one and a half cents per pound, which means ruin to the producer, as the balance of his crop, if sold at all, for wine, must be ‘sold for a song.’”

And so many vineyards have been planted of late years, giving us each year such an increase of the total production of our country, that the business is in danger of being swamped entirely, True the demand increases yearly, but not so fast as the supply.

Another man seems to think fruit growing such a profitable undertaking, and so easily conducted, that he can simply buy trees for a tenant and await his golden harvest. He writes :

“I understand you edit a fruit growers' journal. I have a one hundred acre farm, on the mountain, near Grimsby, which neither pays the tenant or myself. Could I not set it out to fruit, with a prospect of better returns. Is a fruit farm a success under a tenant?”

In reply to the last question we say decidedly, no. If any kind of farming needs the personal supervision of the owner it is fruit farming. It needs the best training possible in the practical work of the garden to qualify a man for the work, and the constant attention that only comes from personal interest. We are persuaded that the circumstances would need to be exceptional, under which a fruit farm would pay at all, under the circumstances described.

⇒ Question Drawer. ⇐

The Apple Tree Borer.

588. SIR.—Some fine trees in my orchard have been nearly destroyed with the borer. Can you give me a remedy?

C. J. LISTER, *Bowmanville.*

A remedy now is almost like "locking the stable door when the horse is stolen"; however, if the track of the borer is found, he may be destroyed by thrusting in a wire without cutting the tree very badly. Then cover the wound with wax or varnish, and the tree may possibly recover.

The best remedy is prevention. Apple trees should be washed with soft soap and water once in June and once in July of each year, if the borer is about, and this will effectually save them from this insect enemy. The parent beetle flies during these months and deposits her eggs in the bark of slow-growing trees, where they remain boring farther and farther into the interior for two or three years before pupating.

Best Artificial Fertilizer.

589. SIR.—I would be much obliged if you would let me know through the CANADIAN HORTICULTURIST the best artificial fertilizer for young apple trees; age four years and under. Also when should it be applied?

S. J. RUTHERFORD, *St. Hilda, Gaspereau, N.S.*

Reply by Prof. Craig, Ottawa.

It is difficult to reply to a question so general in its extent and character. It must not be expected that fruit trees can be grown successfully, and the best results obtained from the application of a single fertilizer, as nearly all plants require a combination of the three principal elements taken from the soil which enter into the plant growth, viz : Phosphoric acid, nitrogen, and potash.

In a general way it may be said that nitrogen stimulates the development of woody tissues in trees, while potash and phosphoric acid have a more direct effect upon the productiveness of the tree as well as the thorough and complete ripening of the wood.

For young trees a fertilizer compound of 25 bushels of wood ashes, 100 lbs. of crushed bones, and 150 lbs. of sulphate of ammonia, or nitrate of soda, should furnish the principal elements of plant food required for the growth of a healthy tree. Of course, very much will depend upon the character of the soil.

Nitrate of soda, or sulphate of ammonia, will furnish the nitrogen. The phosphoric acid may be purchased in crushed bone or as dissolved bone black, and the potash may be secured in wood ashes, muriate of potash or kainit.

In using mixed fertilizers the best results are usually obtained when they are applied in the spring.

Parasite of the Tomato Sphinx.

590. SIR,—I send to your address a specimen of a tomato worm, which I believe to be a female, with some of the eggs attached. From their appearance under the glass, I am led to suppose that after a certain time these eggs are deposited in the ground, where they hatch out the following season to pursue their destructive work among the tomato plants. Kindly give through the Journal any information you can command on this subject and favor

GEO. C. MOORE, *Eglinton, Ont.*

Reply by Prof. Fletcher, Entomologist, Central Experimental Farm, Ottawa.

The objects taken by Mr. G. C. Moore for the eggs of the Tomato Worm are really the cocoons of a beneficial parasite belonging to the same class as the Wasp and Ichneumon flies. The eggs from which the tomato-worms come are laid by a large moth. It is sometimes very abundant, but when this is the case, many of them are usually destroyed by this parasite, which is known by the name of *Apanteles congregatus*. The eggs of this insect are laid by the female fly within the body of a caterpillar by means of a needle-like ovipositor, with which she pierces the skin. Sometimes as many as 200 eggs are laid in a single caterpillar (207 cocoons of this parasite were actually counted on a large specimen of the Tomato Sphinx found in London, Ont.) The young maggots upon hatching feed upon the fatty parts of their victim and, when full-grown,



FIG. 408.—Cocoons of *A. congregatus* on Sphinx caterpillar.

force their way through its skin, and work themselves out as far as the last joint of their bodies, when they begin spinning their small white cocoons, which stand on end and present the appearance of the figure. From these eventually the small active black four-winged flies emerge.

I may mention that it is a common mistake for those not acquainted with entomology to take these cocoons for eggs, but eggs are only laid by insects in the perfect state.

The Fertilizing Value of Spent Hops.

591. SIR,—Would spent hops from breweries be good on heavy clay land, cultivated as a vegetable garden; also in a plantation of apples, pears and small fruits? If so, how would you apply it, and in what quantities?

FRED HOSKIE, *Port Colborne.*

Reply by Prof. Shutt, Chemist, of Central Experimental Farm, Ottawa.

In hop refuse the more valuable constituents of plant food, viz., nitrogen, phosphoric acid and potash, are present in such small quantities that, considered as a fertilizer, this material cannot be looked upon as possessing any commercial value.

Hitherto, we have not been called upon to examine this refuse in our laboratory, but according to Dr. Goessmann, of Massachusetts, they have the following average composition :

ANALYSIS OF WASTE HOPS.

Water	8.98
Nitrogen.....	.98
Potash.....	.11
Phosphoric acid.....	.20
Lime.....	.27
Magnesia.....	.10
Insoluble matter.....	.63

The amounts of phosphoric acid and potash closely approximate those in average soils, though somewhat less than those in the best soils. In nitrogen it is somewhat richer. This may be rendered available by first composting the refuse hop, thus insuring fermentation, converting the nitrogen into compounds more or less soluble. Very little good would result from the application to the soil of the unfermented material.

Incidentally, such fermented refuse would improve the soil by its decomposing organic matter, which is of value apart from its contained nitrogen. Since this material cannot in any sense be considered a rich or concentrated fertilizer, its cost at the farm must be carefully considered before decision can be arrived at as to whether it is an economical manure to use or not.

Spraying and Spraying Pumps.

592. SIR,—Will you kindly inform me through your valuable journal which is the best spraying machine to use; also, the best liquid preparation for general spraying for apple scab, woolly aphis, etc.

N. BUTCHERAT, *Port Moody, B. C.*

Reply by Prof. J. Craig, Central Experimental Farm, Ottawa,

Probably the best and most useful liquid for spraying is that known as Bordeaux mixture. This has the advantage of being useful both for insects and fungous diseases; being a combination of copper sulphate and lime, and, when used for insects, Paris green may be added with safety. It has some disadvantages, in that it is more difficult to apply than the ammoniacal copper carbonate, which does not clog the nozzle to the same extent, and it can also be applied later in the season without fear of staining the fruit.

The best spraying machine to use will depend somewhat on the amount of work required of it. For a large orchard it is desirable to purchase a machine operated by horse power. These are offered for sale by a number of pump makers: among them the Field Force-Pump Co., Lockport, N.Y., and the Nixon Nozzle Co., Dayton, Ohio, and others. For ordinary field work, where the area

to be covered does not exceed 8 or 10 acres, a force pump attached to a barrel, and fitted with two discharge pipes with a Vermorel nozzle attached, will serve the purpose very satisfactorily. Advertisements of pumps of this kind appear in the CANADIAN HORTICULTURIST.

Green and wooly aphids are treated, not with poisonous substances, but with oily mixtures which will kill by contact. The best of these is the kerosene emulsion made according to the following formula :

Kerosene (coal oil),	- - - - -	2 gallons.
Rain water,	- - - - -	1 gallon.
Soap,	- - - - -	half pound.

Boil the soap in the water till all is dissolved; then, while boiling hot, turn it into the kerosene, and churn it constantly and forcibly with a syringe or force pump for five minutes, when it will be of a smooth, creamy nature. If the emulsion be perfect it will adhere to the surface of glass without oiliness. As it cools it thickens into a jelly-like mass. This gives the stock emulsion, which must be diluted with nine times its measure of warm water before using on vegetation. The above quantity of three gallons will make 30 gallons of wash. Insects breathe through small openings along their sides. The effect of kerosene emulsion is to suffocate them, by stopping up these breathing pores.—*Fletcher.*

Sun Scald or Bark Blister.

593.—SIR,—I would like to ask your opinion in regard to a disastrous disease, known here as a black spot or dead spot, that is fast destroying our fruit trees, principally apple. It makes its appearance on the bark of the tree, both on the stock and limbs of the young trees, and on the smooth bark of the limbs of the other trees. I think you have made an investigation before, but had not found out any cause or remedy.

N. BUTCHERAT, *Port Moody, B. C.*

Reply by Prof. J. Craig, Central Experimental Farm, Ottawa.

Sun scald, or bark blister, or canker, as it is variously called, is a malady which seems to be somewhat peculiar to the region of British Columbia. Its cause has not been satisfactorily determined, although it is supposed to be a disease which owes its origin to some member of the lower order of plants included in the general group fungi.

Sun scald in the colder region of the Dominion seems to be directly attributable to climatic changes, and to be more characteristic to some varieties than others.

Shading the trunks of the trees from the rays of the sun during winter and spring, has been very successfully tried.

It might be worth while to try this remedy on a small scale, although indications of its beneficial effects are not encouraging.

THE BRITISH APPLE MARKET.

After all it would appear that the apple markets of Great Britain are governed chiefly by the supply from Canada and the United States. A little while ago, the market reports of Great Britain led us to suppose there was such a heavy home crop, that there would be no opening for our apples. Now, the November reports have come to hand it appears that the supply of home-grown apples is about exhausted, and that there is a sharp demand for Canadian apples at high prices, for first-class stock. Inferior stock is always cheap in every market, and should not be sent over under any circumstances.

James Adam, Son & Co. write, under date of 28th Oct., as follows :—

For the few Canadian apples yet to hand, we are pleased to report a very strong demand, with sales mostly at the following satisfactory prices: Kings (the so far favored variety), 25/ to 33/, Baldwins 20/ to 23/6, Greenings 15/ to 21/, Blenheim and Ribston Pippins 15/6 to 28/6, and 20oz. 25/ to 31/6 per barrel. The English growths are now greatly diminished, and the bulk of present stocks being of greenish varieties, fruit of good quality and color is wanted, and, provided supplies are not excessive, we think satisfactory returns may be looked for, from now until about the middle of December. About this time demand invariably falls off, and it will then perhaps be advisable to stop shipments until say the beginning of January.

And again, under date of 4th of November :—

Offerings this week have been in excess of last, though, as will be seen by figures below, arrivals altogether thus far are remarkably light. With the exception of a few Newtown Pippins, there have been no American, and of the Canadian, we are sorry to say the stock was not by any means good, having we suppose been put up in the orchard. In consequence of this, together also with the fact that green varieties predominated, prices are a shade easier, home growths yet offering plentiful supplies of these, as intimated in our last issue; but all things considered fair values have ruled, anything of color being again well competed for. Kings brought from 18/3 to 29/, Baldwins 15/3 to 21/, Spies 16/3 to 22/, Canada Reds and Ribstons 18/ to 20/6, and Greenings 9/3 to 17/9 per barrel, these latter having varied considerably in quality, as quotation indicates.

Newtowns, as was to be expected, are also cheaper, prices for first shipments being too high for this period of the season. Latest sales have been from 15/ to 30/ per barrel.

Prospects for good stock are still encouraging, provided supplies are not excessive, and it is to be hoped shippers will not be induced to send forward inferior stock, as this we feel sure will only lead to disappointment.

Arrivals from 1st September, 1893, to 28th October, 1893 . 2,238 barrels.

“ during the past week 6,678 “

Total to date 8,916

To same date last year. 248,277

Messrs. Woodall & Co., of the same market, write under the same date :—

Of the arrivals up to date, 6,586 barrels were received during the present week, those received previously being insignificant and spread over a considerable period. About three weeks ago it became apparent that the enormous English crop was getting exhausted, which was confirmed by a small arrival of Canadian realizing up to 33/ for Kings, clearly showing that good qualities were wanted. The bulk of supplies, so far, are from Canada, and what were offered this week of good quality were eagerly competed for and sold at very full rates. A somewhat adverse element was produced by a shipment of false-packed fruit which brought very little, and made a quotation for Canadian that should not exist, and it is to be hoped the cause of it will not be repeated, as it gives a want of confidence

all round. The small arrivals from New York are almost entirely Albemarle Pippins, which are excellent quality and appearance, and have sold readily from 15/ to 38/, according to quality. The future prospects may be fairly ganged from this week's sales, and there is every probability that shipments of good sound stock up to Christmas will come to a satisfactory market.

QUOTATIONS FOR SOUND.—Albemarle Newtown Pippins, 15/ to 38/; half-barrels, 15/.

CANADIAN.—Baldwins, 18/ to 23/6; do. seconds, 15/ to 17/6; Ribston, 20/ to 28/; C. Red, Phoenix, Spy, Cranberry Pips, 14/ to 24/; 20oz. 28/ to 31/6; Greenings, 17/ to 21/; do. seconds, 10/ to 14/; Kings, 25/ to 33/. Slacks sell 2/ to 4/ below above quotations.

Messrs. M. H. Peterson & Co., of Colborne, Ont., give following statement of apples exported from Canada to the British markets, week ending November 11th:—

Montreal.....	12,916	
Nova Scotia.....	3,945	
Boston.....	160	
New York.....	2,383	
	<hr/>	
Week's total....	19,404	Same week last year..... 80,680
Total so far this season....	55,379	Last season..... 627,651

Cable from Messrs. J. Adam, Son & Co., Liverpool, 13th Nov., 1893:—"Market dull—quality very common. Baldwins, 12/ to 18/6; Greenings, 9/ to 14/; Spies, 12/ to 19/."

DEAR SIR,—Messrs. James Adam, Son & Co., Liverpool, this day cable:—"Market firm, with good demand. Baldwins, 16/6 to 20/; Greenings, 15/ to 18/6; Spys, 16/ to 21/6; Russetts, 13/ to 15/."

Yours truly,

M. H. PETERSON & Co.

Colborne, Ont., Nov. 24th, 1893.



IN THE ANNAPOLIS VALLEY.



FISHERIES.

GOVERNMENT.

MANUFACTURES.

A PARTING GLIMPSE OF THE VANISHING "WHITE CITY."

