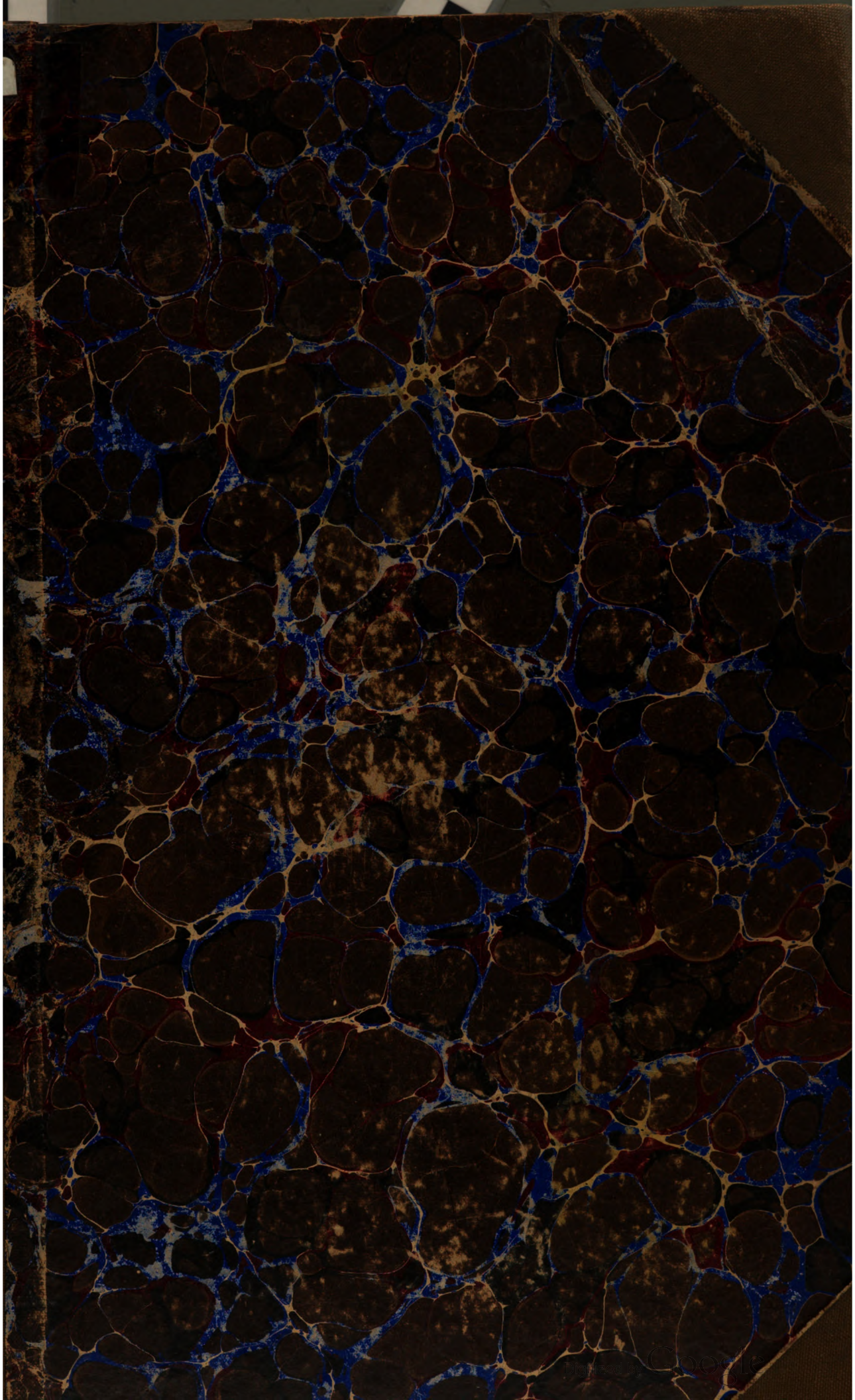

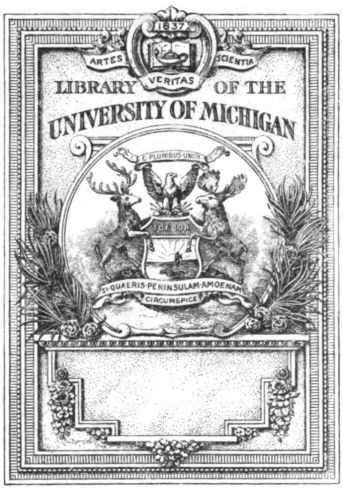

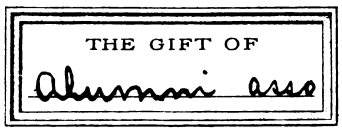

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COUNTRY LIFE IN AMERICA

A Magazine for
the Home-maker, the Vacation-seeker, the Gardener, the Farmer,
the Nature-teacher, the Naturalist

L. H. BAILEY
EDITOR

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VOL. I. NO. 1
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NOVEMBER, 1901

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IN AMERICA

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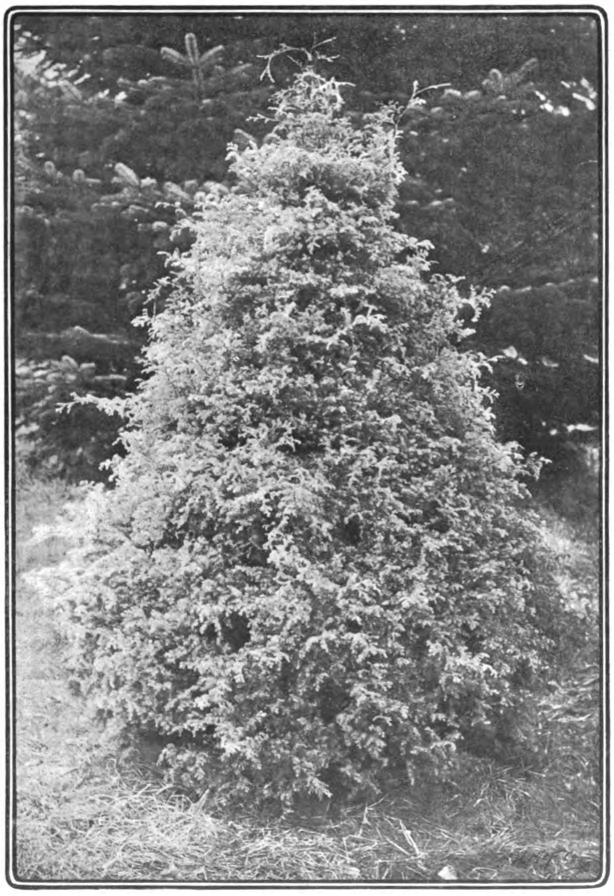

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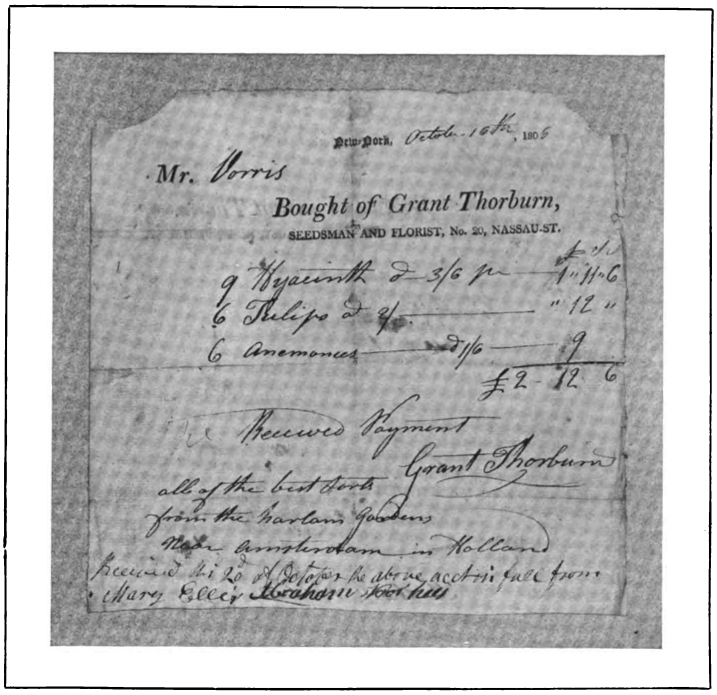

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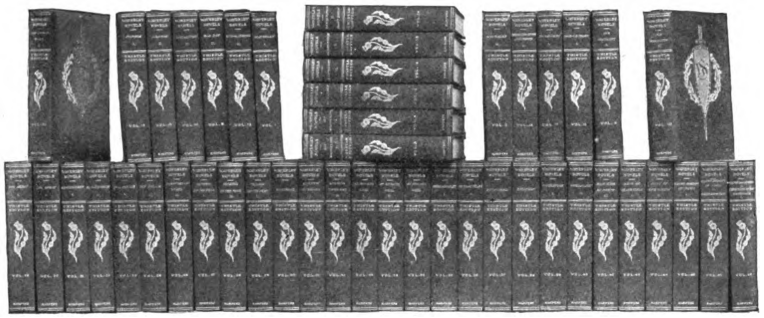

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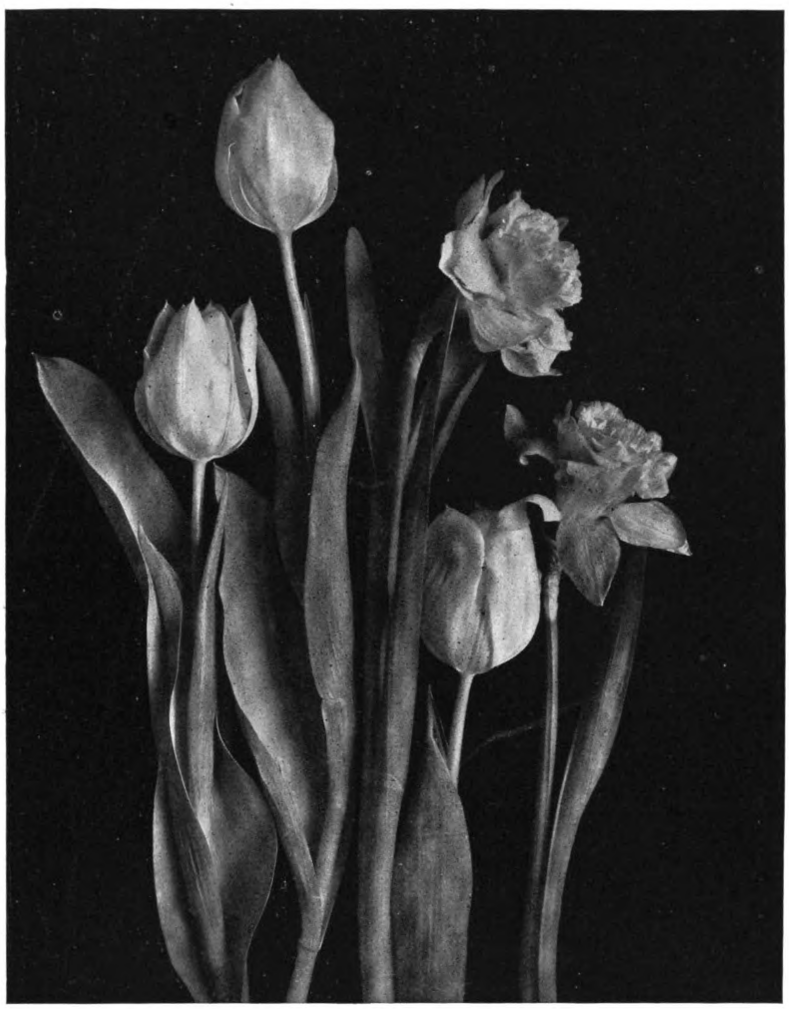

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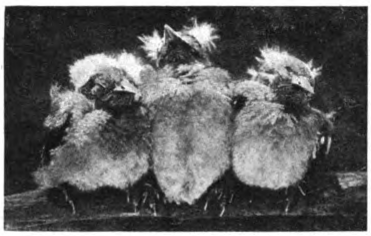

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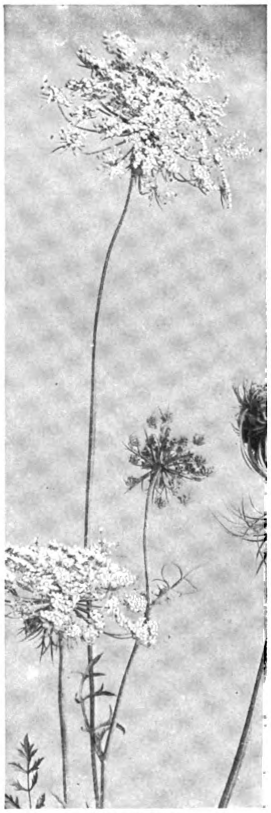

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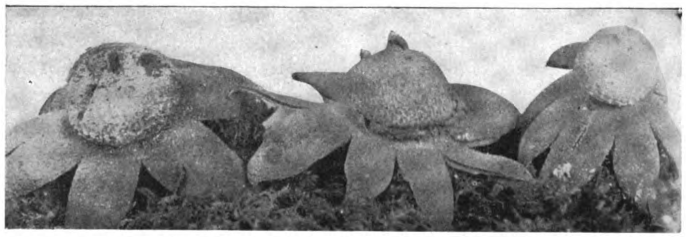

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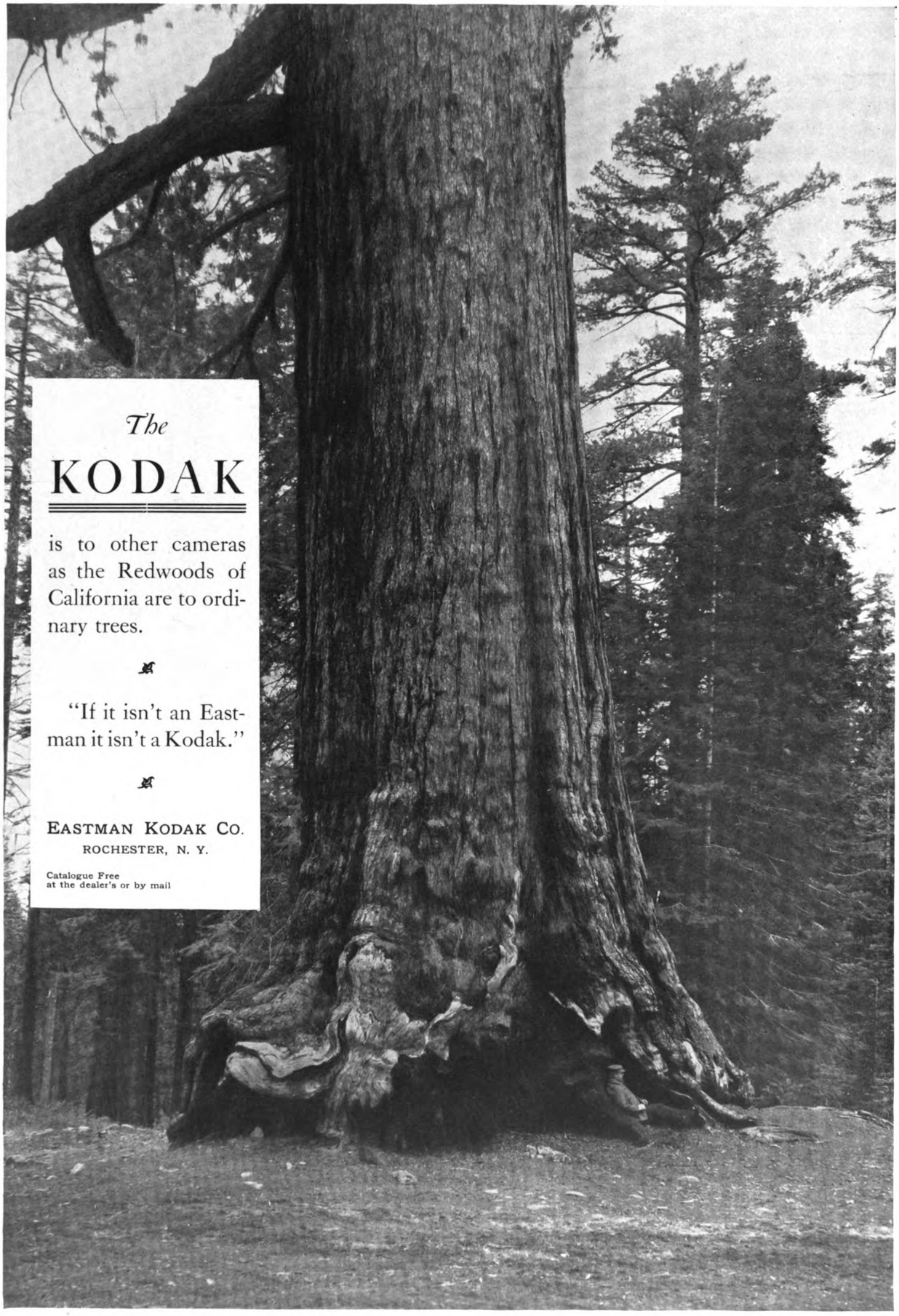

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IN THE HAYFIELD AT ELLERSLIE (See page 9)

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COUNTRY LIFE IN AMERICA

VOLUME I—NUMBER 1
OLD SERIES: VOL. 6—No. 5

November, 1901

PRICE, 25 CENTS
$3 A YEAR POSTPAID

THE ABANDONED FARMS

THE SHIFTING OF THE RURAL POPULATION OF NEW ENGLAND—THE STATUS OF THE ABANDONED FARM PROPERTIES—THE CAUSES AND THE PROMISE

ALONG the valleys and on the fertile flat lands the early inhabitants settle. The first development follows the coasts and rivers. As land becomes scarce and consequently more valuable, the hills and mountain sides are subdued. The remoter parts become inhabited. In the course of time, economic conditions change. The centers of activity remove. New industries develop. New lands are opened. Population shifts. The poorest and remotest places suffer most. Difficult and profitless lands are abandoned.

In every country of mountains and valleys there is bound to be an unequal distribution of the rural population. Farmers are driven from the hills sooner than from the valleys. I have seen abandoned farmsteads on the mountains of California, and on rocky hillsides far and near. But it is with New England that one associates the typical abandoned farm. The eager discussion of the subject in recent years has concerned itself almost wholly with this region. It is in New England that the abandoned farms have become so common as to raise a distinct public question as to causes and remedies therefor. State boards of agriculture have interested themselves in the

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sale of the lands. The reasons for their prevalence there are three: the hill lands are relatively a large part of the total area of the states; the country was settled before the great fertile regions of the west were accessible; the era of rapid transportation came, manufactures developed, the West was opened as a promised land, and the population of rural New England sought more attractive fields of employment.

Viewed as an economic question, the abandonment of New England farms should not disturb us more than other shifting of population. In the present day, most of the lands that are now abandoned would not have been settled. They would remain in timber; and now, by the inexorable power of economic forces, they are returning into forest. The first flush of the settlement of the West has passed. Manufacturing industries have attained stable conditions. People are looking again to the country. The better farms again are being farmed. On the hills of western Massachusetts I found a cow-puncher from Oklahoma settling on an abandoned farm, to make his living by farming. Farmers are buying up adjacent lands and extending their business. Near the railroads, city people are building cottages and retreats on the sites of old farms, to find respite and peace. The remoter places are passing back into forest, and lumbering is again an industry in old New England. Where once were "mowings" and "plowings" are now wild and free stretches of woodland. Dilapidated stone walls ramble through the woods and are heaved by the roots of great trees. Here and there is the ruin of a foundation, with trees growing inside and the tiger lilies still persisting at the border. Now and then only a clump of tansy marks a spot where people lived. Roads that once were clean from wall to wall are now narrowed to mere wagon trails, where strawberries ripen in June and goldenrods bloom in September. There are abandoned roads, silent avenues of a rural life that has sunken into the past. There are school-houses on these old highways where the wild growth is stealing into the play-grounds. There are school-houses where no children go to school. One can follow these narrow roads over the hills until he loses all contact with human effort, and is far and far away.

"Deserted homesteads with sagging buildings and close-pressed by forest growth"

Our regret for the abandonment of these farms is largely sentimental. We are thinking of the human lives that have been lived in the stark old houses, where the winds blow through the creaky roofs and into the openings that once were windows and doors. We are impressed by the ancient orchards, with bleaching limbs and rotting trunks. Generations ago, perhaps, the goodman and his wife hewed the farm from the wilderness, erected the laborious buildings, and planted the

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"There are mountains." Outlook from a deserted farmstead in western Massachusetts over "long stretches of close-tilled valleys"

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"Not only farms but mills and shops have been abandoned"

cider-apple trees between the rocks. A little brood was reared. One by one the children went out over the hills and made homes for themselves; but one of them remained on the old farm, cherishing the old rocks and living content under the old roof-tree. The old place became more hallowed with the years. Even the decay of the old house passed unnoticed. What was neglect and dilapidation to the visitor from the city was the object of veneration and sweet memories to the owner. But finally no youngster clung to the homestead. One went to the city store, another on the railroad, another took to sea and another went West. Age overtook the old folks. The bushes encroached on the back lot. The stone walls went to ruin. The kitchen roof tilted and fell in. The old folks died. The house was closed. The stripling forest has now overrun the orchard and the garden. Swallows are nesting in the broken chimneys.

Ten years ago the abandoned farms were a subject of much solicitude, but now people are beginning to understand that the subject is really not an agricultural question but an economic one. Not only farms but mills and shops have been abandoned; but the energy and the capital that they represented have been absorbed in larger and more efficient enterprises. Farming is not declining in New England just because many of the hill farms have been abandoned. In fact, there is a distinct rejuvenescence of farming in the better lands of New England, as there is in all parts of the East. There is abundant opportunity for the man of enterprise and intelligence; but here, as elsewhere, there is little promise for the man who lacks these qualities. The man on the rich lands of the prairies or on the Pacific coast who has a feeling of commiseration for the farmer of New England is nursing only a pleasant egoism. The New Englander will take care of himself. One never sees better farms than he finds in many parts of New England. On these better farms the land is well tilled. The fields are as soft and mature as those of England. They are clean and frugal. There is no trace of the weedy carelessness of the West. The buildings are tight, and the thick sward grows to their foundations. The home is compact and smug.

All these abandoned farms are owned by somebody. Technically, an abandoned farm is one that is no longer used for accustomed farm purposes. But some of them are abandoned only as to buildings: the land itself has become a part of a neighboring stock farm. Vacant buildings are often mistaken for abandoned farms. Deserted homesteads with sagging buildings and close-pressed by forest growth may mean only that the former occupants have died or that they have moved away for other employment or for health; the farm itself may still be tilled and mown as of old.

Some of the abandoned or unremunerative properties

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are owned or rented by parties who use them for the temporary pasturing of stock that is bought in other parts and driven into these regions for the summer. Some are owned by persons who deal in timber. Others belong to parties who have inherited them from mortgages and who would be glad to be rid of them. I asked how much this abandoned hill land is worth. With much deliberation the man replied:

"If you don't want it purty bad, you'd better be a leetle careful how much you offer for it."

From two to five dollars an acre is a frequent price for the remoter lands in some parts of New England. Great areas of these lands would better remain in forest.

Many of the abandoned farms, however, are still capable of yielding a good living with no great expense of clearing, fertilizing and rebuilding. Most of the old houses were strongly built, and are easily repaired. Markets are numerous and close at hand. The farmer can grow a special product and find a personal customer for it. It is easy to establish a reputation for good products. It is easy also to hold this reputation, for attachments and traditions are strong in New England. The greater part of the people of New England are in the cities and villages. In Massachusetts alone these cities contain about one and three-fourths million persons. Farming is comparatively a small business: there should be a ready outlet for every good thing that the farmer can grow.

Gradually these better properties are being purchased for legitimate farming purposes. Of 233 purchasers in Massachusetts who stated their intention when buying the land, 158 expected to go into some kind of farming, fifteen bought the property for the wood and timber, sixteen for a summer residence, sixteen for an investment and twenty-eight "for a home." Far the larger part of the buyers were residents of Massachusetts, and "the names would indicate that most of the purchasers were of American parentage." The number of abandoned farms is really not so great as one would infer from the amount of discussion that the subject has provoked. In 1890, there were less than 1,500 such farms known to the authorities in Massachusetts, with a ratio of acreage of abandoned farms to acreage of all farms of 3 to 45. Many of these farms are really not abandoned, but have become unremunerative from age or ill health of the occupants and are offered for sale at a low price. The ratio of assessed value of abandoned farms in Massachusetts in 1890 to that of all farms in the state was as 1 is to 15. Some of the farms that are offered for sale in the state lists are in good condition, with prices ranging as high as $200 per acre. In most cases they need overhauling and restocking. New orchards, improved

"We are impressed by the ancient orchards, with bleaching limbs and rotting trunks"

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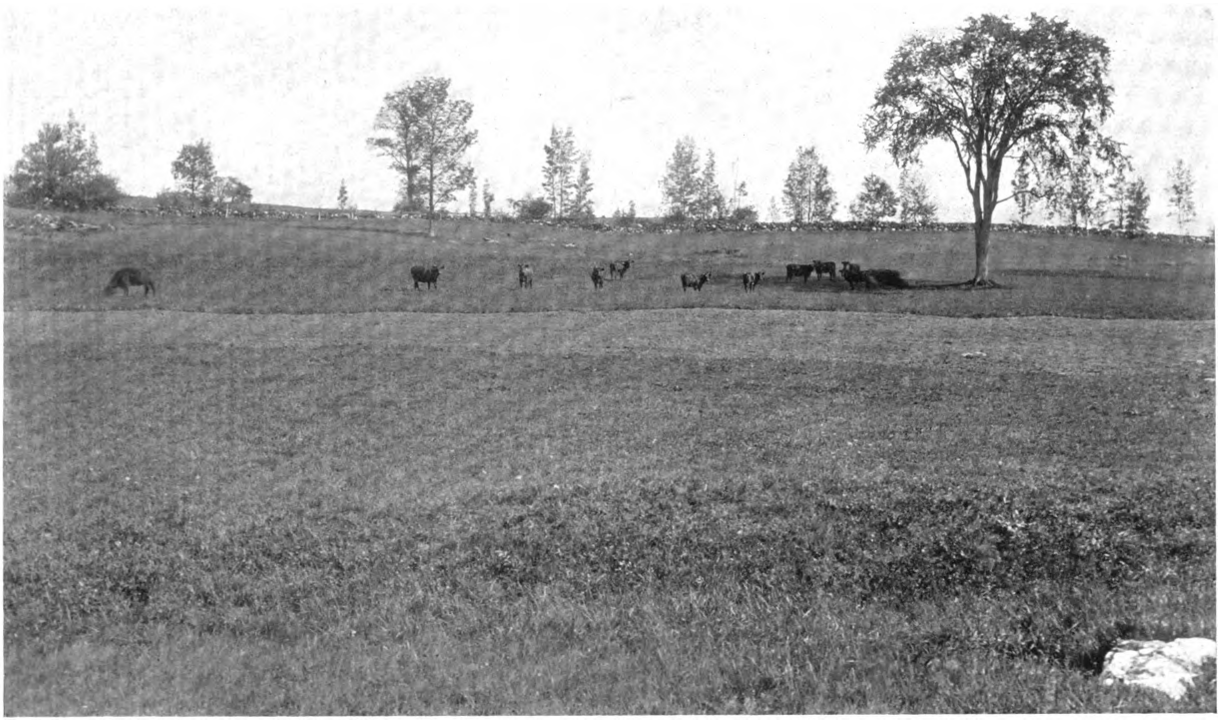

"Alongside a deserted weed-grown farmstead one may often see the estate of a thrifty farmer with wide clean fields and cattle resting beneath the elms; perhaps it is a renovated farm"

buildings and modern ways of farming will make many of these old granges profitable and attractive. Alongside a deserted weed-grown farmstead one may often see the estate of a thrifty farmer with wide clean fields and cattle resting beneath the elms; perhaps it is a renovated farm. How these old farms can be utilized, we hope to tell in future issues.

Into woodland, arable farms and summer homes, the abandoned farms of New England are disappearing. All of them, in time, will be made useful. The purchaser of the better farms need not be isolated. There are pleasant towns, clean and homelike hamlets and easy communication with the world. There is diversity and release in the landscape. The country is verdurous and green. There are mountains. There are long stretches of close-tilled valleys. There are tumbling brooks. There are springs in the hillsides from which the water is piped to the buildings, so that the windmill is a rarity. There are watering troughs along the roadsides. Much is said against the climate, and yet New Englanders are known to be long-lived and healthy. Our relation to climate is largely a mental attitude; it is determined by our point of view. There is no perfect climate. The people lead quiet lives, with less of the nervous bustle than one finds farther west; and he feels that these lives are deeper and richer thereby. In the old days the New England farmer lived on what he saved rather than on what he earned. The new day is come.

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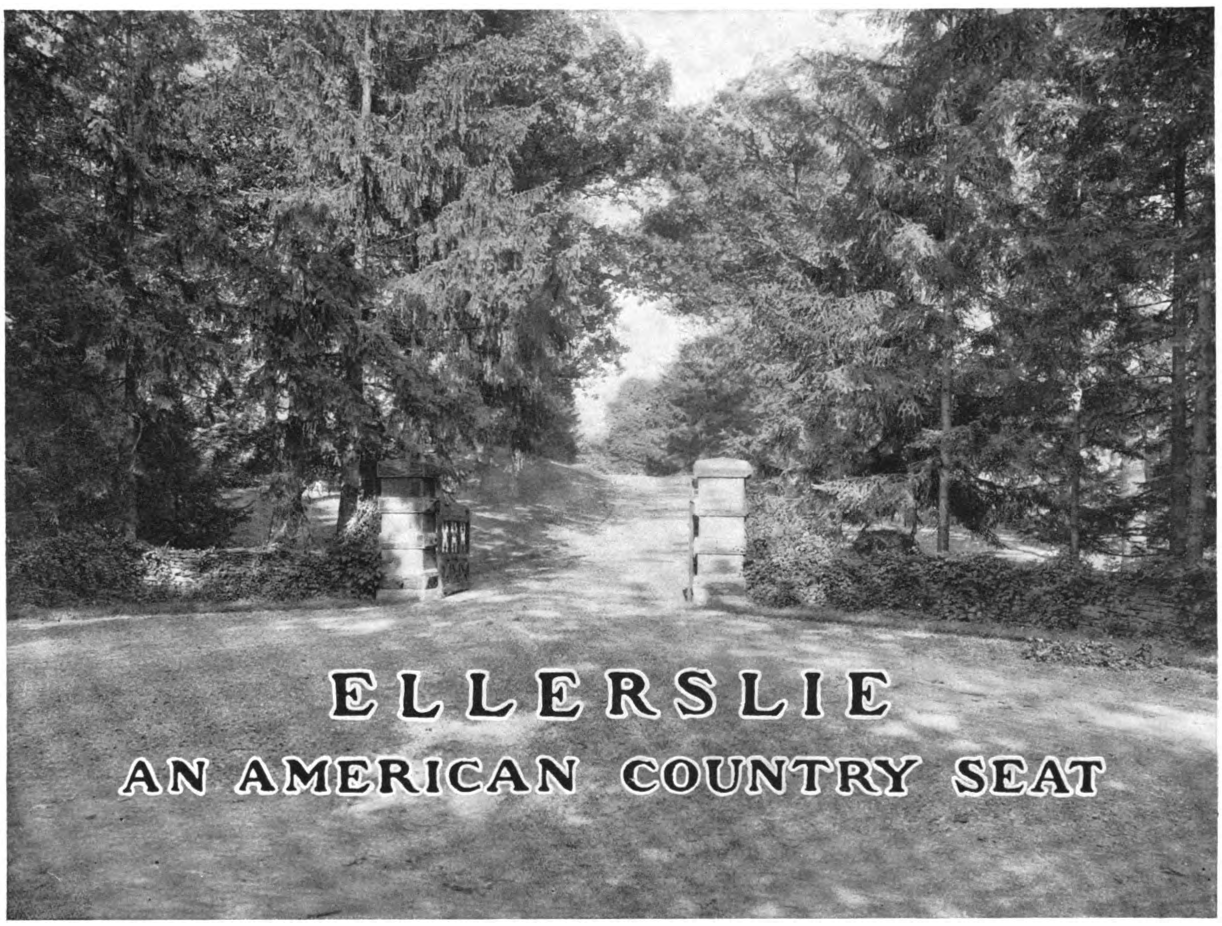

THE ESTATE OF LEVI P. MORTON—A REPRESENTATIVE OF THE BEST IDEALS IN COUNTRY LIVING

Photographs by HENRY TROTH, J. HORACE MCFARLAND and WURTZ BROS.

INSTINCTIVELY we judge a man's personality by the outward or physical aspects of his home. These outward features he may not have made himself, but they nevertheless reflect his type of mind, else he would not have chosen them. Walden is an index to Thoreau, even though Thoreau did not make Walden. In our choice of sites and scenery we express ourselves, quite as much as in the things we build. It is a pardonable curiosity that impels us to inquire how and where public men live. Their public service is the better understood and appreciated when we know the customary setting of their lives.

Levi P. Morton, Minister to France in the Garfield-Arthur administration, Vice-President of the United States in the Harrison administration, later Governor of New York, and long a commanding figure in financial and public affairs, has a country seat on the eastern side of the Hudson River, at the little town of Rhinebeck. The place itself is known as Ellerslie. Although a large estate, it is so secluded in the native forest that it has the retirement and individuality of an ordinary farm. It is Mr. Morton's desire to make the estate a genuine American farmstead of the better type, and to this end he places the management of it in the hands of a well-trained farmer who is a graduate of one of the prominent agricultural colleges. The breeding of cattle and the production of butter are the leading efforts; and these enterprises, with all the incidental undertakings, are carried out as painstakingly and as successfully, perhaps, as on any similar establishment in North America. In these enterprises, Mr. Morton takes the keenest personal interest, notwithstanding his many absences abroad and the varied public duties that have devolved upon him. "Would you like to see the place?" he once asked me. I wondered what part he would show me. He went at once to the fields where the cattle were grazing. I noticed that he examined the sward, and that his eye surveyed the wide sweep of the horizon.

The larger part of the great estate is in grass, for grazing and for hay, although corn and other annual farm crops are grown to a considerable extent. The dairy house is one of the best equipped in this country, and the butter has long brought fancy prices in the select New York clubs. The personal part of the estate comprises something like one hundred acres. Several miles of curving drives are covered with broken stone from a stone crusher on his own establishment. There is much woodland, so much, in fact, that Mr. Morton has considered the advisability of placing it under a system of regular forestry management. In these woods the wild game is protected; and in the glades the wild geranium and other wildings grow and bloom as they

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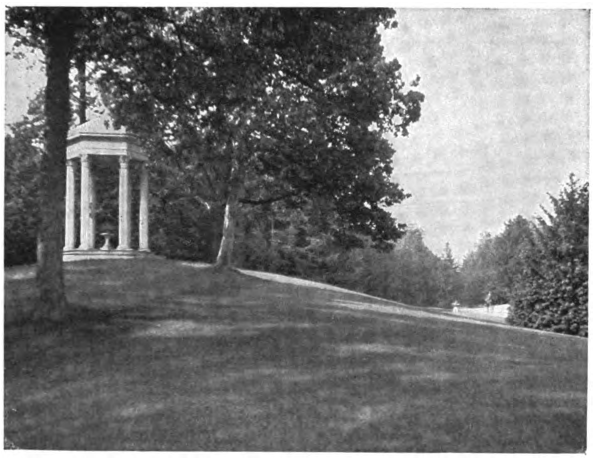
will. To the public, the grounds are open. There is nothing in the place to suggest the nabob.

The region round about has long been noted for its great estates. On the hills to the north of the little village is the estate of the Astors, in earlier days well known for its stables of trotting horses. Stretching away to the south and east is the great farm of Ellerslie, once the home of William Kelley, but for the last fourteen years the seat of Mr. Morton. To the south, even to New York city, ninety miles away, this eastern bank is embellished with magnificent estates of lands and mansions. The Hudson is in many respects the most interesting American river. Much broader than the Rhine, it flows with majestic bearing to the sea without once changing its course, lying in its upper reaches between long, low hills, and lower down breaking through the Highlands and flowing in stately sweep beneath the Palisades. Its landmarks and bolder portions are embalmed in the traditions and histories of our early days, and everywhere its banks express the individualities of the families who for a generation or more have made this region their home. The eastern shore is more conspicuous for its palatial residences than the western shore, for this side was early opened by the Hudson River railroad. Yet the western side is quite as interesting in its way, although it may be more plebeian. From the Northern gate of the Highlands at Cornwall, on the west shore, through Newburgh and Marlboro', and north to Highland and Esopus, is a famous fruit region, renowned since the brilliant career of Andrew Jackson Downing, and the more familiar and methodical labors of his brother Charles. This fruit region may be said to end at Kingston, where the mighty billows of the Catskills roll down to the edge of the valley. Across the river from Kingston and Rondout, and in full view of the domes of the Catskills in the west, is Rhinecliff, the station from which one rides a mile or two up the slope to Rhinebeck. Lying close against the little settlement at Rhinecliff is the thousand acres which constitutes the farm and summer home of Mr. Morton. Perhaps an English trap meets you at the station, and you at once find yourself in a cool and quiet highway between acres of oaks and chestnuts. On either side Mr. Morton owns the land. Presently there is a gateway at the roadside, and a neat winding drive leads off through the forest. You cannot help following it. You wonder that in a forest there should be such a trim roadway, winding in and out as if in a purposeless endeavor to find its way into the open country. Suddenly you come into a great open area, a succession of fields and nooks, bright with the closely shaven greensward and banked with forests and bold groups and lines of spruces. There is a bewilderment of attractions, but in the center of the great space, flanked by large trees and standing against the sky upon an eminence, is the palatial residence of Mr. Morton. From this eminence one looks far down the Hudson, sees the great Poughkeepsie bridge like a spider's web thrown between the hills, and then loses the river in



A temple among the trees at Ellerslie

"From this eminence one looks far down the Hudson"

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"Standing against the sky upon an eminence, is the palatial residence of Mr. Morton"

"Up into the woodland and out on the farm"

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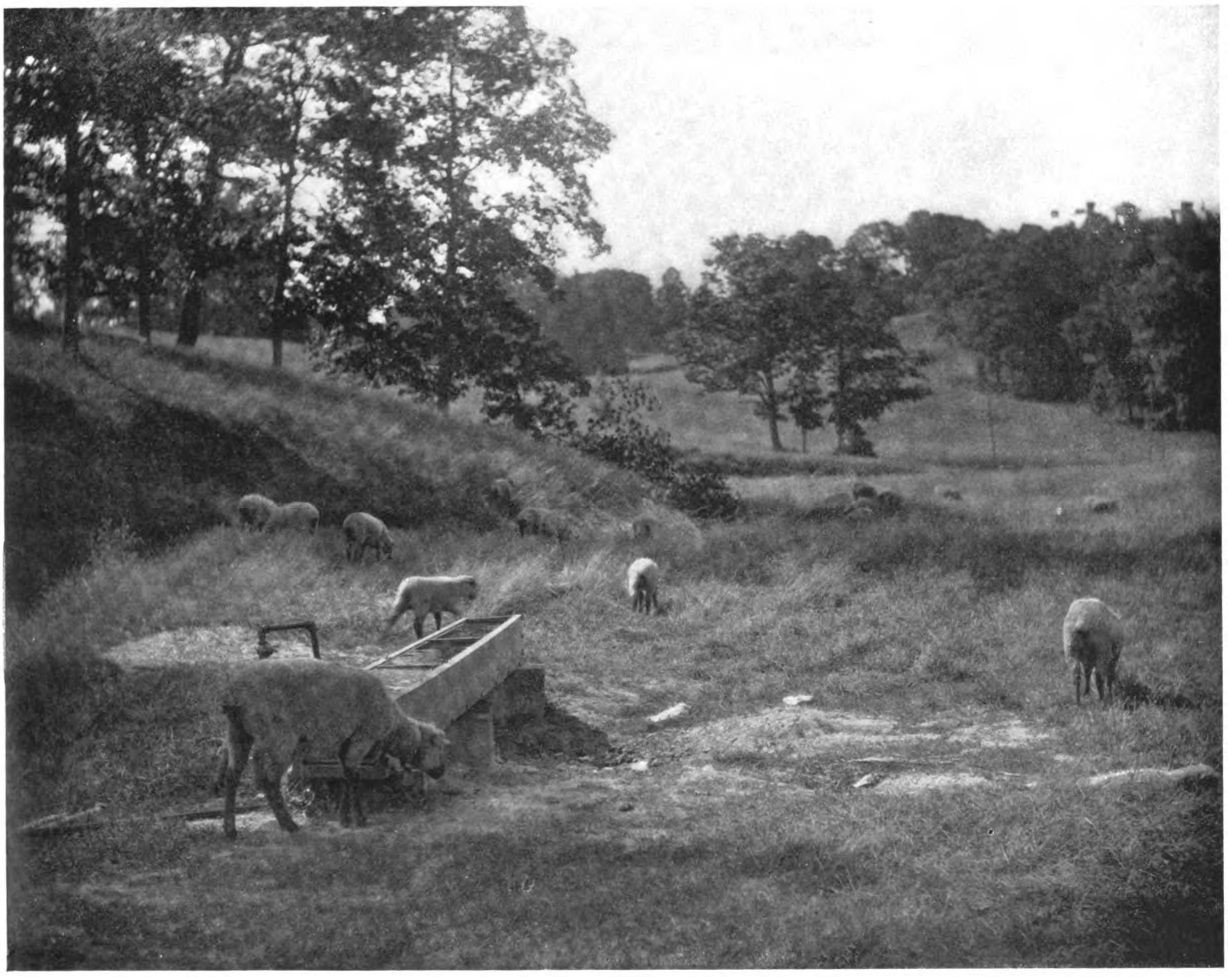
the blue spurs of the Highlands. To the southeast one looks out over a mirror pond and across receding waves of greensward, between fleets of oak and spruce, to the rim of hills against the horizon. At the west and north the woods shut in the space, but deep bays run down the slopes, and the woods are open and glade-like. The natural beauty of the place impresses one at a glance, for not only do the offscapes add a majestic fascination, but the undulations and dips of the ornamented parts of the estate are among the best that one can see even in this Hudson valley. The planting, like the undulations themselves, is largely spontaneous; yet the nicest taste must gaudy planting which is such a common feature of large estates; and it is evident that the landscape is more important in the eyes of its owner than any mere trickery of conventional designs in bedding plants and statuary. There is much bright temporary planting, to be sure, but most of it lies against the larger groups, or fills some minor space: it is wanted less for itself than for its effects in the general composition. The pond, which lies beneath the mansion at the southeast, extends to the eastward, enlarging its borders between sloping banks of greensward and second-growth timber, and is finally lost, some forty rods from its lower end, in a



"Flocks of sheep range over the rolling pastures"

have been exercised in the saving of these plantations and the removal of others. As a rule, the boldest projections of the woods stand on the little eminences, and the hollows are bare of planting and appear to recede into the forest. All this has emphasized the undulations of the land and the irregularities of woody borders, and has made the framework of a picture which any landscape-gardener would admire. This, in fact, is the peculiar and transcendent merit of the place from an artistic point of view—the bold and stately swing of the outlines The artificial planting is mostly well adapted to the genius of the place, for it is made up of strong, bold trees, thrown into heavy masses against the borders. There is very little of the scattered, purposeless and tangled copse of native shrubs and trees. The grouping on the borders of the lake is bold, yet soft—a pleasing combination of irregular planting and the richness of a young growth. Upon one of the grassy slopes is a boat-house, and above it is a bridge with strong architectural features, over which a carriage-road leads up into the woodland and out on the farm.

Altogether, the place is of a type too rarely seen in this country. It comes very near to the landscape-gardener's ideal of having been touched so lightly by the gardener that the hand of man is scarcely visible in the general design. It is plain that this style of landscape suits Mr. Morton. Always a man of large affairs, of calm disposition, managing his interests quietly,

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"His herd of nearly two hundred Guernseys is one of the best in the country"

he finds comfort and relaxation in broad and restful landscapes, rather than in the more florid and fitful styles in common use. This home area is also in keeping with the remainder of the estate, which is mostly devoted to pasture ranges. Mr. Morton's choice in farming is stock, and his herd of nearly two hundred Guernseys is one of the best in the country. Flocks of sheep range over the rolling pastures. The poultry-houses are very extensive, and formerly some 5,000 chickens were hatched and fed, largely for broilers for the New York market. In late years, however, the rearing of poultry on a large scale has been discontinued, as it did not produce commercial results. It is the desire of its owner that the management of the farm should follow as closely as possible along the lines of the most profitable conservative agriculture of the day.

The purely horticultural department of Ellerslie, while extensive, is designed only to supply the family with flowers, fruits and vegetables. A typical English vegetable-garden, with the different plants in prescribed areas, and a border of grapes and ornamental plants, are certain to interest the visitor. Glasshouses for flowers and fruits are prominent features of the place. Lately the show of chrysanthemums has been of unusual merit.

It is an auspicious circumstance that the qualities of mind and heart which make the statesman can also make the agriculturist. Mr. Morton has wrought his individuality into the farm at Ellerslie, and the place will remain an integral part of his life and reputation.

"The dairy house is one of the best equipped in this country"

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PLEASANT HOMES AND GARDENS

IN these pictures are shown various country homes and grounds mostly of small expense and easy maintenance. They illustrate some of the ways of making a country place attractive without so much effort bestowed on the detail as to render it laborious and artificial. With the exception of the California view on this page, these places represent the open-lawn idea of arrangement with heavy planting about the sides. The California place represents the flower-garden idea, a species of lay-out that is in keeping with the climate and surroundings, where greensward is impossible without much expense of irrigation. In all these places there is an absence of sheared trees and hedges, and of other mere formalities. There are free-growing borders, abundance of flowers, variety of form and foliage, all interesting and restful because nature-like. We do not discourage formal effects in gardening, for they may often be used to the greatest advantage; but they are special adaptations of the gardening impulse rather than general, and they should be attempted only after much study of the particular conditions to be dealt with. The open lawn and border planting is easily managed, and the main idea combines well with nearly all suburban and country places, but the formal gardening harmonizes with relatively few establishments, and it is likely to be merely fantastic or even incongruous in the hands of a novice. Moreover, it is decidedly expensive, for great numbers of the selected trees or shrubs must be planted at first without regard to ultimate growth, if a certain effect is to be obtained. The lawn type is easily cared for, and is not necessarily very costly; the formal arrangements need much attention if good results are to be attained, and there is an immediate loss of effect if elaborate care is relaxed.

A picturesque garden home in southern California

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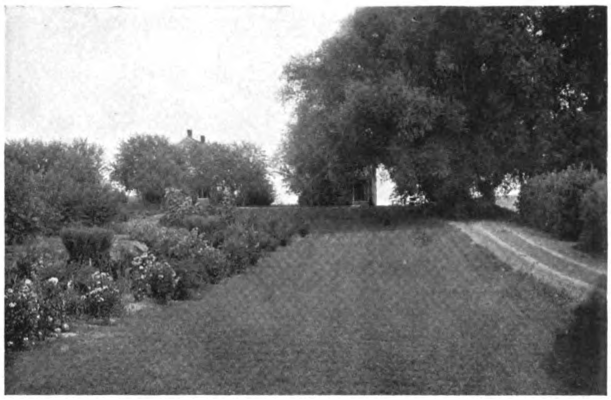
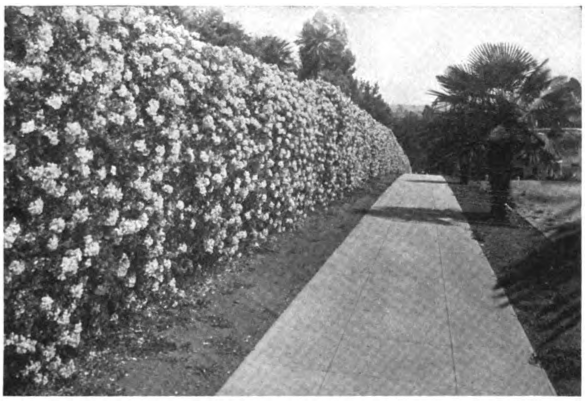
Bushes and trees make the old house homelike



A roadside lawn and garden

An artistic suburban home on Long Island, New York

A good place for wallflowers, against a background of trees



A street wall of geraniums near San Francisco

A horticulturist's home in Georgia

A home in the Shinnecock hills, Long Island

A New York farm home, with house made of native rock

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SHRUBBERY IN THE HOME GROUNDS

HOW TO SECURE THE BEST RESULTS

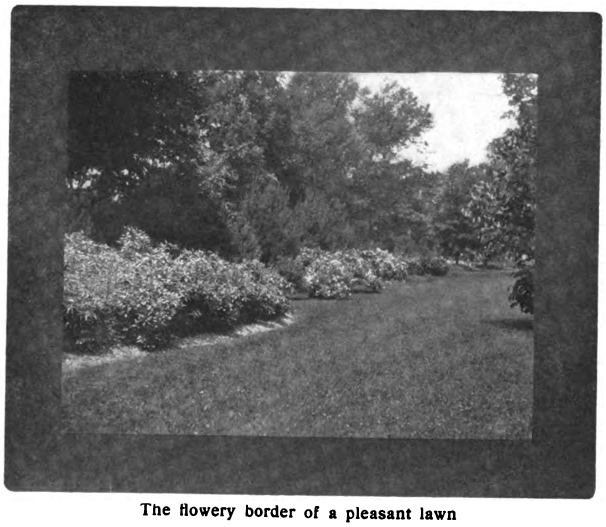
By SAMUEL PARSONS, Jr.

IN these brief remarks it is not my purpose to enter into the minutiæ of lawn planting and ornamentation, but rather to note a few of the leading principles in this branch of landscape gardening—principles which should underlie any work of detail.

First: the shrubberies of a place give it picturesqueness; the trees confer distinction and grandeur. Shrubs, or bushes, or half trees—for the dividing lines between them are not very definite—have a marked and important function in any scheme of lawn planting. They should form the intermediate feature of lawn effects, connecting the different parts of the general mass,—first the trees, then the shrubs, then vines and herbaceous plants, and then grass. The beauty of a varied sky line produced by the intermingling of trees and shrubs, as shown in the accompanying illustrations, should always be sought. There may be circumstances in which shrubs alone should be used, and, in not a few situations, groves of trees, containing no shrubs, are felt to be specially suited to the surroundings, but the mixed tree and shrub group most frequently commends itself in the improvement of home grounds.

A little lawn set in foliage

The mistake of setting shrubs under old, long established trees should not be made, although unfortunately it is common; and we see shrubs like Rhododendrons and Privet misplaced in this way. Undoubtedly they do better than most other shrubs under these difficult circumstances, but they seldom prove permanently successful; while on the other hand, shrubs planted simultaneously with trees nearly always do well for a long time, certainly until the trees attain great size.



The flowery border of a pleasant lawn

A further variety of effect should always be secured in the exterior boundaries of a shrub group bordering on the lawn, by waving its outlines in long curves so as to make bays and promontories of foliage, as shown in the illustrations. Again, variety and grace of line will be augmented by slightly swelling into mounds the space of earth wherein the shrubs are to be planted, and, somewhat strange to say, they will survive better, and grow better, when treated in this way. Moreover, the effect on the entire scenery of the rolling surface rising up from the general expanse of the lawn, is always fine; and the practice of cultivating in beds of open soil, instead of allowing the shrubs to grow singly in the turf, is a good one.

Where things grow as they will

In selecting shrubs for grouping on the lawn, it is specially important not only to have vigorous and hardy specimens, but to employ varieties which suit their surroundings, and which are in sympathy with the foliage about them. For instance, on the border of a lane, or in the neighborhood of outlying plantations, one would naturally expect to see such shrubs as *Ligustrum Ibota*, *L. intermedium*, and *L. Regelianum*, the white dogwood, *(Cornus florida)*, and the bushy dogwoods, *(C. sericea, C. alternifolia, C. alba)*, *Viburnum dentatum*, *V. prunifolium*, *V. tomentosum*, common barberry *(Berberis vulgaris)*, *Callicarpa Americana*, *Clethra alnifolia*, *Itea Virginica*, *Lonicera fragrantissima*, *Lonicera Morrowii*, *Andromeda arborea*, *Rhodotypus kerrioides*, and *Spiræa opulifolia*, and the American

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A soft and easy-sloping lawn bounded by trees

thorns (*Cratægus Crus-galli*, *C. coccinea* and several others); while on the other hand near the house, and in domestic surroundings, other shrubs find satisfactory abiding places: Weigelas, *Forsythia Fortunei*, Altheas, Hydrangeas, California Privet, Philadelphus, *Spiræa Thunbergii*, *Berberis Thunbergii*, Syringa or Lilac, *Viburnum plicatum*, and the beautiful flowering apples and cherries and peaches.

A note of warning should be given about the common practice of clipping the tips of the branches of the shrubs into formal shapes, thus destroying the natural character of the species. Planting trees and shrubs too deep, and using the pruning knife on them too freely and often, are common faults of the horticulture of the present day. Shearing is to be avoided.

FOR ALL THE BLESSINGS THAT ARE MINE

By ROBERT LOVEMAN

I humbly thank the gods benign,
For all the blessings that are mine;

My books, my garden, and my dog,
For mountain, meadow, fen and bog;

The morning drips her dews for me,
Noon spreads an opal canopy;

Home-bound the drifting cloud-crafts rest,
Where sunset ambers all the west;

Soft o'er the poppy fields of sleep,
The drowsy winds of dreamland creep;

What idle things are wealth and fame,
Beside the treasures one could name?—

I humbly thank the gods benign,
For all the blessings that are mine.

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A HOME-MAKER'S YARD

THE SIMPLE ART OF LETTING THINGS GROW

By FRANCES COPLEY SEAVEY

THERE are many good yards, but there are many more that are disappointing. Few are ideal. The ideal yard must have seclusion, and the ideal means of securing it is by the use of shrubbery. Ours is certainly poor as judged by conventional standards. The sward is by no means beyond criticism and an account of the specific causes for its condition together with a story of the struggles to overcome these peculiar difficulties, would fill a book. But, after all, it is a good place,—good to look at and good to live in. Everything has been dug up at least once within seven years and set somewhere else—that is, everything except the old trees—and most of the things have been moved several times within that period. They are likely to repeat the experience. That is half the fun of having a little place.

The Japanese snowball in bloom

But if it is so imperfect, why is it satisfying? Largely because it is usable, and because the nondescript collection of growing things grow for dear life very much according to their own sweet will. Vines are sometimes diligently instructed (at the opening of the season) in the route they are to follow and thereafter are allowed to travel where they please. They are much prettier so. Even climbing nasturtiums are much better if merely given a slight hint as to where they are wanted by being sown in a particular location, and then left to fill their space as they themselves elect. Vines know much better what to do than any one can teach them. Then no one nips the ends of the shrubbery branches, nor lops the lower limbs of the strong, vigorous young trees. The inclinations of the plant inhabitants of the place are not constantly thwarted. The human residents do not object to character and individuality in these agreeable members of the family. If the plants were sheared, every tree and bush might be a duplicate of every other of the same kind and age. Then there would be hard monotony where there is now agreeable variety. If things crowd, one shrub or tree may be removed without spoiling any plan of symmetry or interfering with any hard and fast design. The plants seem to be grateful for their freedom. Some of the old trees exhibit a rather too monotonous tendency to bare trunks. It is not their fault. They are being brought into relation with other things by being shielded with vines and shrubs, and they take very kindly to the innovation. In time they will have adapted themselves fully to the place.

For the rest, there is variety of light and shade; there is seclusion; there is enough irregularity of line and mass to give pleasant mystery; and there is always some flower-spangled shrub or vine, or plant, or berry-laden bush, some flush of changing color, as an accent of interest. Snowdrop and scilla and crocus star the fresh spring grass; violets carpet the ground under the shrubs; quaint Jack-in-the-pulpit comes with the early spring; clumps of narcissi amplify the sunshine; flowering shrubs take their turn as vases or fountains of bloom; dazzling oriental poppies flame out and are gone; stately irises rise from the mold; there are roses, creeping, climbing and shrubby; masses of ferns fill shaded nooks, fresh and cool-looking in midsummer; honeysuckles and purple clematises look in at the windows. There is a tumbling spray of small-flowered clematis blossoms; there is a merry fusillade of the witch hazel at one season and the elfish toss of its yellow curls at another; there are at last the dark silhouettes of evergreens against the pure lawn covering of winter.

A fringing border of deutzias

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THE LIFE-STORY OF A FROG

By MARY ROGERS MILLER

"Twenty froggies went to school
Down beside a rushy pool,—
Twenty little coats of green,
Twenty vests all white and clean."

SO sang the primary school a quarter of a century ago. Such a picture of a school in frogdom was cool and refreshing to think on, and it mattered not that the picture failed to agree with the facts in the case. We children had seen frogs—oh, yes!—and polliwogs in our own "rushy pool" and had envied them their privileges. No song could make us believe that a stern and irresistible fate forced them daily into shoes and stockings and starched collars and sent them to school. But it was a pretty notion to pretend that there was a school where diving and swimming and leaping were taught to young frogs. And how much more rational was their daily program than that we followed wearily in the warm spring weather!

Times have changed. In these latter days polliwogs and children go to school together. The rushy pools and roadside ponds are visited by scores of young naturalists armed with net and pail, and many a young tadpole has been brought up by hand within the narrow confines of a glass jar. The children have discovered the source of information on the subject of frogs. Grown people are less fortunate and often shock their own children by a lack of knowledge on the simplest subjects. It behooves us then to instruct one another and to imbibe some proper knowledge of the frog and his history.

Frogs are often confused with toads and tree-toads. These animals belong to three related, but distinct families. Of the frogs proper there are numerous species, including the giant hoarse-voiced bull-frog, which is said to attain a length of twenty-two inches, the leopard frog, the green frog and the wood-frog.

All these are found in the ponds in spring, whither they go, if not there already, to deposit their eggs or "spawn." With the efficient help of true toads and tree-toads they make up the nocturnal orchestra of the ponds and marshes. Whether the nights are thus made hideous or melodious depends entirely upon the audience. The orchestra is in tune with nature. What if a few strong voices sometimes drown out the fainter ones? These are soloists engaged for the season. In a month or so they must give place to the rasping katydid and the piping tree cricket.

By following the direction from which the voices come, one finds some such place as is illustrated at the top of page 20. Could any spot be more silent? Ah! that is because of a noisy approach, conversation or splashing of water. One must needs sit down on a log and become a part of the landscape. Then will the music begin, perhaps with a bass solo. A few trial notes, then, gathering volume, it will soon wake the echoes, *Zoom, zoom, zoom, zoom!* Resonant, booming, manful,—it is worth going miles to hear.

A frog's egg, when new-laid, looks like a small black bead. Each egg is surrounded by its own transparent jelly-like envelope. Great numbers of these are found together, surrounded by a quantity of the jelly. The mass is often supported in the water by being attached to some weed-stem or submerged branch of a tree. The young are abandoned by their parents at this stage of their existence. As the sun warms the water the eggs feel its quickening force and development begins. In the course of a week or two the tiny tadpoles squirm free from their envelopes and swim away into the pond. They are now true aquatic animals and, if removed, would die as quickly as one of us would if forced to exchange places with them. Unlike their neglectful progenitors, they prefer a vegetable diet and nibble away contentedly upon whatever soft decaying leaves they find in their wanderings. A whole pond to circle about in must seem a mighty big world to a polliwog newly hatched from a thimbleful of jelly. What adventures, what hairbreadth escapes, what boon companions he meets with!

The polliwog has no family ties. He wots nothing of brothers and sisters. All polliwogs look alike to him. The tadpole has no bringing up. He goes to no school save that of daily experience. To-day a fish may teach him how to dodge or his own grandfather give him a lesson in deep diving, but in both cases it is to escape making a meal for his teachers that he dodges or dives. The main business of the day is eating—or being eaten. If he escapes the latter for six weeks or two months the common frog finds himself possessed of two hind legs—later of two front ones. The bull-frog develops more slowly. His broad flat tail, so valuable in early youth, stays on, and on, until it is a wonder that he does not in the pride of his young froghood take measures to dispose of it. Externally, the tadpoles in the picture at the bottom of page 20 are frogs, except for their useless tails. But for these badges of youth, could they not leap away with others of their kindred to hunt insects on grassy banks, or sun themselves "with arms akimbo" on quiet lily-pads?

It is just as well that they must wait, for inside their shiny wet coats changes are going on which will fit them for the higher sphere. Lungs for air-breathing are fast replacing the gills which did duty in the tadpole stage. The young frog frequently pokes his nose out of the water as his lungs grow more lung-like, to try them. The mouth, too, must widen and the eyes grow larger and more bulging. When all is complete, the tail will no longer stand in the way.

Did you ever watch wearily for a tadpole's tail to drop off? The children of to-day are familiar with the gradual absorption of the tail and can even tell the story of how the "white blood corpuscles carry the material which had formed the tail away little by little to build up other parts of the body." The young frogs at the top of page 21 show some of the intervening stages between the tadpole and the frog.

Frogs do not shed their tails; neither do they rain down, the daily press and the "oldest inhabitant" to the contrary notwithstanding. They all pass through the gradual development from the egg to the adult. The bull-frog remains a tadpole for at least two years, while some of the smaller frogs reach the adult state in one summer. Much is yet to be discovered concerning their habits and developments.

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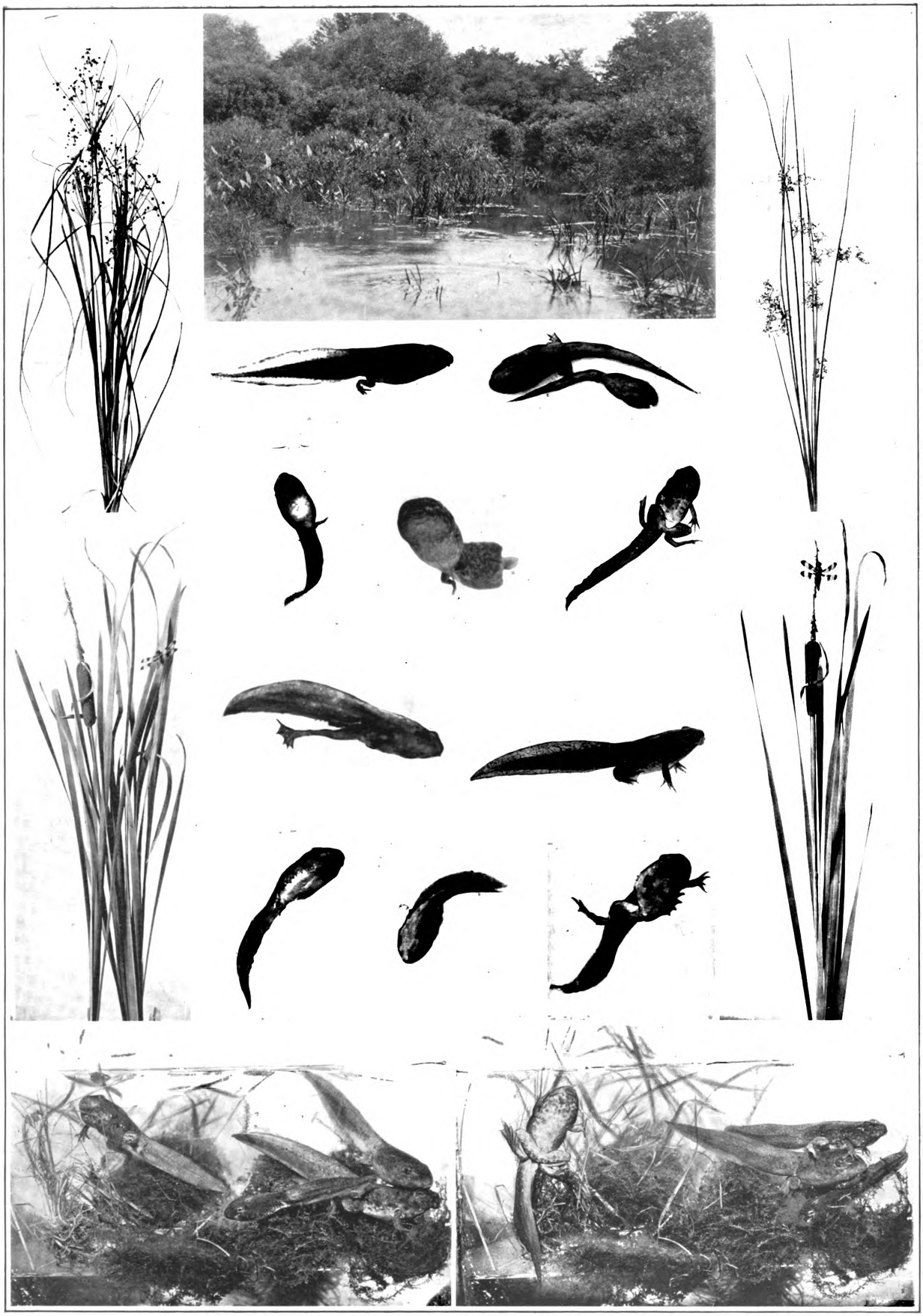

THE PICTORIAL BIOGRAPHY OF A FROG

The story of his life from tadpole to adult, showing that, as he grows, the tail is gradually absorbed and legs appear

(See page 19)

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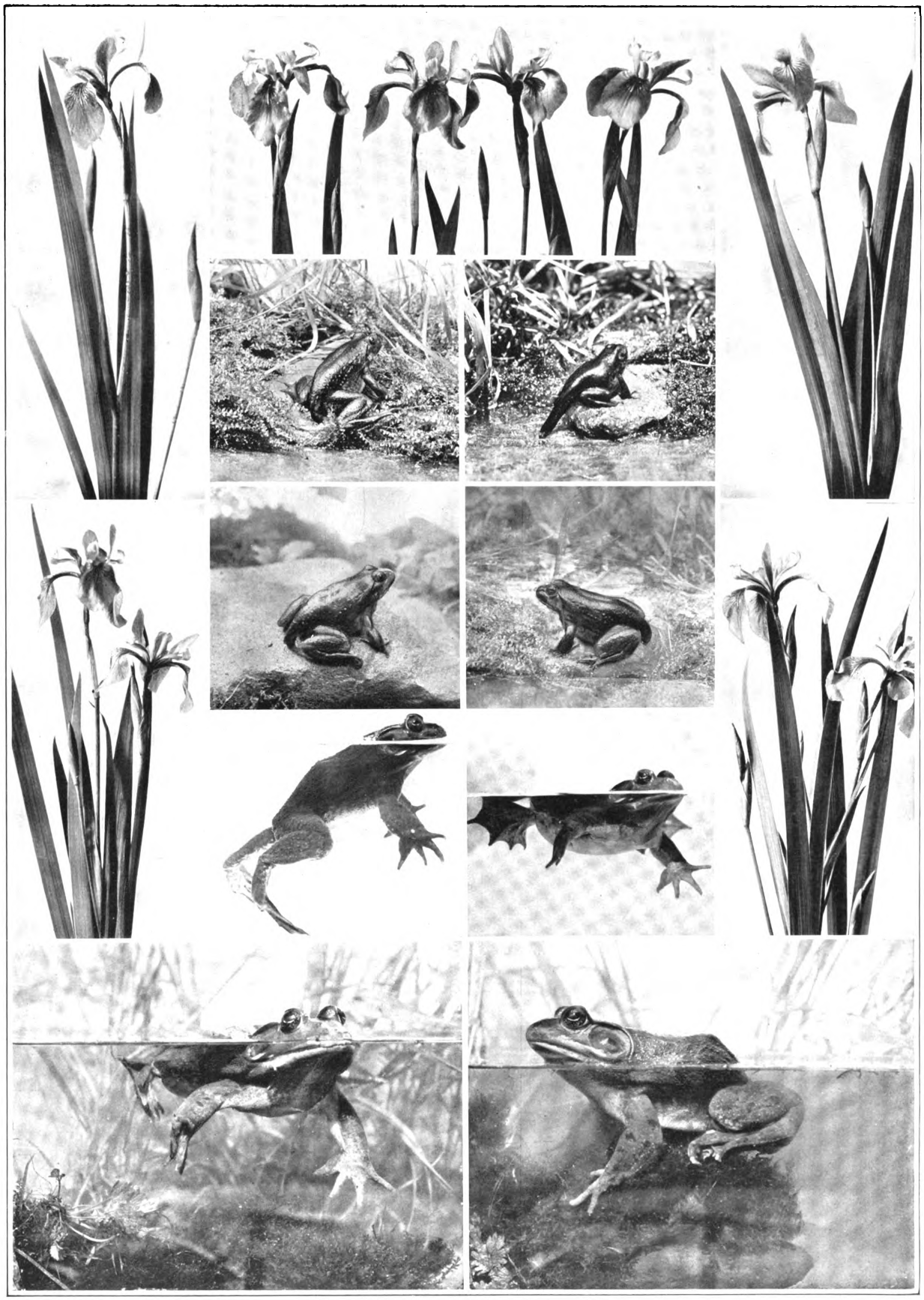

AS PHOTOGRAPHED FROM LIFE BY A. RADCLYFFE DUGMORE

The egg masses could not be satisfactorily photographed in the water as the light shines through the jelly which surrounds the small black eggs

(See page 19)

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LA BELLE FAMEUSE

THE DOMESTIC APPLE OF THE CANADIAN FRENCH, AND ITS HISTORY

By F. A. WAUGH

THE New York marketman calls it the Snow apple; and the man who grows it for the New York marketman calls it "Fay-*moose*," or "*Faim*-use," with a relishing twist to his tongue and the notion that he is talking French. Old-time New Englanders used to call it the Chimney apple, in which name there was suggested the historical circumstance that the variety reached New England by way of Lake Champlain, where it was first planted at Chimney Point. But in its home country the appreciative habitant knows it as "*la belle Fameuse.*" He cherishes it, as he has every reason to, amongst the household deities. It is the sign and substance of the domestic life,—the best product of the family garden.

"Ole Docteur Fiset," celebrated in Drummond's poem, had a typical French-Canadian garden of the old-fashioned sort:

> "Dat house on de hill, you can see it still,
> She's sam' place he buil' de firs' tam' he come;
> Behin' it dere's one leetle small jardin,
> Got plaintee de bes' tabac Canayen,
> Wit' Fameuse apple an' beeg blue plum."

That "beeg blue plum"! There's another story in that; but let us stick to the Fameuse apple. Such a poet as Drummond, with such an eye for local color, did not mention these characteristic features of Docteur Fiset's garden merely for the sake of a rhyme. And when Napoléon, to quote again from Drummond's poems, talks about "*Le vieux temps*," his old heart warming for the rosy girl who rode home with him from the soirée in the burleau, the comparison is not made by accident;—

> "Black hair, black eye, an' chick rosée dat's lak wan Fameuse on de fall."

La belle Fameuse came to Canada with the Frenchman and has shared his fortunes from the first day to the present. Wherever the French missionary went he carried the apple seeds,—up the St. Lawrence, to Kingston, Ogdensburg, Detroit, and even into the valley of the Mississippi;—and wherever the French settler followed the trees flourished near his house,—

> "Behin' it dere's one leetle small jardin
> . . . . . .
> Wit' Fameuse apple an' beeg blue plum."

Herein is presented a striking fact, almost unique of its kind. The ordinary sorts of apples are reproduced by grafting, not by planting the seeds. The men and women who moved west from Massachusetts and Connecticut often carried with them the seeds of their favorite Baldwin trees; but no race of Baldwins grew up to cheer them in their western homes. Johnny Appleseed, they say, wandered up and down the wild western territory of the Ohio valley years ago, carrying apple-seeds in his pockets and sowing them everywhere he went. That is one of the prettiest stories in American history, and probably true; but at all events Johnny Appleseed's orchards came up to all sorts of red and yellow and green apples in the most distracting mixtures. The Spy, the Greening, and the Newtown Pippin, like the Baldwin, all failed to duplicate themselves when grown from seeds. Not so Fameuse. Here was an apple which "came true;" and the early French Canadian colonist, who practiced nothing better than Johnny Appleseed's method of orchard planting, was still able to carry his favorite variety with him,—*la belle Fameuse.*

At the present day, when homesteads have grown old, when farming has developed in every direction, when gardening has become more refined, and when apples are shipped to all the domestic and foreign markets, Fameuse still dominates the gardens of the St. Lawrence valley. Only now the gardeners have grown more critical. The comparative constancy of *la belle Fameuse* no longer passes unscrutinized. When the wayward young trees come up, with more or less self-assertion, bearing fruit of sweeter flavor, or showing a more striped cheek than usual, they are not called any longer by the family name. They have new names of their own; and many of them enjoy separate and creditable mention in the books. They are still recognized as offspring of *la belle Fameuse;* and that honorable old pioneer has the blessing of a large and respectable family gathered about it, like its friend the habitant, whose

> "Ten garçon an' t'orteen girl was mak' it twenty-t'ree."

"Dat house on de hill"

The first Fameuse was apparently known to the colonists between Montreal and Quebec about the year 1650. Many efforts have been made to trace its origin back to France, but it now seems highly probable that it was born to the soil. Since that early day it has had,—a circumstance peculiar to its kind,—many rebirths throughout all the settlements of Canada and the northern states. All the while it has clung to the homestead and to the company of the husbandman like the faithfulest of the domestic animals. The biography of *la belle Fameuse* is, therefore, of the highest historical value, for here we have

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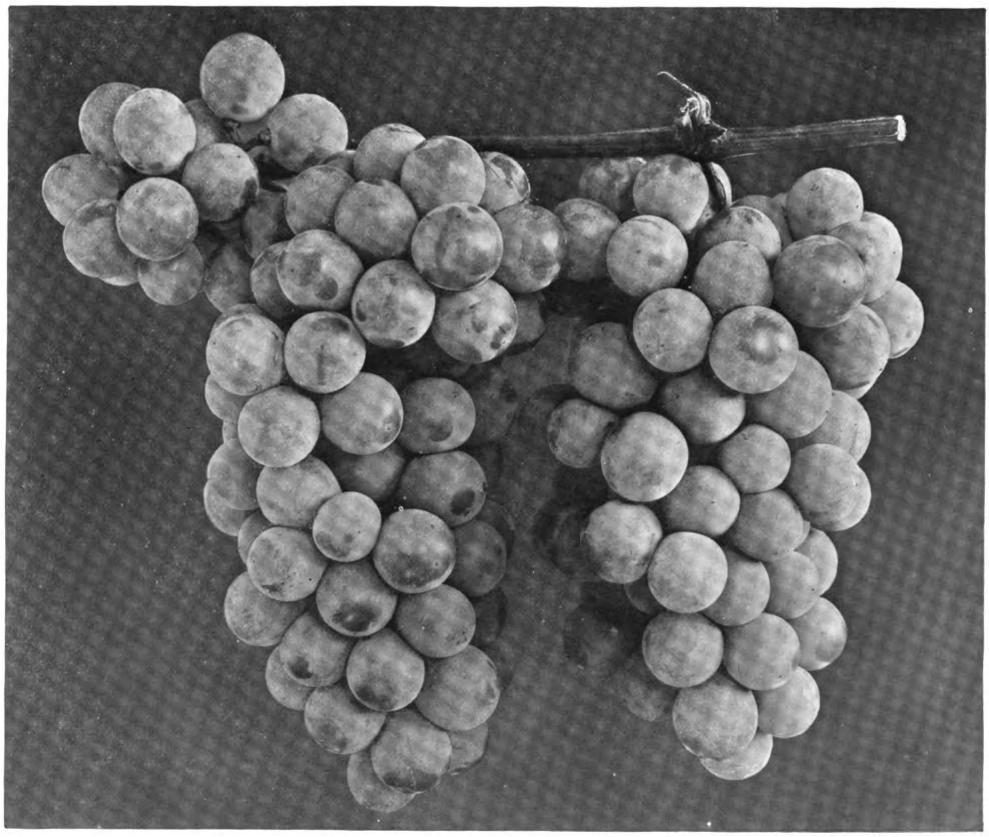
something which has been continuously, and from the first, an intimate part of the domestic life of an important people.

This is an unworked field in which history might be studied to great profit. Why not study history on the farms and in the gardens rather than on the battlefield and in the chambers of political intrigue? For myself, I care less to hear about the intrigues of Queylus or the bloody raids of the Iroquois than of the homely and beneficent life of "*la belle Fameuse.*"

Between the rows of La Belle Fameuse

The name Snow is spurious, and an insult which ignorance has offered against all the sentiment of an honorable domestic past. This name Snow, referring to the very white flesh, is American, Yankee, commercial. Nevertheless, the pomologists have tried, by implication at least, to put the responsibility for it upon the Frenchmen. They cite the other synonym, "Pomme de Neige," which is certainly French, and which means snow if it means a thing. But, bless you! a Frenchman never called *la belle Fameuse* by any such name as Pomme de Neige, much less by the Yankee name Snow. That Pomme de Neige was brought from France by the American pomologists themselves and applied to *la belle Fameuse* for no other reason than that it corresponded with the name Snow. The Pomme de Neige of France and the Schnee Aepfel of Germany are different things altogether. The name Chimney Apple was of local origin and local use in Vermont, as already told. Where the name "Sanguineus," another synonym, ever came from, nobody knows. That race of men and women who for two and a half centuries have cherished this apple in their gardens and who have almost given it membership in their families, know it always and only as *la belle Fameuse.*



Niagara, now the most popular commercial white variety of the native grape type

It is planted in large areas, particularly in western New York, where there are many vineyards of one hundred acres and over

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WHAT THIS MAGAZINE STANDS FOR

THERE is a growing interest in country life: this journal would be its representative.

The interest in country life is various. Many persons are drawn to it because it is release from the city. Sooner or later every busy man longs for a quiet nook in the country where he may be at peace. He wants a country residence. Every year the outflux to the country is greater and farther reaching. The city may not satisfy the soul.

To others, country life is nature for nature's sake. It is contact with living and growing things. The spirit of nature-love, under one name or another, is taking firm hold on our people. It is the spirit of pleasant inquiry, of intellectual enthusiasm, of moral uplift. Its associations are with things that are clean and true.

Others, by choice or chance, are permanent country residents. They are farmers or horticulturists, or they are professional or business men who live in villages and rural cities. Spread out a map of North America. Note the mere dots that represent the cities; contrast the immense expanses of the country.

Only when we love the country is country life worth the living. Contentment and satisfaction of soul are beyond all questions of pecuniary reward. Ultimately, they dominate all things. We would clasp hands with every person who loves the country, and we would engender that love in persons who love it not; and thus would we come into sympathy with all mankind.

. . . . . .

We would preach the sermon of the out-of-doors, where men are free. We would lead the way to the place where there is room, and where there are sweet, fresh winds. We would relieve the cramped and pent-up life with visions of things that every one may have for only the trouble of opening his eyes. We would tell him where the wild geranium blows and what it means. To the person who resides permanently in the country, we would give a broader view and a closer intimacy with what he has. We would show him the dandelion. We would put him into harmony with his environment.

We intend that our work shall be more than sentiment. We believe that we have also an economic and social mission. The cities are congested; the country has room. We would check the influx into the cities by opening the eyes of the country man to see the country. We would show him his advantages. The abjectly poor live in the cities. One does not starve in the country.

We shall not make a technical agricultural or horticultural journal; yet we stand for the elevation and betterment of farming in its best and broadest sense, because the fundamental thing in a self-sustaining country life is agriculture. We want to encourage home-building outside the city, and we shall give instruction in those kindly agricultural arts that have to do with the making of a country home, whether the home is a summer residence, a farmhouse, a rich man's mansion or a workman's cottage. We shall make sketches of farms and gardens. We shall endeavor to portray the artistic in rural life.

We desire to develop the beautiful spots in our country. We would lend our influence in the preservation of natural scenery and historic places. Whilst we are concerned primarily with country life, we shall consider it within our sphere to discuss all matters of urban improvement that have to do with parking and planting. We desire to coöperate with improvement organizations, historical associations, horticultural and agricultural societies.

. . . . . .

To attain all these ideals, we must make a magazine that is artistic and that enlists the best literary talent of the day. We shall endeavor to make the publication worth reading and preserving. It will also be a journal of record. It will discuss the rural progress of the time. It will make note of the current writings on nature and farming, both American and foreign. It will take particular account of horticultural matters, since these things usually are intimately associated with the home. Connected with the editorial management are greenhouses and a farm, from which reports can by made on the novelties in plants. It will also be a journal of comment. It will express an editorial opinion on the movements, political or otherwise, that intimately affect country living.

There is intrinsic worth in the country. Many of us see the country through stained-glass windows and admire the color for a moment, then forget. "Country Life in America" is edited in the country. It is a country magazine for the country man, and for the city man who wants to know the country; it is not a city magazine that sees the country afar off and takes it for granted. It is not a vacation journal. We hope that the smell of the soil will be on its pages.

. . . . . .

What, then, is our field? To extend and emphasize the interest in country life; to point the way to nature; to portray the beauty of the land that lies beneath the

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open sky; to lure to health and relaxation; to stay the congestion of the city; to raise the tone of American farming; to offer specific help and advice to the home-maker, the vacation-seeker, the gardener, the farmer, the nature-teacher, the naturalist; to take account of current rural events, to record progress, and to make note of the literature; to make the country the complement of the city; to sound some sweet and joyous note that shall relieve the tension of our eager lives.

OUR CONSTITUENCY

More than half the people of North America live in the country. Bulletin 65 of the Twelfth United States Census (1900) shows a population in "incorporated places" of 47.1 per cent of the total. The remaining 53 per cent lives in the open country or in small hamlets and villages. The "incorporated places," in which the 47 per cent lives, include rural villages as well as cities, and many of these persons are essentially country people. Only 37.3 per cent of the population of the United States (Bulletin 70) lives in places of 4,000 people and upwards.

How many of our people are farmers it is difficult to determine. Many business men are also farmers, although they may not appear as farmers in the census. In 1890, there were 8,305,286 persons occupied as farmers, dairymen, apiarists and farm laborers out of the twenty-two and three-fourths millions people engaged in all occupations. Aside from these there were more than seventy-two thousand gardeners, florists and nurserymen. What proportion of the people actually live on farms is also difficult of determination. Not all farmers live on their farms. There is a strong tendency, which seems to be growing, for farmers to live in villages. But wherever these people live, they are concerned with the problems of the country as distinguished from those of the city. It is true that the proportion of persons who live in cities is constantly increasing; it is also true that interest in the country and in all rural affairs is extending at the same time. There is room in the country for endless development. There are opportunities for full and useful lives. It is surprising how thinly populated and how undeveloped the open country is. Farms are remarkable for the small numbers of people whom they employ. The eight and one-third million farmers of the Eleventh Census worked about four and a half million farms; that is, there were about two workers to a farm. Not only the half of the people who live in the country, but fully half of the other half, is interested in country life. For all these people, we believe that this magazine has a mission.

GROWTH OF SUBURBANISM

It was not many years ago that people lived in the suburbs as a matter of economy. Now they live in these parts because higher ideals may often be attained here. From reports personally obtained from twenty-eight of the largest cities in America, North, South, East and West, it was estimated that during two recent years over $420,000,000 had been invested in private purchases and the development of lands adjacent to large cities, for suburban operations. Over $60,000,000 were reported to have been voted by trolley and railroad companies to extend their service beyond the limits of these cities. Nearly half a billion of dollars, therefore, were invested in two years in the proposed development of suburban properties, in addition to the millions of dollars already so invested.

BACK TO THE COUNTRY

It is becoming more and more apparent that the ideal life is that which combines something of the social and intellectual advantages and physical comforts of the city with the inspiration and the peaceful joys of the country. If, for business reasons, the tendency of population is concentrative, for living it is distributive. The greater part of the summer exodus countryward is the expression of a growing and genuine interest in the country and in nature, and is deeper and more far-reaching than mere fad or fashion. The enormous investment that is made in country homes is itself a conservative influence and tends to the permanence of the outdoor movement. This movement is having a most beneficial effect on agriculture, in raising the ideals of country living.

Aside from all this, there is an independent revival of interest in agriculture itself. The teachings of science are being felt. Business methods are being applied. The country is improving.

THE LITERATURE OF NATURE

The growth of literature pertaining to plants and animals and the out-of-doors is one of the most emphatic and significant movements of the time. As an indication of the interest on the part of the public in reading matter appertaining to country life, it may be recorded that there were published in the United States within fifteen months one hundred and forty-two books devoted to outdoor topics. Not one of these books has been what the publishers call a failure; a number have sold 20,000 copies; some 40,000; others 50,000; and at least one 60,000 copies. Publishing houses prepare special catalogues of outdoor literature. Added to this, is the rapidly growing literature of agriculture and its allied arts. The old days of distrust in "book-farming" have come to an end. Farm literature of the present day is vital, resourceful, scientific, entertaining. The demand for it is increasing. Much of it will outlive its generation.

OUR HELPERS

Only by means of a large correspondence can we hope to keep in touch with the many interests that are concerned in country living. We desire to have a close personal relation with our constituents. These constituents will be largely the makers of the magazine. Correspondence addressed to the publishers or editor will receive careful attention. We are especially anxious to interest every expert photographer who cares for country living or the beautiful in nature. Photographs and manuscripts will be given full consideration and every precaution will be taken to preserve and protect them; but we cannot hold ourselves responsible for the loss of such articles.

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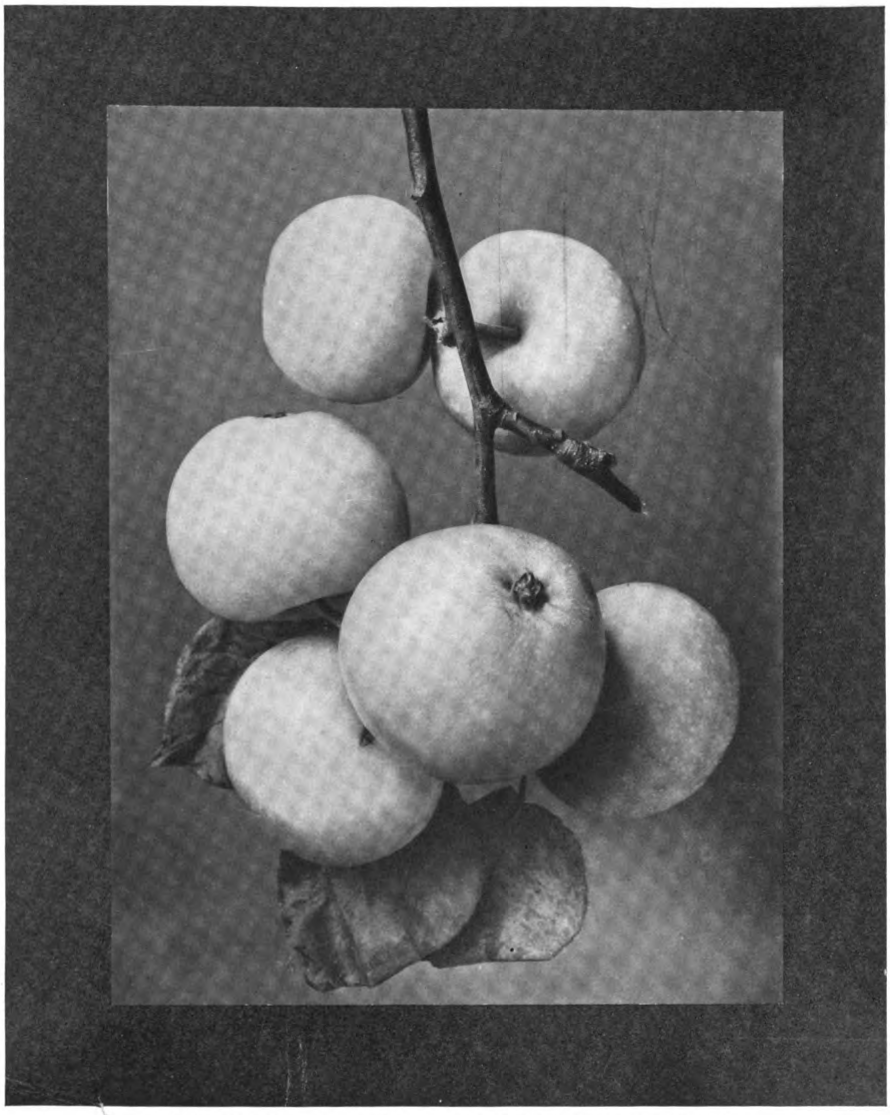
AMERICAN APPLES

By J. HORACE McFARLAND

AMERICA is surely the land of the apple, even though pomological meetings may no longer discuss so fully the juicy fruit that is with us every day in the year. Whether the Hallowe'en trials of an apple-paring over the shoulder for the mystic initial of a future husband or the small boy's too early indulgence in the potential fruit of late spring be considered, the apple is the first of American fruits in every way. Grown over the widest range of country and under the most various conditions, it is most adaptable not only in its vast range of varieties but in its greatly varied uses.



Yellow Transparent, best known of the apples imported from Russia

Without apple-pie at frequent intervals what New England household can be called well-ordered? The Pennsylvania housewife scorns to limit the setting forth on her table of apple-sauce to the times when it is the gastronomic complement of roast pig; and what sort of a country school-house would it be wherein a score or more of juicy apples were not consumed, in sly bites under the desk-lids, any proper school day?

Consider the preponderance of apples on the city fruit stands. The Italian vender polishes the brightly striped but leathery skin of the ubiquitous and turnip-fleshed Ben Davis — he sells it for ten months in the year, and it is his ideal fruit. Bananas and oranges are with us always; grapes, plums and peaches last longer every year, but the apple still is king.

One might work his statistical ingenuity and his mathematics in laying out a wagon road to the moon, a bicycle path to the sun — and America would doubtless produce enough apples to pave these highways every year.

Some unfortunate sections of the United States cannot grow apples, from climatic reasons. In other sections the old-fashioned apples will not succeed. While the railroads rush train-loads of apples here and there over the country to fill these fruit vacuums, there is always the effort to find types that will be successful in these difficult locations. One of these newer types is the Russian, of which a hopeful introduction was made by the United States Department of Agriculture in 1870. From this importation one variety has so far succeeded in commercially establishing itself. This is the Yellow Transparent, of which a Delaware-grown cluster is shown in the illustration on this page. It is an early apple of excellent quality, and from the south it sends acceptable fruit to the northern markets very early in the season.

But it is to the great North we must look for the real luxuriance of this fruit for the million. It seems that only in the climates where nature's winter rest is long is the acme of size, flavor and color reached. An island in Lake Champlain is worth a story by itself, — it is a paradise of apples. At the Pan-American Exposition the superb apples from Wisconsin were guilty of causing many pangs of desire in the passing thousands.

As transportation and cold storage facilities improve the apple lays hold more firmly on the fruit hunger of the whole continent. The apple is yet king of fruits.

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BULBS FOR SPRING BLOOM OUTDOORS

FALL bulbs are so called because they are received and planted in the fall of the year; also in contradistinction to summer bulbs, which are planted in spring. They are nearly all imported from Holland. Millions of them are brought into this country during September, October and November. Fall bulbs include all those early spring-flowering bulbous plants which brighten up the garden almost before the dreary days of winter are past. Crocuses, snowdrops, scillas, Stars of Bethlehem, narcissus, daffodils, jonquils, tulips and Dutch hyacinths are household words. Figs. 1–3.

From the little attention that these plants require, together with their cheapness, there is no reason why any one who may possess only a few feet of ground should not have and enjoy them, and extend their cultivation in grounds of more ample proportions. Their requirements are simple indeed. We plant them in the fall because it is the season in which they make their roots and establish themselves well in the ground ready to begin work in spring. All bulbs must be well rooted before active growth can take place above ground. In this they are somewhat analogous to seeds which, when germinating, always make the roots first so as to be able to draw nourishment from the soil to support the growth above ground.

The depth of planting fall bulbs varies with the different species, but all should have a covering of 2 inches of soil above the top of the bulb. Therefore hyacinths and narcissus should be planted 5 to 6 inches deep according to size of bulbs, tulips 4 inches, crocuses, snowdrops and bulbs of similar size about 3 inches deep.

Bulbs are not fastidious in regard to soil, though a loamy soil with a tendency to sandiness is best. The best fertilizer is thoroughly decayed farmyard manure, or ground bone meal, and only a very moderate dressing of either, which should be forked into the soil when preparing to plant.

They may be planted in the mixed flower border, or in formal beds or borders near the dwelling, or best of all (tulips and hyacinths excepted) they may be naturalized in such positions as under deciduous trees, on grassy slopes, around the edges of lawns or shrubbery borders, along the edges of woods or in any wild or semi-wild positions in company with trilliums, anemones, dicentras and many other early spring-flowering plants. A bank of crocuses under large deciduous trees or irregular colonies of daffodils along the edges of woods or on grassy banks is a beautiful sight, while snowdrops, scillas and Stars of Bethlehem are well adapted for naturalizing along woodland paths and in open groves. In such positions they should be planted in quantities in order to be effective, and as irregular as possible and not in square or circular colonies. Always aim to make them look as natural as possible.

When once planted most bulbs will increase and flower each year provided the foliage is not cut off. This must be allowed to ripen off naturally, which will take until the end of June.

Tulips and hyacinths, being so highly cultivated or so far developed from the wild types, do not lend themselves well for planting in wild or semi-wild positions. They are best adapted for formal beds or borders near the dwelling. Tulips and hyacinths should not be planted in the same bed or border together, because the times of flowering differ, and unless very carefully selected and arranged, the colors of the flowers will not harmonize well. Before planting, the beds should be given a dressing of fertilizer, then dug and raked very smooth. The bulbs should then be placed regularly all over the bed before any are planted so that each bulb shall have just so much space to develop, hyacinths 7 inches apart, and tulips 5. They should then be carefully planted and the bed left very smooth and even. The flowers of both tulips and hyacinths embrace a good range of color, and color designs can be made when planting. Suggestions for the same may be found in almost any bulb catalogue. It is important in planting tulips to plant the early-flowering kinds together, and the late-flowering kinds by themselves and not in the same bed. When a bed of tulips is in bloom every flower should be open at the same time; also both with hyacinths and tulips, the flowers should all be of an even height, to secure which the bulbs must be planted of an even depth.

1. A bunch of crocuses

Beds of jonquils and daffodils are also very effective and the bulbs require to be planted the same distance apart and depth as hyacinths. Crocuses, scillas and other small bulbs are more suitable for narrow borders than formal flower beds. They should be planted three inches apart.

Although fall bulbs are quite hardy, yet sometimes during the winter we have sudden thaws sufficient to excite the bulbs to grow. To prevent this, when planted in beds, it is better to give them a light covering of partially decayed leaves or light mulch about two inches deep, but it should not be put on till after the ground is frozen rather hard, for if placed on before this mice will often nest under it and take their meals out of the bulbs. When planted in wild or semi-wild situations the natural covering of leaves and grass is sufficient.

Many people discard their tulips and hyacinths after the season of flowering is past, as they never give the same satisfaction a second season. If one has not the heart to do this and the beds are wanted for the summer bedding plants, the bulbs should be carefully lifted, the flower stalks cut off, and the bulbs planted again closely in shallow trenches in some shaded secluded place where they may finish ripening their foliage and may rest till fall. They may then be lifted and planted in irregular shaped colonies in the mixed flower border, where they should remain permanently. Daffodils, crocuses and other bulbs do better if they can remain in the beds when once planted, but if the beds are wanted for summer-flowering plants the bulbs may be treated the same as tulips and hyacinths.

Almost all bulb catalogues designate the kinds most suitable for bedding, together with the colors, single or double, early- or late-flowering, and quotations per dozen, per hundred, and per thousand; and while the best prices will, of course, secure the best quality of bulbs, which will produce rather the largest flowers, yet I do not ever remember to have seen a poor variety of any of the fall bulbs.

EDWARD J. CANNING.

BULBS FOR WINTER-BLOOM INDOORS

FEW plants lend themselves so readily to the successful management of the amateur gardener as the so-called Dutch bulbs. These bulbous plants are not necessarily natives of Holland, but for centuries they have grown there, the climate and the peculiar soil producing bulbs of unequaled quality; hence they are commercially known as "Dutch" bulbs. Foremost of these are the hyacinth, the tulip and the large family of narcissus. The small Roman hyacinths are grown in France, as is also what is known

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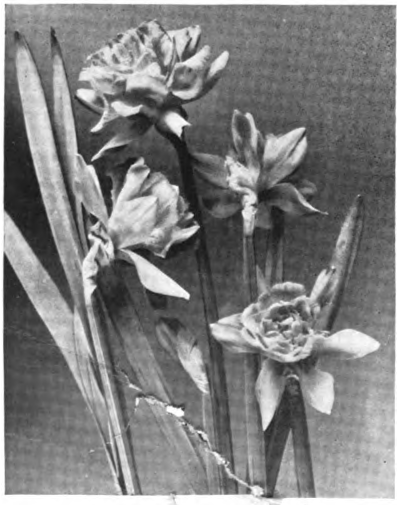
familiarly as the Paper White narcissus, Totus Albus. The well-known crocus and Scilla Sibirica, the latter a pretty little blue flower, are also sometimes forced, but they hardly repay the trouble, lasting but a short time in bloom.

Procure the bulbs from the most reliable source. The first cost of the bulb should not be considered, as without a high quality of bulb all your time and labor will be in vain. Never attempt to force a bulb that has been produced in your own garden, and still more, never attempt to force any of these bulbs a second year. The forcing process ruins a bulb for producing a second crop of good flowers. To be successful with bulbs for blooming indoors, observe the following points: (1) Secure best quality fresh bulbs; (2) plant them before they become dry; (3) keep them cool for some weeks, in order that the roots may grow, but the top not start; (4) bring them into the house for bloom only after the pots are well filled with roots.

The Paper White narcissus and the Roman hyacinth arrive in this country during the month of August. The Dutch hyacinths, tulips and the narcissus arrive during the month of September. The success that you will have in the forcing of these bulbs will depend largely on how well they are rooted before you bring them into the heat of the living room or conservatory. There should be no delay in getting them potted or boxed. There is very slight difference in the treatment of any of these bulbs except what is here noted.

Hyacinths are frequently successfully forced in glasses. For that purpose the opaque glass is to be preferred. The water should be about half an inch from the bulb. A small piece of charcoal, say the size of a hickory-nut, placed in the water will obviate the necessity of any change of water during the entire time of growth and flowering. Place the glass in some dark, cool place,—cool because you want root action to go on without the top growing. When the roots have reached the bottom of the glass, which will be usually in six or seven weeks, the plants can be removed to the light of the window or conservatory. Hyacinths in pots are best grown singly in those of 4½ inches in diameter. If pots are larger than that they look clumsy, and smaller is scarcely room for full development of the roots.

Tulips can be grown in pots, pans and boxes. We prefer the pans of six, seven or eight inches diameter and three to four inches deep. Roman hyacinths can be grown in pots, pans, or



2. Double narcissus

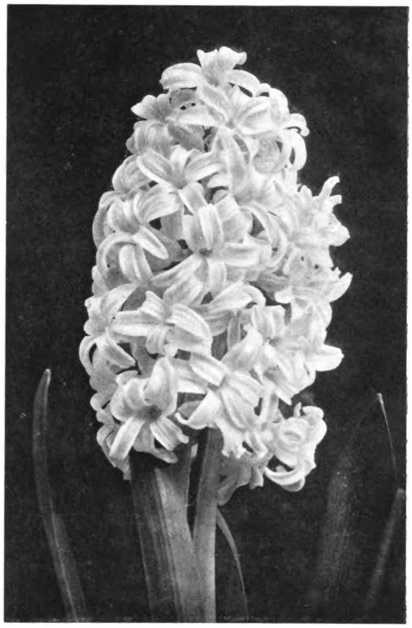
when a large quantity is wanted, in boxes. The several varieties of narcissus should also be grown several in a pot or pan, or in boxes. These boxes can be of any convenient size, say twelve inches square. Three inches deep is the right depth.

The quality of the soil is of very little consequence, providing the texture is right. The embryo flower of all these bulbs has been already formed and all we do is simply to force it out with heat and moisture, so that rich soil is not essential. But for convenience, and I believe also for the benefit of the roots, a light, sandy soil is preferable. In potting the hyacinths, fill the pot full of the earth and press the bulb firmly in, which will compress the soil and leave the bulb slightly exposed above the earth. With the Roman hyacinth, a six-inch pan will hold about nine bulbs. There is no need of giving it a lot of room. A pot or pan of these pretty hyacinths or of tulips when thickly planted and well flowered is a pretty object, but when thin and scanty the plants are anything but attractive. You can place the bulbs of hyacinths and also of tulips almost touching each other. They will flower just as well. If you fill the pots or pans loosely with soil, by pressing in the bulbs you will have the soil in the right condition. Let the tops of all these bulbs be just visible with the surface of the soil. As soon as potted or boxed, the bulbs want a copious watering. By that I mean water enough to penetrate to the very bottom of the soil.

Remember that without being well rooted in the soil you will have no success in flowering bulbs inside. The writer has tried several places in which to store them while they are making root. A very cool, dark cellar will do fairly well to store the pots while they are making root, but out of doors is preferable. We prefer to put Dutch hyacinths, the Roman hyacinth and the Paper White narcissus in a coldframe so that we can cover them with boards or glass. None of these bulbs are injured by a slight freezing, except the Paper White narcissus. That should never be touched by frost at any period of its growth. Tulips and the other narcissi are best placed out of doors in any out-of-the-way place, but in a position where they can get the rain. Always place the pots or boxes on boards. When bringing them in they will lift clean away from the ground. After the first thorough watering, cover the pots with three inches of some material, whatever is most convenient to your hand. The commercial man, who forces many thousands of tulips, finds that the ordinary garden soil is most convenient. Tanbark would do just as well, or leaf-mold if you have it. If the weather should be very dry they should be watered at least once a week, as active root growth will not be going on if the soil in the pots is dry. If there are frequent rains they will not need watering. At the approach of severe weather, usually towards the end of November, an additional covering of six inches of stable litter or dry leaves is necessary. The bulbs that are planted earliest will be the longest in rooting, but it will usually take seven or eight weeks before any of them can be brought in for forcing. The earliest that can be forced are Paper White narcissus and Roman hyacinth. If well rooted, some of these can be brought in as early as the first day of October and in a temperature of 60° will be in bloom by the middle of November. By bringing in a few every week or ten days a succession of these can be had in bloom throughout the winter. The Dutch hyacinth, the single tulips and the narcissus Van Sion should not be brought in for forcing until New Year's. At this date the Dutch hyacinths will come along in a temperature of 60°, but the tulips will require a temperature of 75°. The hyacinths can be given the full light of the window or greenhouse, but the tulips must be shaded either with thick paper or a covering of cheese-cloth about a foot above the pots. Without this the tulips would not make any stem and the subdued light induces them to grow up. As the season advances, less heat is required and by the end of February no shading is needed on the tulips.

Do not attempt to force any double tulips before the first of March. By the middle or end of March a temperature of 55 to 60° will grow any of these bulbs and, as is easily understood, as you approach their natural flowering season the conditions of a cool greenhouse are sufficient to produce the finest flowers. Never put the boxes or pots on the top of the hot water pipes. These bulbs do not like heat at the roots, but in the early days of their forcing they want plenty of top heat. Water can be given copiously every day. When the flowers are fully expanded the pots can be removed to a cooler temperature, which will much lengthen their time of beauty.

There is but one kind of Roman hyacinth worth growing,—the white-skinned and pure white flower. In the large-flowered hyacinths the single varieties are much the better for forcing. The varieties are limitless. A dozen of the very best are Baron von Tuijll, rose; Gertrude, bright



3. White hyacinth

Adapted to winter bloom in the window or to spring bloom in the open

red; Gigantea, light pink; Norma, waxy pink; Alba Superbissima, pure white; Grandeur à Merveille, blush white; La Grandesse, pure white; Mme. Van der Hoop, rosy white; Charles Dickens, light blue; Czar Peter, porcelain blue; Grand Lilac, lilac blue; King of the Blues, very dark; King of the Yellows is the best of its color.

All tulips are by no means adapted for forcing. The best single are Belle Alliance, deep scarlet; Vermilion Brilliant, bright scarlet; Chrysolora, golden yellow; Yellow Prince, pure yellow; La Reine, white shaded pink; White Pottebakker, pure white; Cottage Maid, rose and white; Proserpine, deep pink (extra fine); Keizerskroon, red and yellow. Double Tulips; Imperator Rubrorum, scarlet; Murillo, pink, almost white; Tournesol, red and yellow; Couronne d'Or, yellow. Narcissus, single: Trumpet Major, yellow (very fine); Stella, white, yellow cup; Golden Spur, grand yellow; Poeticus ornatus, white, dark centre. Narcissus, double: Van Sion, rich yellow (most satisfactory); Orange Phœnix, white, orange center; Incomparable, yellow and orange. In crocus there are yellow, blue, purple, white and striped.

WILLIAM SCOTT.

HOW TO GROW CHRYSANTHEMUMS AT HOME

AT this time of year every one is bringing home a potted chrysanthemum plant from the florist's. Soon after Thanksgiving the flowers will be gone. Reluctantly the housewife removes the last faded flowers and is confronted with a plant and a problem. It seems a pity to throw the plant away. Think of the pleasure of growing one's own chrysanthemums!

Just what to do with the old plant is the most urgent question. Most people put it away in the cellar for the winter, with a vague idea of planting it out in the garden the following spring where it will grow all summer and fall until danger of frost and then be potted and removed to the house. This plan seems to be natural and

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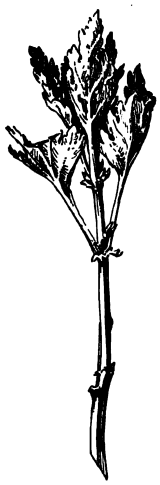
reasonable, but experience has shown a much better method. As a rule, the old plant never flowers as well again. It is right to keep it over the winter in the cellar, but in the spring, when it starts into new life, slips or cuttings should be made and these will give much better results than the old plant. This is the main thing for the amateur to bear in mind.



4. Chrysanthemum cutting. Half natural size. These cuttings should be made in February or March.

Any one who does not care to make cuttings may buy young plants from the florists for ten or fifteen cents, as late as the middle of June, and carry them on to the season of bloom with good results. But there is a fascination in doing the whole thing one's self. It is a simple matter to make cuttings, even at home. It costs nothing to fail, and it is worth while to try. Make cuttings of everything you like, and see what happens. But before discussing the matter of cuttings let us return to the previous question of the winter treatment of the old plant.

This fall, after the plant has bloomed, cut the stems down to within an inch or two of the ground and put the pot or box of roots in the cellar in a place where it will not be forgotten. It should be kept moderately dry all winter, but will need watering now and then. Aim to keep the plant alive and healthy, but not growing. It needs rest. In February or March bring it up to the sitting-room window or some place where it can have more warmth and light and a regular supply of moisture. Such conditions encourage growth and the new shoots that come up from the crown in early spring furnish the material for cuttings.

Now for the cuttings. The first thing is to have a small, shallow box of sand free from dirt. Two or three inches is deep enough. There should be holes in the bottom for drainage. The sand must always be kept moist. It is the moisture that enables the cuttings to take root. The sand furnishes no plant-food; it merely holds the cuttings in place. It would be well to get the box of sand ready this fall. In February or March it may be difficult to obtain.

There is a reason for getting clean sand. If soil is mixed with it the cuttings are likely to "damp off." The "damping off" is a sort of swift destruction that carries away thousands of cuttings in a single night, no matter what the plants may be. It is due to certain fungi which live in the decaying vegetable matter of the soil. Hence the extraordinary care that florists use to get clean "silver sand" and sterilize it so that all the spores of fungi are destroyed.

5. The florist's chrysanthemum. Grown to single stems

Cut off a shoot three or four inches long. Use a sharp knife and make a clean, smooth cut. Trim off all the leaves but the two at the top and the growing point between. Cut the leaves close to the base (Fig. 4). Put the cutting in the sand and press the sand firmly about the base. Keep the sand always moist. Place the box of cuttings in a shady place for three or four days, because sunlight wilts them. In two or three weeks the plants will have a strong and independent look, and their roots will be about three-quarters of an inch long. Take them out and pot them in the smallest size pots that you have—say two inches across at the rim; or you can put them in very small boxes or cans. When the pot is well filled with roots, in two or three weeks, shift the plant to a 3-inch pot and later to a 4-inch pot. By the tenth of May, in the latitude of New York, the young plant can be taken out of its 4-inch pot and planted in the open ground of the garden where it is to stay all summer. Or, the plant may be grown in a box, as a soap box, instead of a pot. The box may be plunged in the soil outdoors up to its rim. Another way is to set the plant in the ground in spring and lift it into a box in September or late in August. A plant set in the ground in May or June will require a larger

6. A home-maker's chrysanthemum, grown in a box

pot, when lifted, than is usually found outside large greenhouse establishments. Soap boxes or other large receptacles may then be used.

Do not try to compete with the florist in raising the biggest flowers. The professional achieves such results by allowing only one flower to grow on a stem, by feeding the plant heavily, and by giving special care in a special place (Fig. 5). The big flowers on single stems are excellent for exhibition and for cut-flowers, but for a window plant one wants a compact, bushy specimen with ten to twenty flowers (Fig. 6).

In the summer of 1902 the plants will need some staking, unless one is fortunate enough to get a dwarf variety. A tall, straggling plant is very unsatisfactory. It is awkward to move about and the lower leaves are likely to drop off or wither, giving a bare or unsightly appearance at the base. It is best to pinch out the growing point of a chrysanthemum when the plant is about six or eight inches high. If this operation is delayed it may cause a serious check. Moreover, it is much better to have a low-branched plant than a high-branched one. The former is compact, easy to handle, and well supplied with foliage; the latter is inconvenient to handle and likely to have an unkempt appearance.

An important point in chrysanthemum culture is disbudding. This should be done fearlessly or the outcome may be disappointing. Try to have ten or twelve good branches and allow only one flower to grow on each branch. Leave the central bud of the cluster. Pick out the others of the terminal cluster and also the lateral buds as soon as possible. It will pay to watch for them daily in August and pick them out with a toothpick when they are the size of small shot. Do not wait until the buds are the size of peas. A flower three or four inches across is large enough for a plant in the home window garden.

CHARLES E. HUNN.

7. Unconventional style of growing Freesias

HOME-GROWN FREESIAS

FREESIAS are amongst the easiest to grow of tender bulbs. In pots or boxes they thrive well, when growing in the window or a cool greenhouse. Pot them as early as midwinter. Place the pots in a cellar where the roots will grow, but the tops will not. When roots are well formed, the pots may be brought into the living room and the foliage will soon appear. Freesias may also be grown equally well without placing the bulbs in the cellar; the pots may be stood in a rather cool place, out of strong light, until roots have been formed. The florist's ideal is a Freesia that stands erect and does not need staking; but the amateur can well afford to let the plants droop, if, by so doing, he obtains as good effect as that shown in the engraving (Fig. 7).

A WINTER PIT

A PIT for protecting half hardy plants is shown in the engraving (Fig. 8). It is three to five feet deep, with good drainage from the bottom. It is covered with sash. Preferably it should be under trees, that the sun may not be too strong on the glass in the bright days of March and April. The plants may be set in this pit right in their pots or tubs. On all clear, mild days, the sash should be lifted to afford ventilation.

Such a frost-proof pit is very desirable for those who can afford a greenhouse, whether large or small. It is a cheap storeroom for bulky plants when not at their most attractive season. It is useful for retarding azaleas and rhododendrons until they are wanted for blooming. Hydrangeas and small conifers in tubs for summer decoration of porches and lawns may be stored in such a pit all winter. Star Jessamines and the great bulk of greenhouse shrubbery may be stored in pits until the chrysanthemum season is over. After the first rush of bloom in early spring, the callas and many other plants that have now ceased to flower may be moved to a pit until it is warm enough to plant them out in the garden spaces.

8. A frame or pit for protecting half-hardy plants

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9. A bed of squills covered with leaves

10. The same bed in bloom

PROTECTING PLANTS FOR WINTER

THE necessity of winter protection for plants is mainly as follows: (1) To prevent excessive depth of frost at the roots; (2) to shield the semi-frozen branches from the sun's rays; (3) to prevent thawing during temporary warm spells; (4) and to retard premature activity in spring, where late frosts are liable.

A steady cold is more favorable than repeated thawing and freezing. Situation as to condition of soil — wet or dry, — and the texture — light or heavy, — are important considerations. In light, dry soils many plants winter readily that would perish if the conditions were reversed. On raised beds they usually do better than in sunken ones. Newly planted material requires a better protection than established plants of the same species. Some shrubs inclining towards tenderness — diervilla, for example, — when growing strongly and late, owing to a rich soil, require protection; whereas, if in poor soil where growth is restricted and ripens early, they do not.

The term hardy, as applied to plants, is misleading and has merely a local significance. Those hardy in the southern states may not be at the north. There are exceptions, as *Neviusia Alabamensis* from Alabama and *Hypericum aureum* from the mountains of Tennessee, which are hardy at Chicago; but the exceptions are few.

Latitude is only a partial guide in determining the hardiness of many plants, as local influences temper the atmospheric conditions. The influence of the Gulf Stream bordering the eastern states allows some plants to be successfully grown there that are failures in the interior at places just as far north.

The presence of any large body of water has its influences, either beneficial or detrimental, and in the case of the lower part of Lake Michigan both influences exist. St. Joseph, Michigan, where the peach-growing district lies to the east of the lake, escapes the strong east winds of spring that spend their fury on the regions opposite, chilling Chicago and its surroundings with moisture absorbed from the waters not yet warmed. These winds, following a warm spell caused by southern winds, are very trying to vegetation, and peach-growing is impossible.

Mountain ranges tempering the winds, and the presence of foot-hills where frost may descend to the valleys, are other conditions governing the term hardy. In sections where heavy falls of snow remain for the most part of winter, plants covered by it require but little, if any, protection.

Experience alone can determine in a given location what is hardy; but many half-tender plants may be grown almost anywhere if given ample protection.

The material used for protection at the roots may consist, with a few exceptions, of anything that will keep out excessive depth of frost—such as marsh hay, straw, manure of any kind, leaves, boards, boxes, etc. Plants, like the giant reed *(Arundo Donax)*, are more likely to survive in uncongenial situations if a waterproof covering is placed over them in addition to the usual mulching.

Shallow-rooted plants, like the cardinal flower, the perennial double sunflower and horsemint *(Monarda didyma)*, are best protected by placing thick sods over them.

Eulalias or zebra grass and the Japan iris are inclined to be somewhat tender in the neighborhood of Chicago and winter better if their foliage is allowed to remain; but they require also a good mulching at the roots.

Stable manure is generally used for root protection, as its food elements are washed into the soil by the melting snows and its fine particles may be dug into the earth in the spring, but when too pasty or compact it should not be placed immediately over the crown of such plants as young German iris, *Heuchera sanguinea*, and *Pyrethrum roseum*, on account of their liability to decay in open wet weather. It may be placed between the plants and strawy material placed over the

11. A shrub tied with evergreen boughs

crowns. This caution also applies to nearly all evergreen perennials, which are better protected by leaves, evergreen boughs, boxes, raised boards, etc. Where snows are prevalent, pea brush or tops of plants like our native asters may be placed over the plants to catch the drifts. Inverted wooden troughs, V-shaped, are excellent for covering long borders of such low-growing evergreen plants as *Veronica circæoides*.

Leaves, especially those of the oak, are among the best of covering material, but the early falling ones, such as those of the maple and the elm, are too soft and mat down. These should be gathered when dry and sheltered from rain until wanted. When through with them in the spring, pile in a shallow pit at some fence corner to rot into leaf-mold to place over fern beds as a mulch. Figs. 9, 10.

When leaves are used in boxes to cover plants which show life above ground — shrubs or evergreen perennials, climbing roses — the box should be water-tight at the top, as a drip often causes mold, which may affect the canes. Enough air penetrates through the cracks and sufficient moisture rises from the ground for all requirements. Boxes over such tender plants as the *Alstræmeria aurantiaca* should be at least two feet deep, filled to the brim with leaves, and the ground outside well mulched up close to it. When a wide box is required, unhandy to tip over the plants when filled, tack some burlaps or laths over the opening, or use a few boards which may be held in place by two persons, and pulled out when in position. Tar paper may be used for covering cracks and knot holes in tops of boxes, or for protecting young trees from sun-blistering and rabbits. Empty barrels, sometimes one set partially in another to gain height, are good to protect small trees like *Magnolia Soulangeana*, which should have its branches tied in. Tree peonies and yuccas are benefited by empty boxes large enough not to touch the plants; wooden shutters, boards, or any water-shedding material are additional protection for occasional use.

Wood and coal ashes are good to place over clematis and tender lilies, as these materials are but slowly susceptible to changes of temperature.

Wrapping with straw is the usual method of protecting shrubs and vines. In the case of large shrubs, wrapping is facilitated by setting three poles in the ground, wigwam fashion, close around them, and wrapping with string for the straw to lean against. When straw wrappings are not supported by poles, they should be staked, to prevent them from being blown over. Evergreen boughs are sometimes used for tying up tender shrubs. Fig. 11.

Earth is one of the best protecting materials. When space permits, most of the roses may be bent over and covered by it. If in rows, tie the top to the base of its neighbor. If so large and bushy that a portion stands out above the soil, cover that part with some vines or strawy material. Plants may also be wrapped singly with straw, or the bed boxed in and well filled with leaves. Climbing roses in exposed situations are best protected by first mounding up the soil rather high at the base to allow bending without breakage, and extending the mound in the form of a gradually diminishing ridge. Choose a day when there is no frost in the canes and lay them on the ridge, covering the lower part, up to a point where they lie flat, with soil or thick sods — this again to prevent breakage. Have in reserve a frost-protected pile of soil or sod, which can be put on when the frost comes to stay. If climbing roses are planted on a lawn where earth covering is impracticable they may be tied in straw or laid on the grass, and boxed with leaves. Have the cover water-tight. Most of the tea roses, if the climate is severe, are better if placed in cold pits. Fig. 8. Many half-hardy plants can be wintered to advantage in such glass-covered structures. Hermosa, Clothilde Soupert and the dwarf polyanthas may be boxed in with leaves. Narrow lead tags bearing recorded names retain the identity if placed around the stems.

If one has many tender plants and roots to carry over the winter, it is well to construct a special house or "outside cellar" for them, as shown in Fig. 12. If this is frost proof, it may be used for roots of dahlias, cannas, and the like.

Do not be in a hurry to protect plants. Late November to early December is time enough in the latitude of Chicago. It is best to let a good freeze come, to force field mice into other winter quarters, before using strawy material.

W. C. EGAN.

12. A building for the storing of tender roots and bulbs

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HOW TO MAKE A GARDEN—THE FIRST LESSON

13. "The climbing withes of the clematis"

IT is customary to begin with the preparation of the soil when giving advice on the making of gardens. The real beginning of a garden lies farther back, however. It is a mental concept. One does not begin to make a garden until he wants a garden. To want a garden is to be interested in plants, in the winds and rains, in birds and insects, in the warm-smelling earth.

The best preparation for garden-making is to go afield, and to see the things that grow there. Take photographs in order to focus your attention on specific objects, to concentrate your observation, to train your artistic sense. An ardent admirer of nature once told me that he never knew nature until he purchased a camera. If you have a camera, stop taking pictures of your friends and the making of mere souvenirs, and try the photographing of plants and animals and small landscapes. Notice that the ground glass of your camera concentrates and limits your landscape. The border-pieces frame it. Always see how your picture looks on the ground glass before you make the exposure. Move your camera until you have an artistic composition,—one that will have a pictorial or picturesque character. Avoid snap-shots for such work as this. Take your time. At the end of a year, tell me if you are not a nature-lover. If to-day you care for only pinks and roses and other prim garden flowers, next year you will admire also the weedy tangles, the spray of wild convolvulus on the old fence, the winter stalks of the sunflower, the dripping water-trough by the roadside, the abandoned bird's nest, and the pose of the grasshopper.

What has all this to do with gardening? Where I write is a child's flower garden. In one spot the flowers failed. Here a bushy fireweed has filled the space. The child has let it grow, and it is part and parcel of the garden. The child knows that a fireweed is better than hot bare earth, and, fortunately, no one has ever told her that a fireweed is not beautiful. Her contact with nature is one point more intimate than it would have been without the fireweed, and she will always feel that each plant is interesting after its kind. The fireweed has no showy flowers: she likes it because it is a plant and fills a place in her garden, not because it fills the eye with color.

Appreciation of the charm of plant form and color is the real beginning of gardening; and this is why gardening appeals with such power to persons of refined tastes. Every plant is interesting. Yet the person is discriminating, loving one plant more than another or with a different kind of love. There are times and seasons for all plants. One's sympathies are wide, as one's life is full and resourceful.

15. "Always see how your picture looks on the ground glass"

In its largest sense, the garden comprises the personal parts of the estate,—those parts that are not devoted to specific agricultural purposes. The lawn, the grove, the park, the flower garden, the vegetable garden, the fruit garden for the home supply,—all these partake of the garden spirit rather than the farm spirit, and these are intended in the sketch I am writing. The beauty of a tree, therefore, is as much a garden subject as the beauty of a flower. I like to think that there are four epochs in the life of any garden plant, four kinds of interest to the cultivator. These are, first, the juvenile stage, when the initiate is coming into its first contact with the problems of living and when its future is all to be determined; second, the aspiring growing stage, when every day sees change and progress; third, the blooming and fruiting stage, the only one of the four that appeals to most people; and fourth, the stage when the work is done and the leafless framework stands bare above the brown earth or is buried in the drifting snow. To me, the first and the fourth are the most significant and the most mysterious. I am willing to take the trouble of growing a plant that I may see its leafless stems above the snow on Christmas day.

Not in flowers alone do plants appeal to the true gardener. Not long ago I was interested in observing the different points of view of such a gardener and his customer. Born in a foreign land and widely traveled, the gardener had always loved plants because they were plants. He was now growing plants for a living on our Pacific coast, but his establishment had none of the rich and florid look of the commercial garden. Plants of mean habit and small flower, plants common-looking and inconspicuous, tucked away in nooks and corners—these he pointed out to her with almost pathetic appeal as she led him on and on in quest of some gaudy coleus or geranium. The latter she purchased, in spite of his earnest recommendation of the humbler and really prettier things; but I thought that he was glad that she spared the ones that were nearest his heart.

It is good practice for the beginner consciously to compare the general habits and forms of plants. Contrast any two. Learn their characteristics, the size, the direction of growth, the general swing of the branches, the hang of the spray, the amount of foliage and its color and texture, the mass effect of its flowers. Make out what the framework or scaffolding would be if all the leaves and flowers were removed. Compare, for example, the compact habit, drooping spray and garland-like inflorescence of the mock-orange (Fig. 16), with the open habit, and horizontal airy spray of the Japanese snowball (page 18); or contrast the climbing withes of clematis with the bole from which it hangs (Fig. 13). Note how these plants change from spring till fall, and from fall till the quickening days of spring. Believe that every plant lasts at least a twelvemonth.

The bolder parts of the garden should be taken by the bolder and stronger plants. The humbler and tr[illegible]ent and more exotic things should be the [illegible]dents. Throw in the borders thickly and profusely. Plant only sparingly in the centers. Leave some generous space of open greensward as a contrast and a foreground for the planting. The most dangerous thing in the planting of a place is to encroach on the open lawn, for one plant out of place there may introduce an element so discordant as to spoil the whole effect of the picture. As one would embellish a building with minor architectural effects and tasteful combination of colors, so the gardener can brighten and enliven the premises by means of every kind of choice and cheery flower that will bloom in the nooks and along

14. "The spray of convolvulus on the old fence"

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16. "The drooping spray and garland-like inflorescence of the mock-orange" or philadelphus

the borders. In the distance may be iris, zinnia, marigold, dahlia, sunflower, foxglove, hollyhock, each in its place and of sufficient quantity to produce a forceful local impression of individual habit and color. In the foreground may be pinks, bachelor's button, the annual phlox, verbena, deep-tubed petunia and all the minor citizens of the garden. Make up your mind in advance that you will like all the plants that grow in your garden — then your gardening will be successful.

L. H. B.

GROWING AMERICAN BEAUTY ROSES UNDER GLASS

THE American Beauty rose is one of the special high class products of modern glass gardening. The successful cultivation of it requires close attention to many details. These details, as understood by professional florists, are briefly set forth in this paper.

For propagating, use sharp sand 4 inches deep, well firmed and kept at a uniform temperature of 55° to 60°, and overhead temperature at from 60° to 65°. The cuttings should be medium-sized wood with two eyes. Trim the foliage in such a manner as to prevent its lying on the sand and turning yellow from too much moisture. Shade for a few days by hanging light-weight muslin over the bench, but no closer to them than one foot from the top of the bench. Give more space, if possible, to prevent condensation of moisture on foliage.

When the cuttings have made roots an inch long put them in 2-inch pots and place them on a bench in the house with a temperature of 56° at night and 68° in the daytime. Shade for a few days as mentioned for cuttings. Paper shading is too dense and is likely to sweat them too much. For potting, use the same soil as for general planting, adding a very small quantity of bone meal. Shift into 3-inch pots, then into 4-inch, never allowing the plants to become root-bound.

For soil, use 5 parts of the regular rose-house sod to 1 part of pure cow manure, put up the previous autumn and thoroughly mixed in the usual way by chopping down and repiling at least twice before using. It is immaterial whether the soil is of clay or sandy nature, as good results may be obtained from either kind.

17. Bachelor's button or cornflower, that sows itself in the garden wastes

In planting, fill the benches with soil 4 inches deep, firming it before setting the plants, which should be 15 inches apart both ways. Leave a slight depression around the base of the plant in order that the ball may receive the direct benefit from a good watering after plants have been set. The subsequent waterings should be very carefully applied until heavy firing commences, when the plants will be better able to withstand water to a certain extent. That is, keep them on the "dry side." If not allowed to dry out the earth will become sour and prevent root-action. It is essential at all stages of growth to keep the plants growing without any checks, but do not force them or they will give poor results later in the season.

The plants should be disbudded. Pinch off the first crop of buds when they have shown color. Have the plants well established before allowing them to bloom, being careful not to rob them of too much foliage. Use judgment between the strong and weak plants. When cutting the blooms from young or matured plants, their future growth should be taken into consideration. Try to determine how many "eyes" of the wood should be taken with the bud in order that they may "break" freely and to the best advantage.

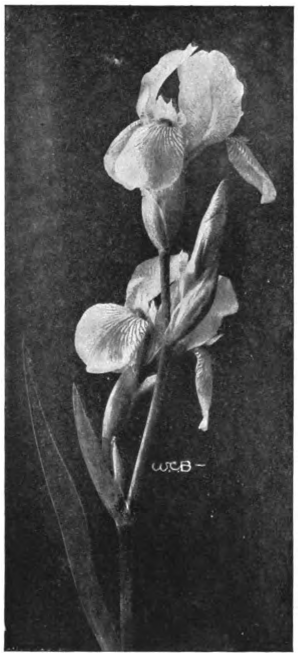
Give plenty of fresh air, avoiding drafts. Moisten the walks twice a day in hot, dry weather; otherwise avoid too much moisture. Shading the glass has a tendency to make plants spindling. Keep the house as nearly as possible at 58° to 60° at night, and 70° to 75° at day, excepting cloudy days, when it should be kept at 65°. Ventilation should be given gradually, avoiding extremes. Letting the temperature run up too high before giving air is likely to induce mildew, black spot and injury to the buds.

For mulching on the beds use half soil and half cow manure, composted and made fine under cover at least four months before using. Apply lightly in August, freely about January 1, and a light application in April.

Syringing should be done on bright days only, commencing early in the day, but not before the sun is shining, in order that the plants may have time to dry off before sunset, particularly if the weather is too warm for firing. Syringing is not necessary on every bright day, providing red spider has been kept in check from the start. A good nozzle for syringing is made by taking a brass hosepipe 10 inches long, attaching thereto a sprinkler 3 inches in diameter at right angles, with holes made a trifle larger than ordinarily used. With a water pressure of from 70 to 80 pounds directed to the under side of the foliage this spray will dislodge the spider without knocking the plants about as much as by the older methods.

Green aphis is likely to be troublesome. Do not wait until it makes its appearance. Smoke the houses weekly in the autumn with tobacco stems that have been moistened with water to prevent blazing. Discontinue when the mornings become too cold to admit giving plenty of air; then tobacco stems should be substituted, being suspended under the edge of the bench in poultry netting. Stems will last much longer used in this way, besides keeping the house sweeter and cleaner.

For mildew, paint the flow-pipes with sulfur mixed with water. This will not adhere as readily to the pipes as if mixed with oil or lime, but it will be more efficacious in emitting the fumes, and is not as injurious to the pipes. In warm weather, during the absence of firing, dust the plants with sulfur mixed with air-slaked lime and apply with a bellows especially made for this purpose, or use Hammond's grape dust in very much the same way.



18. Blue flag, citizen of every old garden

The plants may be supported by using two wire canes or stakes five feet long (No. 8 wire) for each plant and held in position one foot from top of stake by a wire running lengthwise over bench. To have straight stems and uniform foliage the growth should be kept carefully tied, giving all the room that is possible for light and air.

When the old plants have been discarded and the old soil removed, the bench bottoms, sides and corners should be thoroughly cleansed by scraping and brushing. Then fumigate with burning sulfur, and after the house has been sufficiently aired, whitewash inside of benches before filling with new soil. In this, as in other horticultural operations of importance, avoidance of trouble from fungoid diseases depends largely on cleanliness and the establishing of antiseptic conditions. Especially is this true when successive crops of the same sort are grown under "forcing" methods.

Three-quarter-span houses of the usual iron construction are to be preferred. The benches 4 ft. 3 in., by 5 ft. deep. American Beauties are grown only on the two inside benches of each house.

HENRY HEINTZ, Jr.

COVER THE ROCKS

THERE seems to be a general desire to remove all rocks from the home grounds. In some situations, however, a rock may be made one of the most attractive objects in a place. It should be an incidental bit in the landscape, and should not obtrude itself into the very foreground. Drape it with Virginia creeper, honeysuckle or other informal vine-cover. Encourage the moss and lichen to grow on it. Against its base plant ferns and woodsy things. Sometimes, in a sunny location, it may be covered with nasturtiums, which seem to love such treatment, and to respond with great richness of bloom.

Many people remove rocks with a vague desire of "clearing up." So, too, with trees, which were the enemies of a former generation, but the friends of our own. We do not stop to think, sometimes, that rocks are beautiful, or can be made so at a small expense.

W. M.

STRAWBERRY PLANTING

STRAWBERRY planting tests at the Georgia experimental station showed the yield by hill culture was only about one-half that in matted rows. The 18-inch rows yielded 134½ quarts more per acre than 12-inch rows, and 24-inch rows yielded 282 quarts more per acre than 18-inch rows; but it is believed that 18-inch rows are the best, as the spaces between 24-inch rows are too wide.

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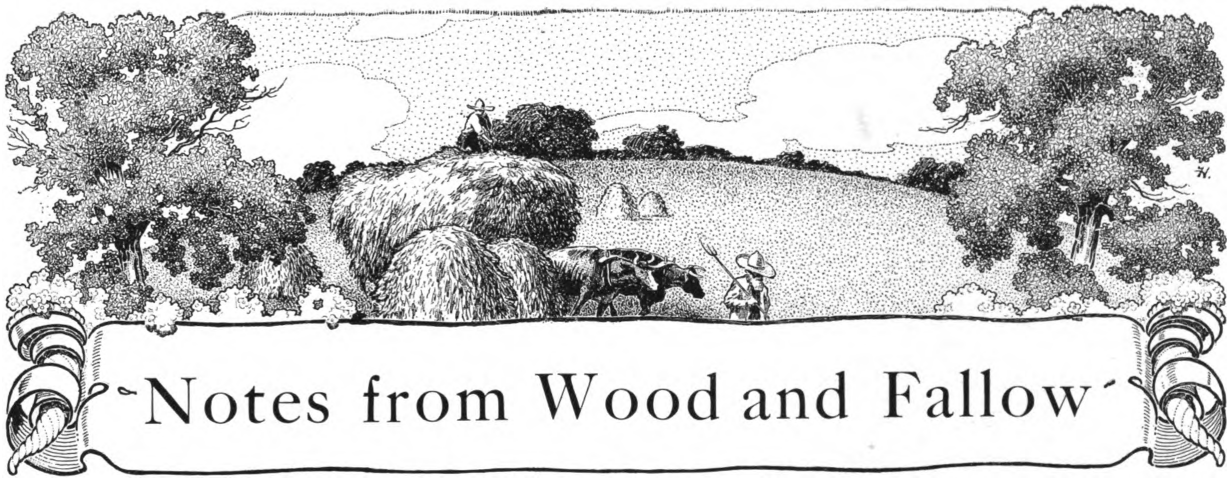


Notes from Wood and Fallow

GOLDENROD, QUEEN OF THE AMERICAN AUTUMN

With unpublished drawings by the late WILLIAM HAMILTON GIBSON

ROADSIDES, hillsides and swales are bright with goldenrods and asters in these waning autumn days. Often they linger until well into November, when the ground freezes hard at night and there are scurries of snow in the blustery days. They are characteristic of the northern part of the country. As far west as Oregon, one sees the goldenrod along the country roadside, but when he descends into the valleys of California he loses them for another and strange vegetation. So common are the goldenrods that many people despise them — those persons who associate interesting objects only with some foreign land that they have not seen. Yet the goldenrods, and all other native plants, are more appreciated to-day than they were a generation ago. Look in the old books and in the new for pleasant descriptions of goldenrod!

Like other common and weedy plants, goldenrods improve much under cultivation. Given room and good soil, they become trim and compact clumps, bearing their golden sprays and trusses in great profusion. A clump will last for years; or if it begins to fail, take it up late in fall, divide the roots and replant the stronger and fresher parts. Just because goldenrods grow wild, one must not think that they do not profit by good feeding and the other kindly attentions that make plants happy and handsome. Even a weedy and scrawny plant in the wild may develop into a comely subject when the root is transplanted to a rich and roomy garden. A border near the boundaries of the place is a good location for goldenrods. Mark the best wild plants when they are in bloom, then remove them to the border late in fall or early in spring. Cover the crowns with litter or leaves on approach of winter.

Profusion of bloom, wealth of color and great numbers of kinds are characteristics of the goldenrods. Many of them are plants of much delicate grace. This fact is well shown by the simple drawings left by the lamented Gibson, and now first reproduced on these pages. With few lines the artist has caught the habit and the "feeling"

19. The commonest of the Goldenrods—Solidago Canadensis

of the plants. These drawings also show the botanical details and will thus aid the student to follow the keys and descriptions in the botanies.

A BOTANIST'S VIEW OF THE GOLDENRODS

Goldenrods are "difficult" subjects for the beginner to name and classify. This is because the kinds are so many and often so much alike, and also because the plants vary or take on strange forms under differing conditions. Yet these very perplexities make them all the more attractive to the real student. To be able to identify the species after hours and even days of study is the acme of delight. They are such a pleasant feature of our autumn landscapes that every nature-lover should attempt to know more about them.

Why are they called goldenrods? They were named when only the European species were known and these have a wand-like or rod-shaped flower-cluster. Had it been American species that first received a name in the English language it is probable that the name would have been golden-plume, or some other, descriptive of the pyramidal and often wide-spreading flower-clusters of our common goldenrods.

The Latin name applied to the goldenrods by Linnæus was *Solidago*, which meant to make solid or draw together, in allusion to their reputed vulnerary powers. Belief in their medicinal power is not current at the present day. They have a bitter principle which prevents their being eaten by animals.

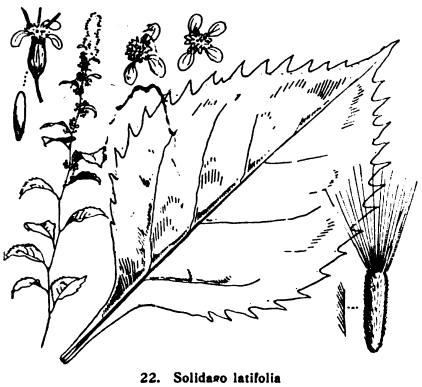
American species are cultivated in Europe, especially in wild gardens. English gardeners recommend them for planting in the background of wild borders and in shrubberies, but consider them too coarse for fine open effects. They are at their best in the open fields, fence-corners, and copses of their native country, and there form the glory of the autumn.

The goldenrods are much more abundant in North America than in any other continent. In Europe but one or two species are native, and these are rare.

There are one hundred species in the whole genus and about ninety-five of these are in North America. The number of species, however, does not determine wholly the prominence of a genus in the landscape. The number of individuals representing the species indicates even more per-

20. Solidago cæsia

21. Solidago nemoralis



22. Solidago latifolia

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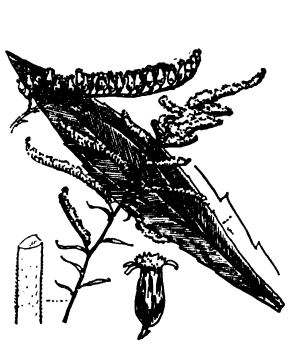


23. Solidago Canadensis

24. Solidago lanceolata

25. Solidago rugosa

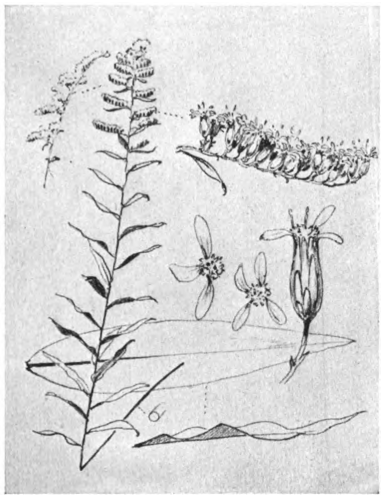
26. Solidago rigida

fectly its character. The annual plants and grasses usually have many individuals representing each species in areas where they are found, and a single species often gives character to the whole region in which it grows. The species of goldenrods, although perennials, often completely dominate in the region where they grow and in some places they even exclude nearly all other plants. They occur from Mexico to the arctic regions, and from the seashore to the summit of the highest mountains.

The goldenrod is the choice of many Americans for the national flower. The rose, the Indian corn and others are also candidates for the honor. Our plant has neither the delicate colors of the former nor the economic importance of the latter, yet it is not unlikely that it will be the ultimate choice.

Although representatives of the genus may be found in all kinds of places in North America, yet some of the species are seemingly particular about where they grow. A few are common in dry woods and copses; others are more often found in open fields; some are swamp-loving species; two or three are coast plants; others are alpine and arctic species. Thus, while in nature we find species selecting certain places, it is a notable fact that most, if not all, will grow without any extraordinary care in the garden.

There is great uniformity in the cycle of annual growth in this group, as indeed there is in the whole family to which it belongs. The plant begins, of course, as a seedling. After two years' growth it has attained sufficient maturity to bear flowers and seeds. The plants do not depend upon seed production to multiply—indeed, reproduction by seed seems to be infrequent except in new ground. The common method is by offsets which are produced in the following manner. From the lowermost joints of the stem, usually below the surface of the gound, several branches arise which remain as underground shoots during autumn and winter. They vary in length and in number in different species. In spring and early summer of the following year, the shoot changes its mode of development and becomes an upright leafy stem, bearing the heads of yellow flowers at its summit. This mode of growth leads to the remarkable tendency of these plants to grow in societies or, as they are more often called, patches. Sometimes, in the species



27. Solidago odora

with many underground shoots at the base of each stem, the growth is so dense as to exclude other species entirely. To understand their habit it is well to distinguish the annual growth into two phases—the autumnal subterranean, and the vernal terrestrial shoot. It is the latter that constitutes the goldenrod of summer and autumn.

Allusion has already been made to the variability of the flower-cluster in the different species. Rod-like or wand-like, flat-topped corymbs, wide-spreading panicles: these display some of the variation met in a study of the forms of flower-clusters. Each kind shows its own specific variation, and further variation will be found in individuals of each species; these latter are often traceable to the vigor of the plant or peculiar conditions of environment.

The make-up of the individual flower is characteristic of the family. This family is the Compositæ, to which belong the plants with small flowers, or florets, combined in a head and with the anthers united in a ring about the style. Asters, thistles, sunflowers and daisies belong to this family. What is commonly regarded as a single flower is really a small head or cluster of flowers. These little heads are well shown in the accompanying drawings, and in Fig. 30 one of the individual florets is also displayed. Some of the outermost florets in the head bear a ray or elongated petal, and these rays appear as if they might be the corolla of a single flower. Although the heads are small, they are usually borne in great numbers, giving the goldenrods their characteristic profusion of bloom and delicacy of spray.

No goldenrod blossoms in spring or early summer. The first to show their colors sometimes appear the last days of July. By the end of August a few other species bloom. September, however, is the month for the goldenrods in their brilliancy. Often they grow with the wild asters and are particularly bright along dryish waysides. Under these natural conditions, the blue of the asters seems to harmonize well with the yellow of the goldenrods.

W. W. ROWLEE.

28. Solidago Canadensis, another form

29. Solidago arguta

30. Solidago patula

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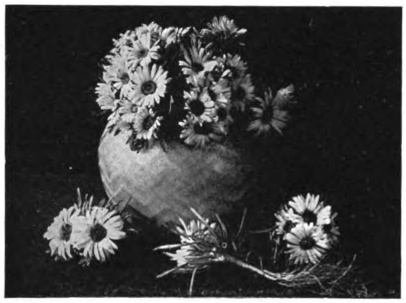
EASTER DAISY (Townsendia sericea)

THIS elegant little composite, which covers itself in March and April with white or rose-tinted flower-heads an inch or more across, is a beautiful example of specialization to meet certain particular conditions, most prominent of which is a long, rainless summer. Its depauperate form, slender, pointed foliage, and the disproportionate size of the flowers, suggest some of the forms of cacti. The growth of the



31. The Easter Daisy of the Rocky Mountains—*Townsendia sericea*

plant begins in autumn and the flower-heads become as large as peas; so that before winter snows have disappeared the fully expanded flowers have made their appearance. They should be cultivated on a dry, sunny slope or on the rockery, the crown of the plant resting directly on the ground, which varies from a stiff clay-limestone soil to a gravelly loam. Plants should be moved in early autumn; seeds may be planted in spring, or better in autumn. It is native to the Rocky Mountain region.

D. M. ANDREWS.

ADVICE ON PRUNING

IN general, prune in the spring, just before the buds swell. The healing processes then start immediately. If pruning is done in fall or winter, the wound remains hard and dry until spring before healing begins, and nothing is gained except that the work is done and out of the way. Professional orchardists and vineyardists usually prune late in winter or very early in spring, in order to get the work done before the spring rush begins. With grapes, also, it is well to prune at least a month before the buds start, in order to avoid bleeding; for while bleeding may do no harm to strong vines, it does no good and it may be very dangerous to weak vines. The above remarks also apply to fruit and shade trees that are pruned for general form, and in order to promote the vigor of the remaining parts. The severer the winter climate and the tenderer the tree, the greater is the necessity of avoiding winter pruning. In special cases, as the apricot in parts of California, summer pruning may be advisable; but these instances are exceptions to the general rule and they rest on particular circumstances.

Shrubs and trees that are pruned for flowers may be thrown into two categories with reference to time of pruning. (1) Those that bloom in early spring perfect their blossom-buds the previous fall. These buds remain full-formed on the twigs in the winter. Winter or very early pruning removes these buds and thereby lessens the bloom. Therefore, prune spring-flowering shrubs just after blooming. This will give the new shoots time to make flower-buds before the following winter. (2) Those shrubs that bloom in summer and fall make their flower-buds on the shoots of the season. The more of these shoots, so long as they are strong and healthy, the more profuse the bloom. Therefore, prune these plants very early in spring. With both classes of shrubs it is always allowable to remove all old and weak wood in winter, or, in fact, at almost any time of the year. For the first two or three years it may be advisable to head-in shrubs in order to make them compact and stocky; but after that time allow the plants to grow pretty much as they will, so that they may develop their natural and characteristic beauty, pruning them just enough to make them comely and to thin out the redundant wood.

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32. At leisure

33. Making for home

THE WOODCHUCK AND HIS HABITS

With photographs by VERNE MORTON

THERE is perhaps no mammal more familiar to country people than the woodchuck. Every hillside and meadow is dotted with the small piles of earth which mark the doorway to his home. The woodchuck prefers a hillside or a knoll in which to dig his hole, for here he can easily make the end of his den higher than the beginning, thus avoiding the danger of being drowned out. He usually has two kinds or types of openings to his home. One, the main opening, is large, more or less circular, leading into the ground by a slope, and has before it the mound of earth brought from the galleries beneath the surface. The other, usually found near the main opening, is smaller, circular, leading straight down into the ground; and since it is dug from within outwards it does not have before it the mound of earth which is characteristic of the main opening. There being no mound of earth at this secondary opening it is inconspicuous and thus affords the animal safety when retreat into the main opening is cut off. The galleries extend sometimes twenty-five feet or further from the main opening. They give off two or more branches, at intervals, from the sides. In a chamber at the end of one of these branches the nest is usually placed. Sometimes one of these creatures is found which is truly a woodchuck, making his home in the woods in some hollow tree or stump.

Woodchucks are strictly vegetable feeding animals. They like the succulent grasses, being especially fond of red clover. Sometimes they enter the garden and feed upon the vegetables. If this was their only fault they could not be considered as strictly injurious animals, but in certain localities where they are very abundant the mounds of earth and the openings to their homes are the source of great annoyance to the agriculturist and therefore the animals are condemned.

What could be more unlike in general appearance than a woodchuck and a squirrel? Yet they are cousins, both belonging to the same family of mammals. The trim body, sharp claws and agility of the squirrels make it possible for them to lead an arboreal life, jumping recklessly from branch to branch, while the flabby form and short legs of the woodchuck better adapt him for digging than for running or climbing.

Not being fleet of foot, and being a poor climber, the woodchuck must depend upon his hole for safety. It is seldom that one sees him very far from that place. His hearing is well developed, — so well that one must approach quietly, indeed, in order to get within good range and not be noticed. He does not depend upon hearing alone, however, for the detection of approaching danger. He is always on the lookout. He will stop at intervals, rise on his haunches, with arms drooping across his breast, and take a survey of his surroundings. If "all's well" he drops down to feeding again. If a person approaches him, he immediately scampers off to his hole with short leaps. After arriving at his very doorstep, he sits up again and watches until he considers that the intruder has come within unsafe limits, then giving a sharp, loud whistle, he drops into his hole, often coming back to the opening to watch further developments. Although a poor climber, woodchucks can, with a running start, climb a tree. They have been known to climb into small peach trees, to eat the fruit.

34. Listen!

In early spring and fall the woodchuck probably does most of his feeding during the middle of the day, but in summer, early morning and late afternoon are the times he prefers to go abroad in search of food. Sometimes he is seen feeding, in moonlight nights. If one utters a sharp whistle it will bring to the sitting posture every woodchuck that happens to be within range of the sound.

The woodchucks are true hibernating mammals. They pass the summer in feeding and rearing a family of from three to six young, which are born sometimes in April, or the very first of May. By October they have become exceedingly fat, and are consequently not so active. In the latter part of this month they retreat to their nest, roll themselves up into a ball and fall into a sleep which lasts until the following March. The nature of the food of the woodchuck is such that he cannot lay up stores as the chipmunks do, nor is it of such a kind that it can be obtained during the winter. The case of this creature during the winter seems to be, therefore, one of "sleep long and soundly or starve." During the winter's sleep or hibernation, life processes go on very slowly. Breathing is reduced, and the heart-beats become so slow and feeble that they cannot be felt. They come from their winter's sleep about the first of March, in New York.

Although the woodchuck is considered to be very commonplace among our mammals, whose very home and person smell of dark, damp, musty places, yet one can pass many pleasant hours in learning his ways, and thus not only add to one's knowledge concerning him, but acquire an interest and experience which will help in understanding the habits of other mammals.

H. D. REED.

35. A sun bath

36. There's something in the wind

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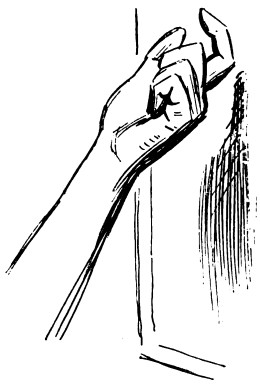

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Recent Writings

SHORT BOOK NOTES

A Summer's Work Abroad, in school grounds, home grounds, play grounds, parks and forests. By Mira Lloyd Dock. Published by the Department of Agriculture of the Commonwealth of Pennsylvania, 1900. 6 x 9¼. 33 pages. 9 full-page half-tone pictures. Procurable from the Secretary of the Pennsylvania Department of Agriculture, at Harrisburg, Pa.

This document will be an inspiration and aid to the leaders of the work of civic and village improvement in America. It is Miss Dock's account of her observations and studies in Europe from June 15 to Oct. 14, 1899. Half of this time was spent in England, with a week in Edinburgh; the other half was devoted to Germany, with a few days in Switzerland, and one week in Paris. The time in Germany was chiefly spent in the Rhine country and Black Forest, with a view to comparing German provincial and mountain communities with those of central Pennsylvania. "Investigators in Germany," says Miss Dock, "find that practically the country is one vast improvement association."

The main general conclusions reached by Miss Dock are expressed as follows: "Travelers abroad who have only time to see and enjoy without opportunity of investigating the origin of the clean streets, parks and recreation grounds which add so greatly to the interest and comfort of their journeys, usually carry away an impression that the "government" is in some mysterious way responsible for a delightful state of affairs that we can never enjoy because our own government is so different and we are so young and new. The first discovery made by an investigator is, that the great civic improvements abroad were generally originated, not by the 'government,' but by far-sighted and public-spirited citizens, and the second discovery is, that most of the modern works that add so much to the healthfulness and beauty of places visited are of very recent origin. In many instances their projectors are living with a fair prospect of many years in which to enjoy the results of their foresight. The third discovery is, that everywhere the most responsible members of society are interested in all works that affect the general welfare."

Agriculture in Porto Rico. Report on the Census of Porto Rico, 1899. War Department, office Director Census of Porto Rico. Lt. Col. J. P. Sanger, Inspector-General, Director; Henry Gannet, Walter F. Willcox, Statistic Experts. Washington: Government Printing Office, 1900.

Any one who seriously contemplates leading the life of a planter in Porto Rico should endeavor to procure from the War Department a copy of the Census of Porto Rico, as it gives a good idea of conditions in general and of agriculture in particular. The census is issued in the form of a bound book of 417 pages, with many maps, tables and large half-tone pictures from photographs. It has an index of 29 pages. Thirty-eight pages are devoted to agriculture, and there are 13 full-page pictures from photographs. There is a colored chart showing the relative areas in cultivation in principal crops. Two colored maps indicate the parts of the island where coffee and sugar are most popular and another shows where the greatest proportion of the total area is cultivated. Coffee, sugar cane and bananas are the important crops, and of these coffee is the most important. Coffee occupies 41 per cent of all the cultivated land, sugar cane 15, bananas 14, sweet potatoes 8, Indian corn 4, malangas 2, rice 2, cocoanuts 1, tobacco 1.

Sugar cane is of much less relative importance in Porto Rico than in Cuba and tobacco, which is one of the leading crops of Cuba, is of trifling importance in Porto Rico. In the department of Mayaguez more than half, and in Arecibo

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half the cultivated area is planted in coffee; in Aguadilla and Ponce 43 per cent, and in Guayama 38 per cent. Sugar cane occupies more than one-half of the cultivated area of Humacao and more than one-fourth that of Bayamon. Only in these two departments is sugar of greater importance than coffee.

Agriculture is almost the sole occupation of the people of Porto Rico. Consequently there is a small proportion of city population. The inquiries made by the census were limited to those relating to areas of farms, to cultivated land and woodland, to the tenure of the farms, with the race of the occupant; to the area cultivated in certain leading crops, to a few details regarding the production of sugar and coffee, and to the number and character of live stock. The questions asked were identical with those asked in Cuba. Owing to the comparatively dense population land values are higher in Porto Rico. There is little or no uncertainty as to the character of tenure.

Of the total area of Porto Rico -3,606 square miles—2,743 square miles are included within farms. This is 76 per cent, or more than three-fourths of the area of the island. The area under cultivation is 21 per cent of the entire area of the island. In Cuba only 30 per cent of the total area is included in farms and only 3 per cent in cultivation. In the United States, in 1890, 16 per cent of the total area was under cultivation. Yet considering the density of the rural population, which is far beyond that of any part of the United States, the proportion of cultivated land is small. For example, in Illinois, in 1890, there were only 42 inhabitants per square mile, or less than one-fifth as many as in Porto Rico, while more than seven-tenths of the area of Illinois was in cultivation. The average farm in Porto Rico contains 45 acres, of which 12 are cultivated. In the United States, in 1890, the average farm contained 137 acres, of which 78 were improved. The average Cuban farm contains 142 acres, of which only 13 are in cultivation. The western departments have the largest proportion of land in cultivation, and Aguadilla leads. In Aguadilla the average farm is only 28 acres.

A Chat on Daffodils. By Peter Barr, V. M. H., of London, Eng. Published under the auspices of the Horticultural Association of New South Wales. Sydney. 5½ x 8½ in. 18 pages. No illustrations. Price sixpence.

This is an unpretentious little pamphlet interspersed with advertisements and designed to stimulate interest in daffodils in Australia, and also to serve as a souvenir of Mr. Barr's visit to New South Wales. This world-famous daffodil specialist visited America not long ago on his horticultural tour of the world. He is the head of an English firm of nurserymen and is especially known for his numerous creations among daffodils, his book on daffodils and their kin, his lilies and his love of alpine plants. Mr. Barr made many friends in America. He is now well along in the seventies. The "Chat on Daffodils" seems to be an excellent report of some of Mr. Barr's informal talks, and is of interest to American horticulturists chiefly as a souvenir of a most picturesque and engaging personality.

PRACTICAL NOTES FROM VARIOUS SOURCES

Grape Culture is the subject of Bulletin 92, by C. W. Mathews, of the Kentucky Experiment Station. There are 26 pages and 7 figures illustrating favorite varieties and systems of pruning and training. The list of varieties recommended for Kentucky is as follows: *black*, Moore's Early, Worden, Concord; *red*, Delaware, Wyoming, Brighton, Catawba; *white*, Martha and Niagara.

Another recent bulletin on grape culture is that by C. C. Newman, of the South Carolina Experiment Station. Bulletin 58 contains 27 pages and 18 half-tone pictures from photographs. The varieties recommended for South Carolina are Perkins, Concord, Ives and Niagara.

The seedless lemon is the talk of the citron-growing world. It promises to be as great an advance in lemon culture as the navel orange

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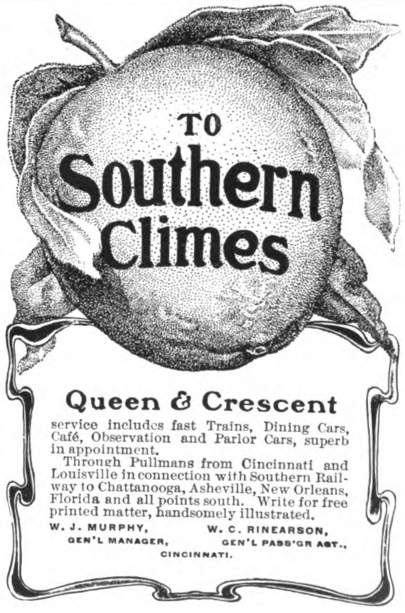

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was in orange culture. A half-tone picture from a photograph of the navel lemon is shown in Bulletin 9 of the Southern California Academy of Sciences. Comparative seedlessness, thin rind and light pulp are important points in a good market lemon. The California navel lemon, as the variety is technically known, was brought out by Dr. S. M. Woodbridge, the agricultural chemist of Los Angeles and South Pasadena, who states that the variety has maintained all its good qualities for two years and promises to remain a fixed type. Dr. Woodbridge announces that no buds will be ready for distribution until the spring of 1902. A cross-section of the fruit shows a small middle cell surrounded by a circle of six medium-sized.

Date culture is a promising new industry for the United States. At present it is restricted to the warmer parts of Arizona. During the past year three imported trees at the Arizona Experiment Station near Phœnix bore over 500 pounds of fruit, which ripened between August and January. The portion placed upon the market sold for 25 cents a pound wholesale at Phœnix, and retailed at 50 to 70 cents. Seedling trees in various parts of the territory bore last year 40 to 200 pounds per tree. Bulletin 38 of the Arizona Experiment Station gives a brief account of date culture. Unlike most fruits, the male and female flowers are borne on separate trees. Unless a staminate tree is planted within 30 or 40 feet of the pistillate it is necessary to cut away clusters of the male flowers and hang them in the tops of the fruit-bearing trees. The pollen is easily kept from year to year. As the dates ripen, the cactus-wren and the Gila woodpecker destroy much of the fruit. The birds are the chief enemies, so far.

The farmer's vegetable garden is the subject of Bulletin 6 of the Illinois Experiment Station, by J. W. Lloyd. The bulletin contains 16 pages and 5 figures. It is well calculated to combat the indifference of farmers to kitchen gardening, which is based upon memories of hard work on hands and knees in the small old-fashioned garden. The modern idea for a farmer's vegetable garden is entirely different, at least where land is plenty. Vegetables are planted in long rows so that horse tillage may be used to the utmost and hand work reduced to a minimum. Mr. Lloyd estimates the cost of a half-acre vegetable garden as follows: seeds and plants, $5.45; insecticides, 50 cents; labor, $26.11; total $32.06. This does not include rent of land or manure. In return the farmer gets a succession of fresh vegetables throughout the growing season and enough to last the family all winter and early spring. The winter supply includes sweet corn for drying, tomatoes for canning, parsnips, salsify and horse-radish to be left in the ground for spring use and the following stored vegetables for winter consumption: onions, beets, carrots, parsnips, salsify, winter radishes, cabbage and celery.

Sweet potatoes are discussed in Farmer's Bulletin 129 of the United States Department of Agriculture. Forty pages are devoted to a general account of the subject. The bulletin has been prepared by D. M. Nesbit.

The sweet potato may be developed along two very different lines, according to whether the tubers are most desired for starch or for sugar. Attempts are being made to use potatoes, sweet potatoes and cassava instead of corn in the commercial production of starch. For table use in the South the "yam" type of sweet potato is preferred because of its high per cent of sugar which is made at the expense of starch. Even the yams, however, often contain 22 per cent of starch. Bulletin 63 of the South Carolina Experiment Station reports valuable investigations that will help in building up the new industry of growing sweet potatoes and manufacturing starch from them. The bulletin is the work of F. S. Shiver, contains 37 pages and is crowded with statistics. The kind of fertilizer used has much to do with the starch content. Potash in the form of kainit has given the best results, closely followed by sulfate, while the muriate does not promise to pay. Sweet potatoes change their chemical composition rapidly in storage, and these changes have been closely studied in the present case. Five different methods of storing were tried. Cottonseed hulls, dry sand and cottonseed gave the best results in the order named.

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Mushroom hunters in the South will be interested in Bulletin 177 of the North Carolina Experiment Station, entitled "Edible Mushrooms of North Carolina." It contains about thirty pages of descriptive matter, and unfortunately no illustrations. The writer begins with nine rules for avoiding deleterious fungi which are given without explanation and seem to forbid nearly the whole list. The statement that "all fungi should be avoided when in the button or unexpanded stage" needs modification. The bulletin is technical and the five-page glossary is rather formidable.

Hawkweeds. The orange hawkweed is the most desirable species of Hieracium for garden cultivation, unless one prefers the yellow-flowered *H. villosum.* The latter does not become troublesome if allowed to go to seed.

In the hands of European cultivators the orange hawkweed has lately broken into new colors and seeds were offered by American dealers for the first time in 1901. Readers of "Country Life" who have tried these new varieties are invited to send accounts of their experience with the new varieties. Meanwhile, the Vermont Experiment Station is telling the farmers how to kill the orange hawkweed by applying salt at the rate of a ton to the acre. The thirteenth annual report of the Vermont Experiment Station explains that the weed is easily controlled by tillage and recommends the salt method only for isolated patches or for soil where tillage is impracticable. Oddly enough, salt proves more effective than sulfuric acid. The latter blackens the plants at once, but they recover. Salt appears to kill weeds not by any poisonous action, but by drawing water from the tissues of the leaves.

Oat smut can be prevented by the use of formalin. The seed is soaked one or two hours in a 1 to 60 solution of formalin. William Stuart gives full particulars in Purdue Univ. Exp. Sta. Bulletin 87 (Indiana).

The New Hawaiian Experiment Station is confronted by some important problems, an account of which appears in the Experiment Station Record, vol. 12, No. 11. The forage problem and the poultry problems are urgent ones. Hay is imported in large quantities from California and retails in Honolulu at $27 to $35 a ton. Forage and pasturage must be provided in some way. The director, Mr. Jared G. Smith, will try to make ensilage of the cane tops. At present the sugar planters dry these tops and burn them. There is a chicken disease which makes it almost impossible to raise poultry. Eggs retail at 60 cents a dozen and a recent lot of live fowls from California sold for $1.85 each. Rice is the only grain obtainable for poultry food at present. Those who intend to visit Hawaii this winter should take a look at the new station. It is located in the suburbs of Honolulu. The land extends from the "Punchbowl" along the east slope of the volcanic ridge, rising from about 100 feet to nearly 1,400 feet in a distance of two miles.

Every sort of citrous fruit one naturally fancies would grow in Hawaii, yet all the oranges and lemons used in the islands are now imported from California, oranges retailing at 5 cents each and lemons at 25 cents a dozen. The station will try to find varieties of citrous fruits adapted to the locality which will ripen before the California oranges are ready for the world's markets. Pineapples for canning, banana drying and the manufacture of banana flour are small industries which the new station hopes to assist.

Chestnut Cultivation in France. A valuable note of about 500 words by John C. Covert, Consul at Lyons, concerning an industry connected with chestnut culture which might become profitable in the United States, is given in advance sheets of Consular Reports No. 946 (procurable from the Bureau of Foreign Commerce, Department of State, Washington, D. C.). The author describes a factory employing 250 women and girls, in which the chestnuts are made into candied sweetmeats called *marrons glaces.* Mr. Covert points out that sugar is 50 per cent cheaper in America than in France and suggests establishing the industry in this country.

Amaryllis hybrids are discussed in a series of articles, by A. Worsley in the "Gardeners' Chron-

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icle" beginning Jan. 19, 1901. Mr. Worsley's articles are restricted to the sub-order known as the Amaryllæ. This is one of three sub-orders, and by far the largest and most important. It includes the narcissi and all those plants popularly known by the name of "amaryllis," which are really hippeastrums. Mr. Worsley excludes the narcissi from consideration for special reasons, and devotes considerable space to the genus in which florists are chiefly interested; viz. hippeastrum. He comes to a remarkable conclusion about the famous *Hippeastrum Johnsoni*, which has long been supposed to be the first hippeastrum hybrid and the prototype of the dozens of named varieties which are cultivated to-day The real *Hippeastrum Johnsoni*, says Mr. Worsley, is extinct. It had seven or eight flowers in a cluster and the segments were a dark self crimson, banded to the apices with narrow, sharply defined, deep red keel, turning suddenly to whitish green in the lower third. The plant called *H. Johnsoni* nowadays is an entirely different thing, the clusters bearing only three or four flowers of a brick-red color, with a lighter colored or white keel in the lower two-thirds. Mr. Worsley's studies include forty-seven genera, of which thirty-six have produced no hybrids. The number of admitted hybrids of ascertained parentage is cut down to twenty-seven, only four of which are hippeastrums, while twelve belong to the nerines, a comparatively insignificant and unpopular group. These results will be very surprising to most florists.

Wild gardens are discussed in a paper of twenty-one pages, by H. Selfe Leonard, in the Journal of the Royal Horticultural Society, vol. 20, parts 1 and 2, just issued. Suggestions are made towards planting for the sake of autumn tints. The list of plants recommended for wild gardening operations covers seven pages and is arranged in eleven categories.

Grafting Experiments with Malvaceæ. In this paper, presented at a meeting of the Society for the Encouragement of Horticulture in the Prussian States, H. Lindemuth gives further results of his experiments in grafting with *Abutilon Thompsoni* as stock. *Malvastrum Capense* showed within a month several yellow variegated leaves, and cuttings preserved this character. It may develop into a welcome addition to the stock of greenhouse plants, especially as the Malvaceæ has few variegated members. A white variegated leaf variety of *Lavatera arborea* gave striking results in yellow, whereas the seeds of *L. arborea* perpetuated only in a very limited degree the white variegation. Seven weeks after grafting the variegated top was cut off and grown as an independent plant. The author then gives the results of his work in Malvaceæ and a list of twelve variegated forms of Abutilon species; also, *Kitaibelia vitifolia*, *Althæa officinalis*, L., which did not become permanently variegated, and *Althæa rosea*, or hollyhock. This last was root-grafted and planted outdoors in the spring, which, however, did not grow upward as usual, but in a horizontal direction, and had immense golden yellow white-marbled leaves. It had not yet flowered. On the practical side he is striving to secure variegated-leaved garden mallows from seed. Gartenflora, vol. 50, No. 1, Jan. 1, 1901, pp. 8–11.

Chrysanthemum Cuttings for Late Bloom. R. Besser, in Möller's Deutsche Gärtner-Zeitung, February, 16, 1901, gives a method of getting very late-blooming dwarf chrysanthemums. He selects strong shoots when they begin to show a flower bud, makes a cutting of this, not too long, and removes all but the terminal bud. After three weeks these cuttings will be rooted, and they are transferred to pots. When they are established an occasional dose of liquid manure may be given. On account of the slow growth during rooting the bud does not develop rapidly and thus the plants may be had in bloom very late in the season (at Christmas near Magdeburg, where, as is common in Europe, chrysanthemums are, in the main, grown outdoors in the open ground or in pots).

REVIEW

Thoreau and His Critics. Pertaining to Thoreau, a collection of ten critical essays by Lowell, Alcott, Briggs, Ripley, Storms Higginson and others, collected from rare sources and edited by "S. A. J." Detroit, The Stylus Press.

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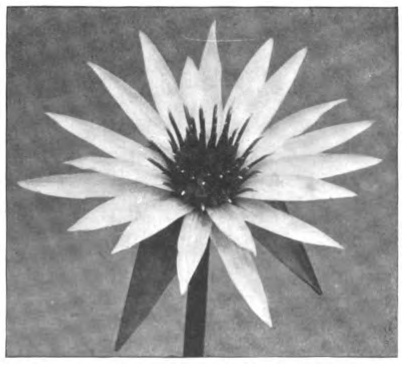

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Whoever has not made the acquaintance of Thoreau has a delightful experience before him. It is his point of view that is refreshing and stimulating. No matter how much one may have lived out-of-doors, it is impossible for any one to read Thoreau's works and catch his spirit without experiencing a great awakening. One returns to nature with a new zest, a keener insight and a surer sympathy. The world looks different after reading "Walden." It is a much more tolerable world. The old walks give new delights.

There are ten books of Thoreau's writings, but there is only one of them which everybody ought to read. "Walden" is the best of his writings. The best advice that any one can give the uninitiated is, Read "Walden," and never mind the critics. It is a charming book and most readable. The chapter on "Sounds" is a classic by itself and most delightful to read aloud. All of Thoreau's personality is in "Walden."

By all the rules and regulations, Thoreau ought to be entirely forgotten by this time; that is to say, if we believe some of his contemporary critics. But if he is to be forgotten at all, "Emerson's hired man" should have lapsed ere this. Yet the interest in Thoreau has steadily increased. The extracts from his diaries, entitled, "Early Spring in Massachusetts," "Summer," "Autumn," and "Winter," and in fact all of Thoreau's books save two, have appeared since his death, and "Walden" has had something like thirty editions. He was the prototype of American "outdoor" writers and his charms seem to be as perennial as nature's own.

This work contains ten estimates of Thoreau, which show how wide of the mark his contemporaries came who measured him by conventional standards. "If from all these sketches," says Dr. Jones, "it were possible to make a photographic composite, I much doubt if the Recording Angel could recognize the man by the picture." Thoreau's personality was unique. He was not so much an iconoclast, as a "professional shocker." He did a great many things that had a look of the sensational and spectacular. By his contemporaries these acts were interpreted in every possible light, but nowadays every one knows that Thoreau was sincere.

The article "Town and Rural Humbugs," in which Thoreau is called a Yankee Diogenes, and compared to P. T. Barnum, is at least entertaining. As the reader turns the pages he is impressed by the fact that Thoreau waked up all the men with whom he came in contact. He gave them a new sensation—many new sensations. There is nothing sleepy or perfunctory in these reviews. His critics were thoroughly interested, and however much they misunderstood his acts and scorned certain elements of his style, all praise his interpretation of nature, and some of them quote his best work freely. As the friend of Thoreau lays the book aside it is with an amused assurance that Thoreau had an ever so much better time than his critics, and was entirely able to take care of himself.

Perhaps the most brilliant of these estimates of Thoreau, but certainly not the truest, is that by James Russell Lowell. Nevertheless, it is distinctly more favorable than his later review of Thoreau, which alone finds a place in the writings of Lowell that were collected by himself. The altered tone is perhaps accounted for by a break between the two men. While editor of the "Atlantic Monthly" Lowell elided a passage from Thoreau's "Chesuncook," wherein he had said of a pine tree, "It is as immortal as I am, and perchance will go to as high a heaven, there to tower above me still." Thoreau refused to furnish another line of "copy." But this is a small matter. One feels instinctively that Lowell and Thoreau could not understand each other. They had no real sympathy and little in common besides an admiration for Emerson.

Lowell's review of Thoreau's first book begins jauntily enough. "We stick to the sea-serpent" are his first words, and then follow seven pages of excellent foolery about anything and everything under heaven before Thoreau's name is mentioned. Lowell was the prince of digressors. Yet he has little tolerance for the digressions in Thoreau's first book, "A Week on the Concord and Merrimac Rivers." He says:

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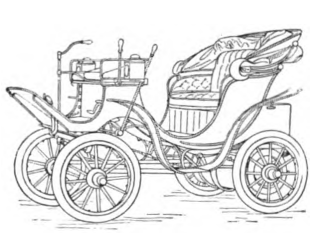

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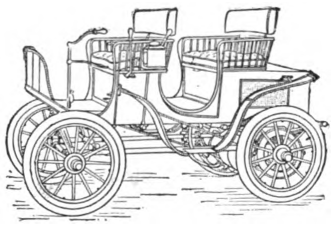

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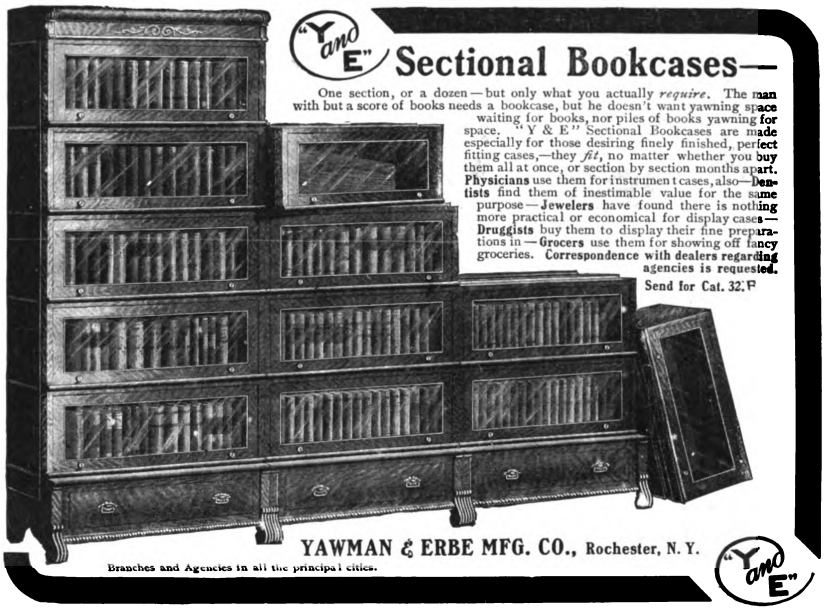

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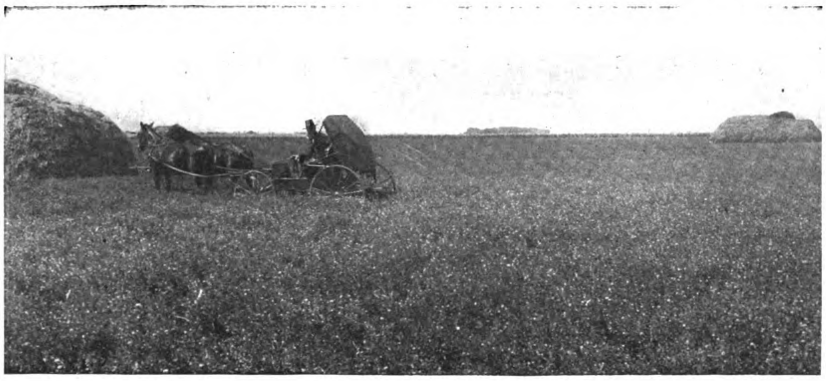
On the Pivotal farm in Nebraska. Alfalfa ready for the third cutting, in middle August



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on Friendship, and we know not what. We come upon them like snags, jolting us headforemost out of our places as we are rowing placidly up stream or drifting down. Mr. Thoreau becomes so absorbed in these discussions that he seems, as it were, to *catch a crab*, and disappears uncomfortably from his seat at the bow-oar. . . . They are out of proportion and out of place, and mar our merrimacking dreadfully. We were bid to a river-party, not to be preached at."

This criticism has much of truth in it. Thoreau was too independent in everything to pin himself down to a single style. In the midst of a book about nature he breaks out into attacks on orthodoxy. Emerson thought that these iconoclastic utterances would win him recognition. George Ripley was the first to show that they were out of place. One might go on indefinitely pointing out traits of Thoreau's character that are sure to give offense to some, but for the purpose of the present review they may be ignored. Our point now is this: Thoreau is worth reading, now and always, for the nature element. His writings are eminently "skippable." If one does not like oracular and mystical utterances, one may avoid them in Thoreau as well as in Emerson. Whoever dislikes pantheism, transcendentalism, bad verses, may avoid them in the writings of both men. Both men have given us much better things, in verse as well as prose. Both were essentially original. There are two misconceptions about Thoreau that are very prevalent. One is the notion that he was a hermit, true or quack. The other idea is that he was a poor imitator of Emerson. These notions have been echoed and reëchoed by the critics, most of whom have taken their cue from Lowell's later estimate of Thoreau.

Thoreau's point of view towards nature, and Lowell's, were utterly distinct. They have been wisely and wittily set off by the editor of "Pertaining to Thoreau" on another occasion:

"Lowell could not see even nature save through a book. In his 'Moosehead Journal' he is not for a moment able to get away from himself. The reader has not from first to last heard the wind sigh in the pines of the Maine forests; but only the pert smartnesses of the author, to get which he need not have gone from Boston. It is not thus with him who takes up Thoreau's 'Maine Woods;' he leaves the everyday world far behind, and is startled from his sleep by the camp-fire when some mighty monarch of the forest in the stress of the storm plunges crashing to the ground. Nor is Lowell happier with animate nature. 'My Garden Acquaintance' is as artificial as Shenstone's garden. Lowell's feathered friends are arranged for inspection; it is a dress parade, and we feel that there is a pan of oats to be distributed when the spectators have departed."

To those who are inclined to take Thoreau very seriously, his independence, simplicity and love of nature should be the most important and helpful lessons to be drawn from his life and work. It is a mistake to imitate him literally, or any man of genius.

The editor of "Pertaining to Thoreau," to whom we are indebted for the rescue from oblivion of these interesting estimates, signs himself simply "S. A. J." These initials indicate to lovers of Thoreau the name of Dr. Samuel A. Jones, of Ann Arbor, Mich., known for his many sympathetic writings concerning Thoreau, and his remarkable Carlylean collection, which is believed to be the fullest in existence. At the University of Michigan Dr. Jones has given many young men their intellectual renaissance and has introduced them to nature by way of one of her most expert and charming guides,—Henry David Thoreau. W. M.

Correspondent's Corner

Questions pertaining to the growing and care of plants and to the general management of land may be answered in this column. Correspondents should give their full name and address, which, however, will not be printed. Make the questions short and to the point.

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RECENT HORTICULTURAL EVENTS

THE twenty-seventh biennial meeting of the American Pomological Society was held at Buffalo, Sept. 12 and 13. The features of the meeting of this distinctively American fruit-growers' association were the splendid representation of fruit-growers and experiment station and college men; the marked attention paid to quality, harvesting and marketing fruits; the general evidence of an active revival of interest in the welfare and mission of the society. The society stands for the stability of American pomology. It has long been the guardian of a correct system of nomenclature; it has been the authoritative body on this subject in America. Of late years its chief mission has been a study of the adaptation of varieties to the states of the Union and the provinces of Canada.

The meeting just held marks a somewhat important change of ideals. While the variety question was touched upon, yet the keenest interest centered on handling, transportation and marketing problems. Diseases of fruit trees, spraying, and the relation of the honey bee to successful orcharding were subjects of lesser importance.

It was noted that many faces prominent in the councils of this society ten or even five years ago were missing. Most of them are deceased. T. T. Lyon, South Haven, Mich.; Geo. W. Campbell, Delaware, Ohio; John Saul and Wm. Saunders, Washington, were of the old guard who have passed away. A number of old and regular attendants were prevented from attending. One missed the dignified face and courtly manner of P. J. Berckmans, of Georgia, the energetic figure of Robert Manning, of Massachusetts, and the keen wit and hard common sense of J. H. Hale, of Connecticut. But the ranks of the younger men were full. The experiment station men were out in full force and filled a generous half or more of the program—some people thought more than belonged to them. The accommodations afforded by the hotel authorities were inadequate. This detracted somewhat from the enjoyment of the sessions, but good humor and a business spirit pervaded all of the sessions and the meeting will be recorded as one of the most successful in the history of the society. The society retains C. L. Watrous, Des Moines, Ia., as president; Thomas Meehan, vice president; W. A. Taylor, Division of Pomology, Department of Agriculture, Washington, secretary; and L. R. Taft, Agricultural College, Mich., treasurer. J. C.

THE annual convention of the Society of American Florists held at Buffalo, August 6–10, was marked by the largest attendance and most extensive trade display during the seventeen years of the society's life. The main work of the convention was the adoption of a new constitution and by-laws under the national charter granted in March. This society is the only American horticultural society having a national charter. Washington, D. C. was chosen for the permanent home of the society. The charter enables the society to hold property. A library is assured to the society through private benefaction. The important matter of coöperation with allied societies was not decided at Buffalo, and a committee was appointed to redraft the article on coöperation with affiliated organizations. Financially the past year has been the most prosperous since the society was founded. The life membership fund amounts to nearly $1,400, and the treasurer's balance showed over $2,000 on hand July, 1901. The trade display covered 6,000 square feet of floor space and nearly a hundred exhibitors were represented. The main prizes were a silver cup for the best display of plants and a silver vase for the best display of cut-flowers. The former was

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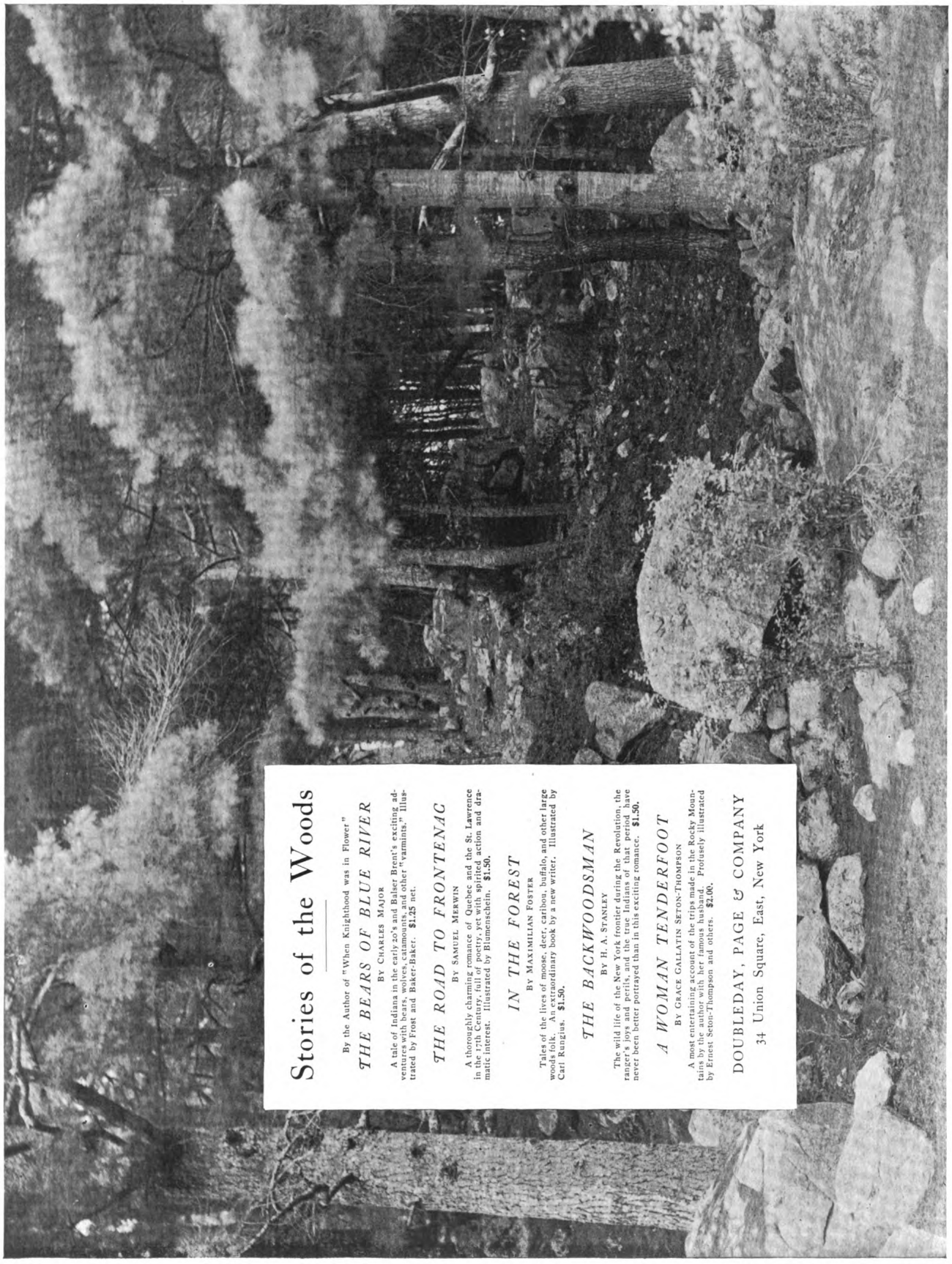

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won by Henry A. Dreer of Philadelphia; the latter by Arthur Cowee, of Berlin, N. Y., who made a very handsome show of gladioli, including many fine sorts.

THE National League of Improvement Associations held its second annual convention, August 13 to 15, at Buffalo. The name of the society was changed to the American League for Civic Improvement. The corresponding secretary reports being in communication with more than three hundred local improvement societies and estimates that there are a thousand societies of the kind in the United States. In addition to the regular numbers on the program brief addresses were given on the general topic, "What We Have Done, and How We Did It," by delegates representing the Civic Division of the Women's Club of Keokuk, Ia.; the Women's Civic League of St. Paul, Minn.; the Horticultural Society of Elmira, N. Y.; the Civic Club of Harrisburg, Pa.; the Floral Association of Spokane, Wash.; the Women's Health Protective Association of Galveston, Texas; and the Improvement Associations of Marissa, Ill., Tarpon Springs, Fla., and Springfield, Ohio. W. M.

THE COUNTRY HORSE SHOWS

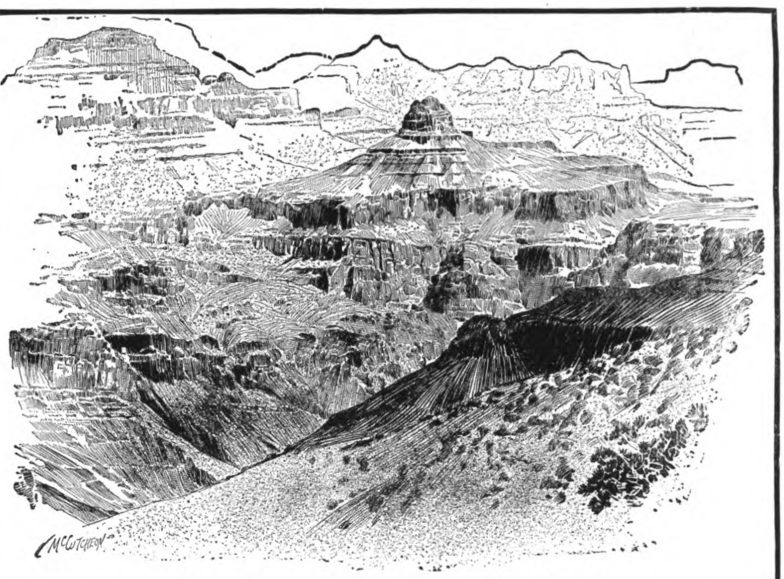
WITH late autumn has closed a most successful season of outdoor country horse shows; and of all the events which enliven the countryside in summer none are more looked for or more welcome. They are a social function of the first importance, and their results on the great interests which cluster round horse breeding are far-reaching. The greater winter shows of New York and Boston are markets from which more immediate cash returns are possible, but for real educational value, and for influence on the producer, the great circle of rural shows from Cleveland to Newport is of vaster importance.

Even from the social point of view I should not hesitate to champion the rural shows against their great winter rivals, for certainly the intensity of personal enjoyment they bring exceeds the mere exhibition of sartorial art and jewelry into which the winter shows are sinking. The rural summer shows are the occasion whereat friends foregather with friends, and the country house-party of kin and kindred spirits is strongly in evidence, binding tighter the bonds by open hospitality and congenial subjects. There is enjoyment for all beneath the summer sun and on nature's evergreen carpet. The four-in-hand is tooled to and at the show; the hunter takes his timber, to the delight of those who will follow the fox in due season; the dog cart and tandem add their quota of skilful drivers; the trotter and pacer are never seen to better advantage or by keener critics; the sturdy hackney in all the pride of park action is an everlasting delight; and last but not least, ponies of every kind, height and beauty, win the hearts and delight the eyes of every boy and girl within the radius of many a mile.

Everybody, too, gets some share of instruction as well as enjoyment: the farmer, the groom, the driver, the carriage builder, the harness-maker and all those engaged in the ramifications of those who breed and deal in the horse and its appointments. All these see the last and the best to which authority and fashion have set their seals; and by parity of reasoning are saved from unprofitable undertakings in the production of the inferior or obsolete.

The growth of local shows attests the strength of their usefulness and the extent of the pleasure they convey. From a single small show of a few years ago they have spread broadcast. The Genesee Valley, Monmouth county, Cleveland, Baltimore, Newport, Bryn Mawr, Orange county, Memphis and Upperville, Va., are only a few from the galaxy of the past summer and yet curiously enough, as if to enforce the point that they are rural events and will not flourish without its surroundings, New York has absolutely failed in each of its efforts to hold a summer outdoor show. The environment of the big city is fatal: there lacks the heartiness of the real interest which only exists where rural sights and scenes and country interests abound.

CHARLES QUINCY TURNER.



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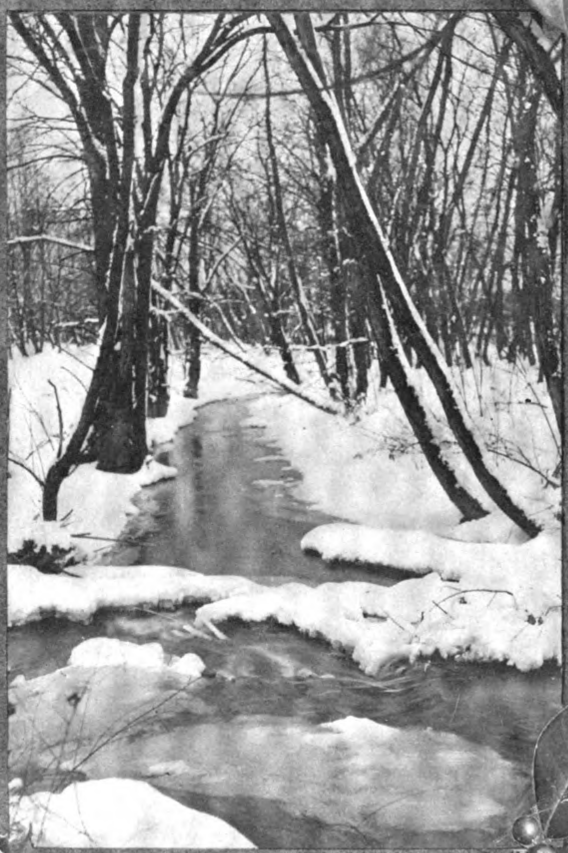

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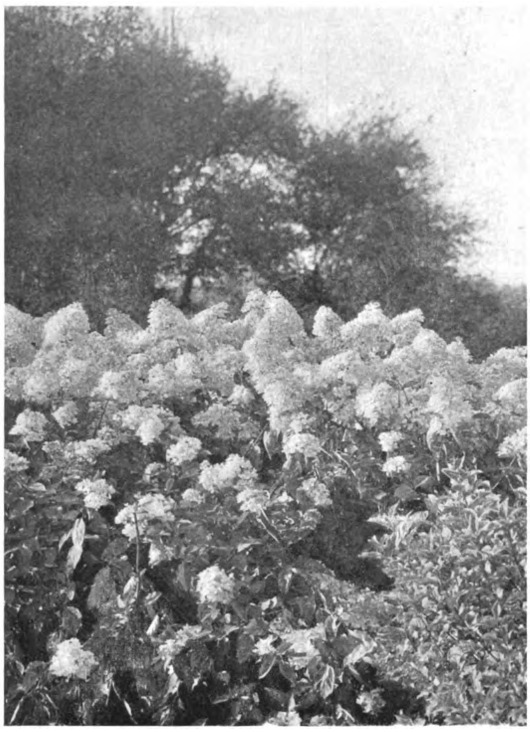

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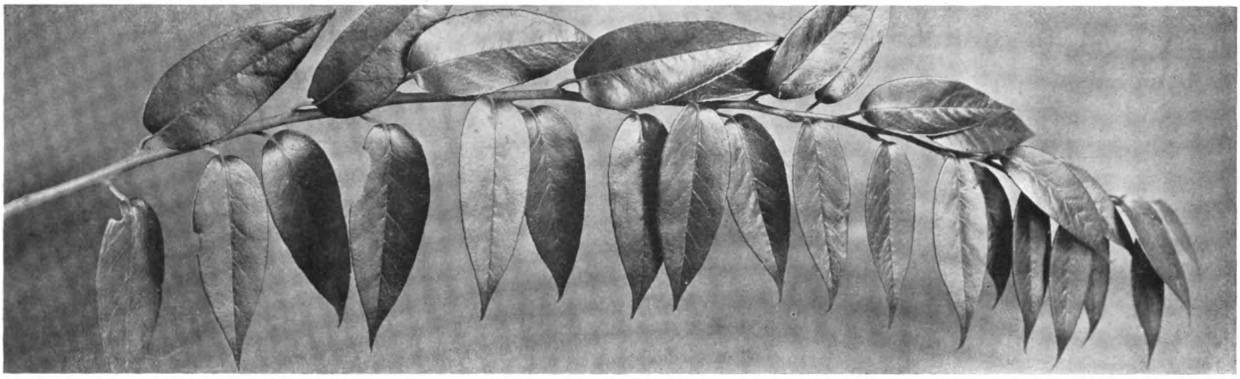

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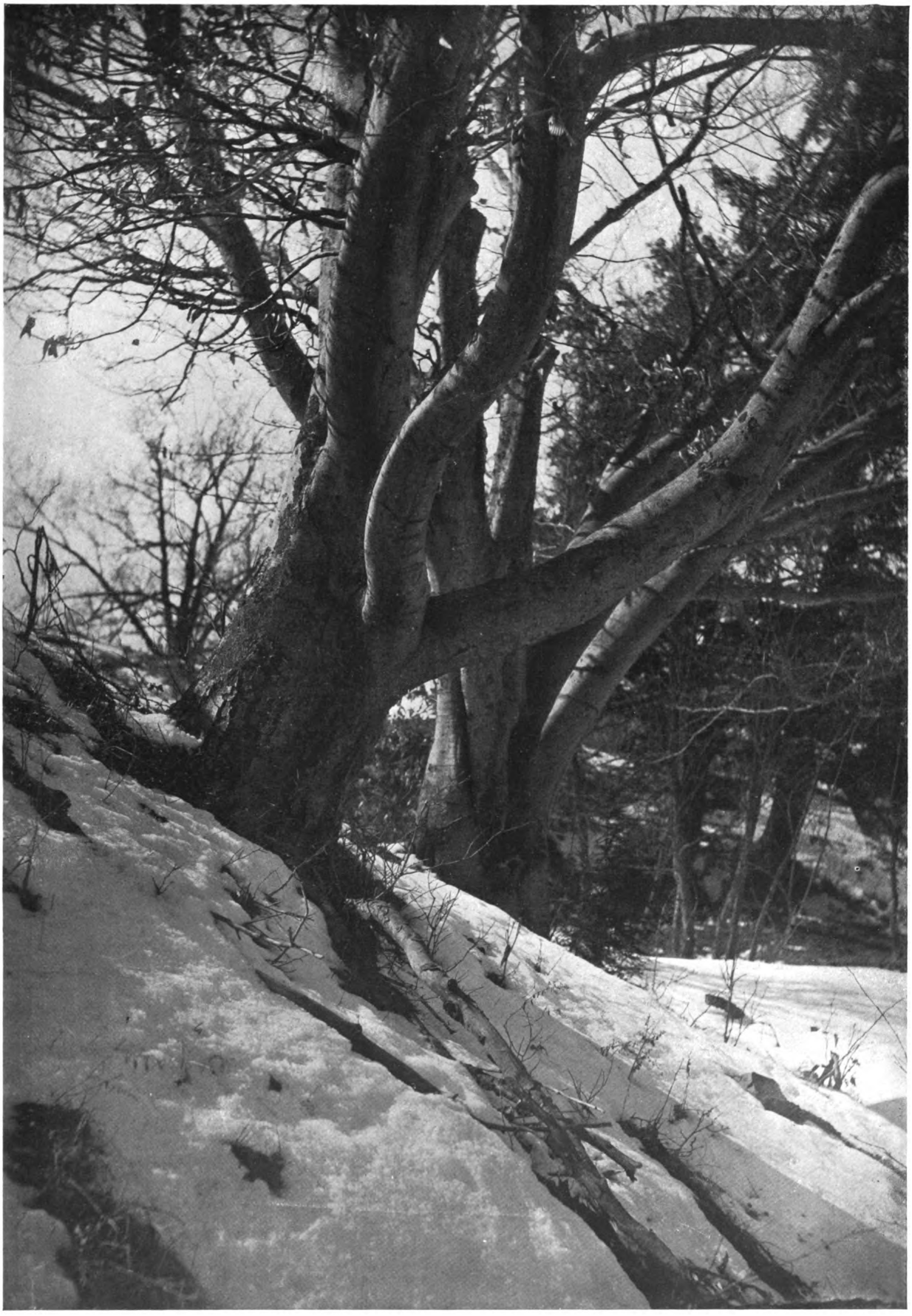

"The strength and resoluteness of the framework of the trees." (See page 40)

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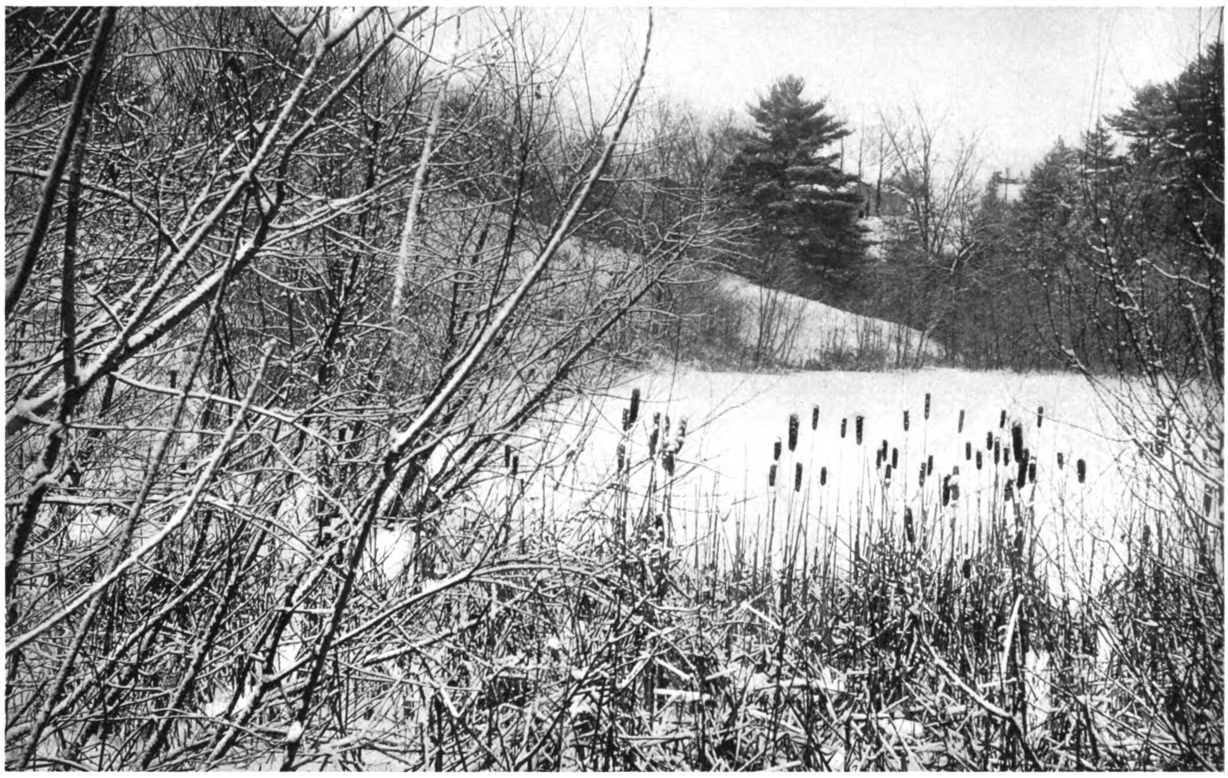

AN OUTLOOK ON WINTER

IN the bottom of the valley is a brook that saunters between oozing banks. It falls over stones and dips under fences. It marks an open place on the face of the earth, and the trees and soft herbs bend their branches into the sunlight. The hang-bird swings her nest over it. Mossy logs are crumbling into it. There are still pools where the minnows play. The brook runs away and away into the forest. As a boy I explored it but never found its source. It came somewhere from the Beyond and its name was Mystery.

The mystery of this brook was its changing moods. It had its own way of recording the passing of the weeks and months. I remember never to have seen it twice in the same mood, nor to have got the same lesson from it on two successive days; yet, with all its variety, it always left that same feeling of mystery and that same vague longing to follow to its source and to know the great world that I was sure must lie beyond. I felt that the brook was greater and wiser than I. It became my teacher. I wondered how it knew when March came, and why its round of life recurred so regularly with the returning seasons. I remember that I was anxious for the spring to come, that I might see it again. I longed for the earthy smell when the snow settled away and left bare brown margins along its banks. I watched for the suckers that came up from the river to spawn. I made a note when the first frog peeped. I waited for the unfolding spray to soften the bare trunks. I watched the greening of the banks and looked eagerly for the bluebird when I heard his curling note somewhere high in the air.

Yet, with all my familiarity with this brook, I did not know it in the winter. Its pathway up into the winter woods was as unexplored as the arctic regions. Somehow, it was not a brook in the winter time. It was merely a dreary waste, as cold and as forbidding as death. The winter was only a season of waiting, and spring was always late.

Many years have come and gone since then. My affec-

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Spring. "The unfolding spray softens the bare trunks"

tion for the brook gave way to a study of plants and animals and stones. For years I was absorbed in phenomena. But now, mere phenomena and things have slipped into a secondary place, and the old boyhood slowly reasserts itself. I am sure that I know the brook the better because I know more about the things that live in its little world; yet that same mystery pervades it and there is that same longing for the things that lie beyond. I remember that in the old days, I did not mind the rain and the sleet when visiting the brook. I was not conscious that they were not a part of the brook itself. It was only when I began to dress up that the rain annoyed me. I must make a proper appearance before the world. From that time, the brook and I grew farther apart. We are coming

Summer. "All things are familiar and close; the depths are covered"

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Fall. "The lines of the landscape become hard and sharp"

together again now. It is no misdemeanor to get wet if you feel that you are not spoiling your clothing. One's happiness is largely a question of clothes.

But the brook is one degree the better now just because it remains a brook all winter. The winter is the best season of the four because there is more mystery in it. Things are hidden; yet there is a new and strange spirit in the air. There are strange bird-calls in the depths of the still white woods. There are strange marks in the new-fallen snow. There are soft noises when the snow drops from the trees. There are grotesque figures on the old fence. There is the warm brown pathway of the brook still winding up between oozing banks. In the spring there are troops of flower-gatherers along the

Winter. "There is a new and strange spirit in the air"

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brook. In the summer there are fishers at the deep pools. In the fall there are nut-gatherers and aimless wanderers. In the winter the brook and I are alone. We know.

Most of us, I fear, look upon winter with some feeling of dread and apprehension. It is to be endured. This feeling is partly due to the immense change that comes with the approach of winter. The trees are bare. The leaves are drifting into the fence-rows. The birds have flown. The deserted country roads stretch away into leaden skies. The lines of the landscape become hard and sharp. Gusty winds scurry over the fields. It is the turn of the year.

To many persons, however, the dread of winter, or the lack of enjoyment in it, is a question of weather. We speak of bad weather, as if weather ever could be bad. Weather is not a human institution, and is not to be measured by human standards. There is strength and mighty uplift in the roaring winds that go roistering over the winter hills. The cold and the storm are a part of winter, as the warmth and the soft rain are a part of summer. Persons who find happiness in the out-of-doors only in what we call pleasant weather, do not really love nature.

We speak of winter as bare, but this is only a contrast with summer. In the summer all things are familiar and close; the depths are covered. The view is restricted. We see things near by. In the winter things are uncovered. Old objects have new forms. There are new curves in the roadway through the forest. There are steeper undulations in the footpath. Even when the snow lies deep on the earth the ground-line carries the eye into strange distances. You look far down into the heart of the woods. You feel the strength and resoluteness of the framework of the trees. You see the corners and angles of the rocks. You discover the trail that was lost in the summer. You look clear through the weedy tangle. You find new knotholes in the tree trunks. You penetrate to the very depths. You analyze, and gain insight.

Many times in warm countries I have been told that the climate has transcendent merit because there is no winter. But to me this lack is its disadvantage. There are things to see, things to do, things to think about in the winter as in the spring. There is interest in the winter wayside, in the hibernating insects, in the fretwork of the weeds against the snow, in the strong outlines of the trees, in the snow-shapes, in the cold deep sky. To many persons, these strong alternations of the seasons emphasize and punctuate the life. They are the mountains and the valleys. The winter makes the spring worth while.

The lesson is that our interest in the out-of-doors should be a perennial current that overflows from the fountain that lies deep within us. This interest is colored and modified by every passing season, but fundamentally it is beyond time and place. Winter or no winter, it matters not: the fields lie beyond.

"The winter is the best season of the four because there is more mystery in it"

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CHESTERBROOK STOCK FARM

A UNIQUE BLUE GRASS FARM IN THE EAST

By FRANCIS NELSON BARKSDALE

IT seems odd that in eastern Pennsylvania there should be a farm so thoroughly and luxuriantly set in blue grass as to excite the envy of Kentuckians; yet more than one son of that splendid land of fair women and fine horses has cast covetous and lingering eyes upon the richly verdant turf of Chesterbrook. If a Kentuckian should be blindfolded and suddenly set down in one of the fields of this splendid estate, he might almost imagine himself in sight of the statue of Henry Clay at Lexington, and from the lay of the land and the texture of the turf it would be difficult to convince him of his error.

Chesterbrook Farm, the stock farm of Alexander J. Cassatt, president of the Pennsylvania railroad, is located in Chester county, Pennsylvania, twenty miles west of Philadelphia. It occupies a commanding position at the eastern end of the celebrated Chester valley, renowned far and wide for the fertility of its soil and its pastoral picturesqueness. No agricultural section of the country is richer in productiveness, nor presents more convincing evidence of thrift and prosperity, and yet it is absolutely devoid of any suspicion of "fancy" farming. The farmer farms for revenue and not for exhibition purposes, yet he does it so intelligently that the products of the soil, in due course, transform themselves into stocks and bonds and mortgages.

The estate of Chesterbrook covers an area of seven hundred acres, every acre of which, except six, is permanently set in grass. The topography of the place contributes much to its charm. The farm is almost a parallelogram, the sides of which slope down from one wooded ridge to another some two miles distant, while the center of the valley and the farm is bisected by the Chester creek. The tract is subdivided into seventeen fields, ranging in size from a paddock of four acres to a field of sixty, each enclosed by substantial fences, supplemented here and there by hedge-rows of osage orange. Every field is abundantly supplied with water, either from the creek or springs. As the land descends with a gentle undulation to the creek, and ascends to the high ground beyond, there are no marked contrasts of height and lowland, but it spreads out to the view as a canvas rolled from a spool. The landscape presents one grand carpet of green, relieved here and there by a great red barn or picturesque old stuccoed house that was standing in youthful pride when the frost-bitten Continental soldiers were dodging the wintry blasts at Valley Forge hard by. Great shade trees raise their grateful shelter in the fields and bits of woodland have survived in groves as if to show the high grade of timber that the land once produced. From whatever view point the farm is considered the prospect is eminently satisfying, both in its natural and acquired features. Many travelers have declared that the green is the green of England, but the setting of the picture distinctly American.

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The underlying formation of the valley is limestone, and this is the primary cause of the luxuriant growth of blue grass. Fine specimens of it are found along the roadside and in places that have never been cultivated, which is evidence that it has a sporadic growth in this section, but it is not indigenous to the soil as in Kentucky. When Richard Penn Smith, manager of the farm, asked Milton Young, of the celebrated McGrathiana Farm, why blue grass thrived so finely in Kentucky, his characteristic reply was,—

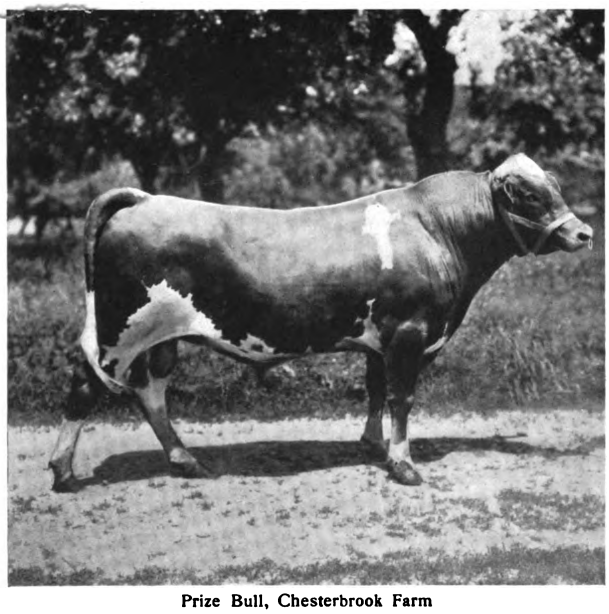
"Well, sah, I don't know any other reason except that blue grass is willin' to grow here!"

It seems willing to grow in Chester valley also, with the proper encouragement.

The fields of Chesterbrook Farm were first set in the blue grass twenty years ago, when Mr. Cassatt acquired the property, and nearly all of them have remained unfallowed since. But it has required much perseverance and unremitting labor to produce the magnificent turf of to-day. Every year since that date one field has been treated to a sowing of two quarts of timothy, one quart of alsike and one quart of red clover per acre. This is sown broadcast on the snow in late February, or early March, just as the pores of the earth are opening with the first thaw. When the turf is free of snow the chain harrow is passed over it to loosen the grass, and then it is rolled. A top-dressing with the manure spreader is administered every spring and fall, and every four years an application of forty bushels of lime to the acre is made. The grass both in quantity and quality is improving each season. It yields about one and a half tons of hay per acre and offers grand pasturage a week after the harvest. Two hundred and sixty-seven tons of hay were housed from a portion of the farm this season, apart from the pasturage afforded over two hundred horses, one hundred and fifty sheep, forty cows and fifty bullocks. The stock is turned on the grass May 1, and remains there constantly night and day until the snow covers the ground. During this period the only other food the animals get is a daily bite of carrots, which are highly esteemed for their medicinal qualities. Many of the fields are mowed twice, and at the end of the season the dry grass is mowed and burned.

The Bard, the star of Chesterbrook

Cadet, Hackney stallion



Prize Bull, Chesterbrook Farm

In winter the hay is served cut. From the weaning time until he is sold the Chesterbrook colt has a diet of blue grass, and there can be no doubt that its nourishing qualities exercise a marked effect on his success in life.

The product of Chesterbrook is first of all hackneys. At the head of the stud is imported "Cadet," whose progeny are scattered over the world from the stock farm of King Edward VII, where Field Marshal, a son of Cadet, heads the stud, to the veldt of South Africa and the plains of Australia. The "Cadet" strain has found singular favor in this country, and more improvement in the style and quality of the high grade driving and saddle horses may be attributed to him than to any other sire. Not only to the thoroughbreds has he imparted these sterling qualities of form and behavior and endurance, but to the saddle and road horses, bred by crossing with thoroughbred running mares, the characteristic excellence of the great sire attaches. All true horsemen appreciate the worth of Cadet, and the records of all the principal horse shows bear testimony to the prize-winning abilities of the members of his

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The farm and its environment. "The green is the green of England, but the setting of the picture is distinctly American"

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The "Old Davis House," one hundred and seventy-five years old,—the Master's headquarters. "Within its hospitable walls many noted men have found unique entertainment at meals often prepared by the hands of hosts or guests, and served without the aid of waiters"

family. He is in the prime of his vitality now, having been imported from England in 1892.

In the palmy days of racing when the Chesterbrook colors were the admiration and the fear of the turf, the blood of "The Bard" was a patent of nobility to any colt. Even in this present year, so prolific in record-breaking, a son of "The Bard" has succeeded in reducing the figures of the running track record. This magnificent son of Longfellow, sired in 1883, is still the bright particular star of Chesterbrook, and while none of his sons are run under his owner's colors, they are eagerly picked up by discerning turfmen, and are winning on many tracks both glory and purses. The training stables and track are still maintained, and the preliminary training of the youngsters takes place on the farm.

Seventy brood mares of all kinds, some of them dams of great distinction, as Heel and Toe, Equipoise, Minnie Andrews, Dawn, and Felicia, provide a splendid motherhood for the fifty foals, which is the average of each year. The fillies are bred at two years old. The running colts are sold at two or three years of age, as their promise of development attracts the buyer, and the hackneys are broken at three and placed on the market well trained at four.

While the breeding and training of thoroughbred horses is the principal industry at Chesterbrook, it does not limit the scope of the owner's work in the field of improving the country's live stock. Mr. Cassatt is a member of the Guernsey Breeders' Association, and his herd of these celebrated cattle is especially select. At its head is "Albert"—a king in his class and a handsome specimen of a high-bred animal. Blue ribbons galore attest the merits of the cows and calves of the herd. A fine flock of thoroughbred Shropshire sheep fill the complement of stock on this interesting place. It has been said that the most successful breeders of horses should also breed cattle and sheep, and the truth of the assertion is demonstrated at Chesterbrook. Some of these thoroughbred animals are well shown in the pictures on these pages.

Ten spacious barns, each one constructed with a special care to the comfort and convenience of its occupants, afford shelter to the stock during winter. All the barns are supplied with purest water from a reservoir on the place, and all the feed is handled and prepared by improved machinery.

The horse barns are surrounded by winter paddocks for exercise, and there is an indoor riding track for winter training.

No better exemplification of the thoroughness of the owner can be found than the excellent roads that traverse the farm. Constructed in the most substantial manner, of macadam, the roadway is as firm as asphalt and the side drains as carefully kept as the gutters of a city boulevard. There are some six miles of road on the farm.

One of these roads terminates at the "Old Davis House"

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A bunch of colts on Chesterbrook farm

—an old stuccoed colonial residence, one hundred and seventy-five years old. It has never been modernized, but stands now just as it has through seven generations of Davises. On the farm it is designated as "The Squire's," because the master makes his headquarters there when he visits the farm. Within its hospitable walls many noted men have found unique entertainment at meals often prepared by the hands of host or guests, and served without the aid of waiters.

Eleven miles away is Cheswold, the country seat of Mr. Cassatt, at Haverford, and his favorite mode of recreation is a ride or drive between the two places. Few days pass at Chesterbrook without a visit from the owner. Not that his presence is required for business reasons, since the management of the estate is as thoroughly systematized and organized as the great corporation of which the owner is the head, but from love of the horses and cattle and a devotion to life out-of-doors,

"One grand carpet of green." Part of the sheep flock, grazing where "great shade trees raise their grateful shelter in the fields"

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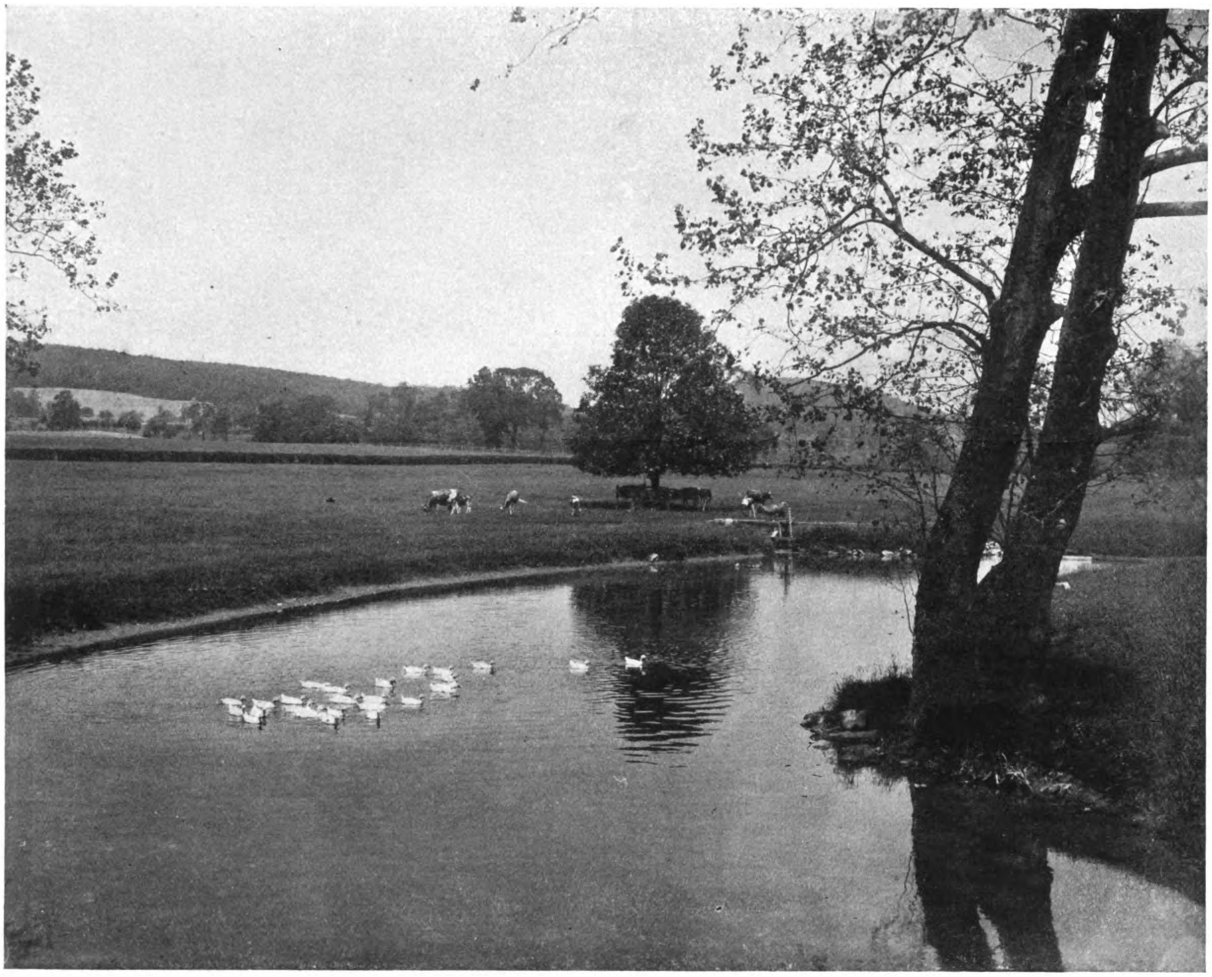

"Every field is abundantly supplied with water"

the busy railroad president finds himself irresistibly drawn to the fair fields that his industry and practical knowledge have developed. The affairs of his estate are less burdensome, but none the less absorbing, than the great problems that come before him daily in the larger fields of finance and transportation.

A new zest is added to the delights of the farm when the hunting season opens. Foxes abound in this section, there being no less than four broods on Chesterbrook Farm alone. The conformation of the country lends itself peculiarly to cross-country riding, and it is a favorite scene for the runs of the Radnor and other hunts with which the owner of Chesterbrook has always been identified.

THE SNOWDRIFT

By JOEL BENTON

When night dropped down, the fields were dark and dun,
  Storm sprites were out—we heard the North Wind blow;
Then when arose the slowly wading sun,
  Morning came mantled in a robe of snow.

White grew the landscape; every field and knoll
  Shone forth transfigured by the snowstorm's spell;
The trees and fences stood in motley droll
  Half dark, half whitened by this miracle.

But where the stone wall held its Parian weight
  Of snowdrift, like some Alp or Apennine,
We saw a sculpture man could not create,
  Smoothed off and chiseled by some touch divine.

Mute wonder of the myriad-moulded snow,
  Pure as the stars that sentinel the sky,
What Art could improvise and fashion so,
  Unless some godlike power sped procreant by!

Here plinth and cornice, architrave and frieze,
  Lift up a beauty to the day and sun,
Amidst the silver of the tinseled trees,
  That never Phidias or Canova won.

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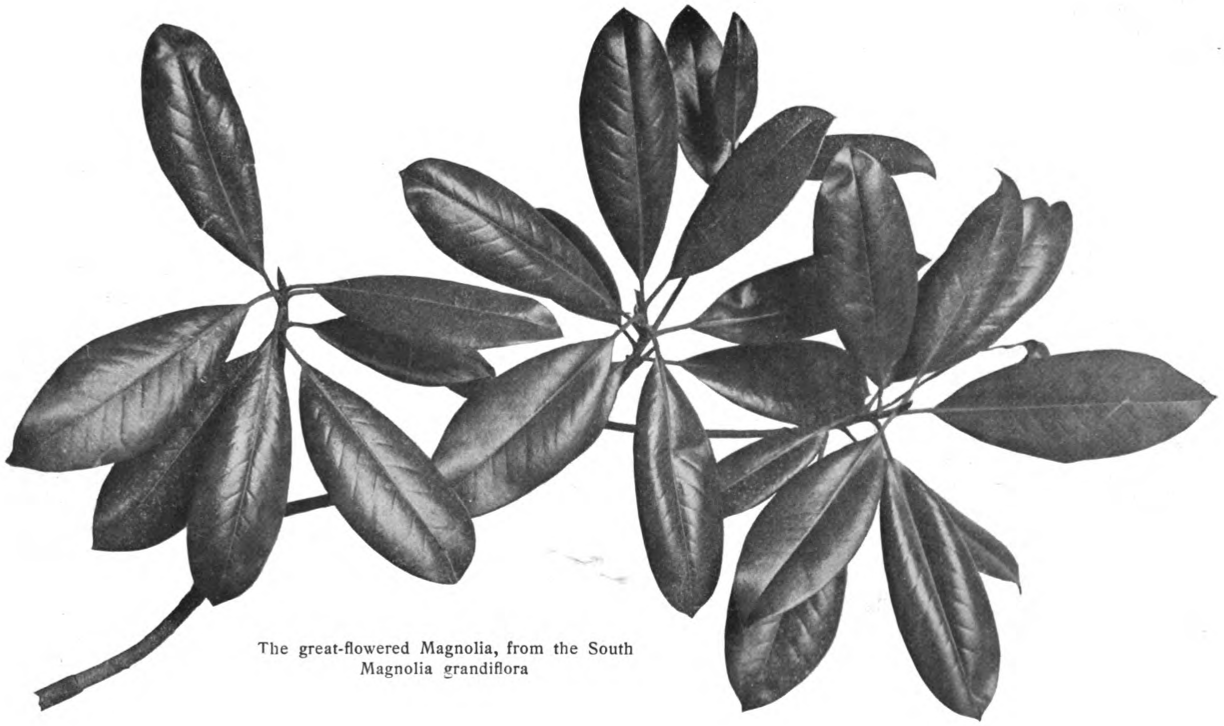
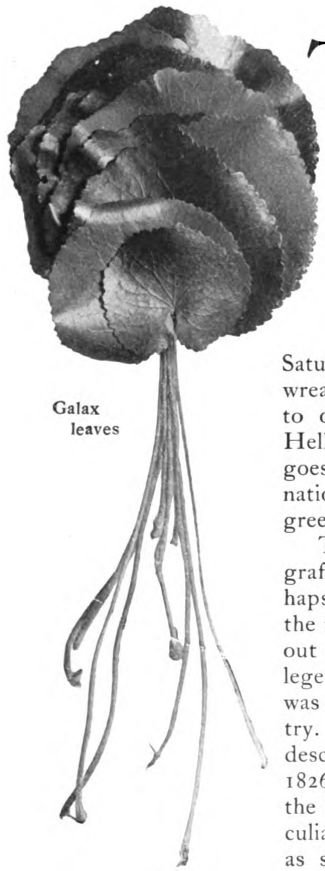


The great-flowered Magnolia, from the South
Magnolia grandiflora

CHRISTMAS GREENS

WHERE THEY GROW AND HOW THEY ARE GATHERED

By LENNIE GREENLEE



Galax leaves

THE love for decorating churches and homes with evergreens and flowers at high festivals is as old as human nature itself. It is found among the customs of every nation and probably had its origin in the wish of primitive man to keep on the good side of woodland spirits. Back to the Roman Saturnalia, to the ivy and laurel wreaths of Bacchus and Apollo, to offerings made the gods of Hellas, the dear old fashion goes, prevailing strongest among nations of the north, where evergreens are most abundant.

The Christmas tree was a graft from Germany, but perhaps the poetic idea of making the fir and spruce bear gay fruits out of season came from an old legend of Odin and Thor, or was taken from medieval pageantry. Samuel Taylor Coleridge, describing a visit to Germany in 1826, gives a graphic account of the Christmas-tree custom as peculiar to the German people and as something of which he had never heard before. The German settlers of Pennsylvania brought the custom to America and kept it for decades before it was adopted by the Puritans. Fifty years ago, except among a few foreigners, gift-trees were rarely seen in America; of late years it is estimated that 140 car-loads, say 400,000 trees, are offered at wholesale in New York and near-by cities in the fortnight before Christmas.

"It is said," according to Hexamer, "that Mark Carr, a jolly, sturdy woodman living among the foothills of the Catskills, originally conceived the idea of sending Christmas trees to the New York market. He had heard or read of celebrations in the metropolis when churches and houses were adorned with pine, hemlock and holly. It occurred to him that the stately young fir trees, covering the mountain side about his modest home, might be made profitable. The chopping and transportation would comprise the whole cost of the enterprise and it could be done at a season when he had little else to do. So, early in December, 1851, Mark and his boys drove two ox-sleds, loaded with young trees, through the deep snow to the river at Catskill, whence the father started with them for the city.

"One old-fashioned silver dollar secured a strip of sidewalk on the corner of Greenwich and Vesey streets, and there the long-sighted mountaineer set forth his forest novelties. Customers speedily appeared, soon buying all his wares at prices that seemed to him positively exorbitant. Highly elated, Mark enjoyed a few days of town life and returned home, but the next year he came again with a much larger stock, and from that time to this the business has continued to increase until now hundreds of thousands of trees are yearly sold from Mark Carr's old corner."

All Christmas-tree choppers like to begin their work early in November, because a fall of snow greatly increases its difficulty. The snow is likely to melt and freeze, rendering the branches too brittle for transportation. The

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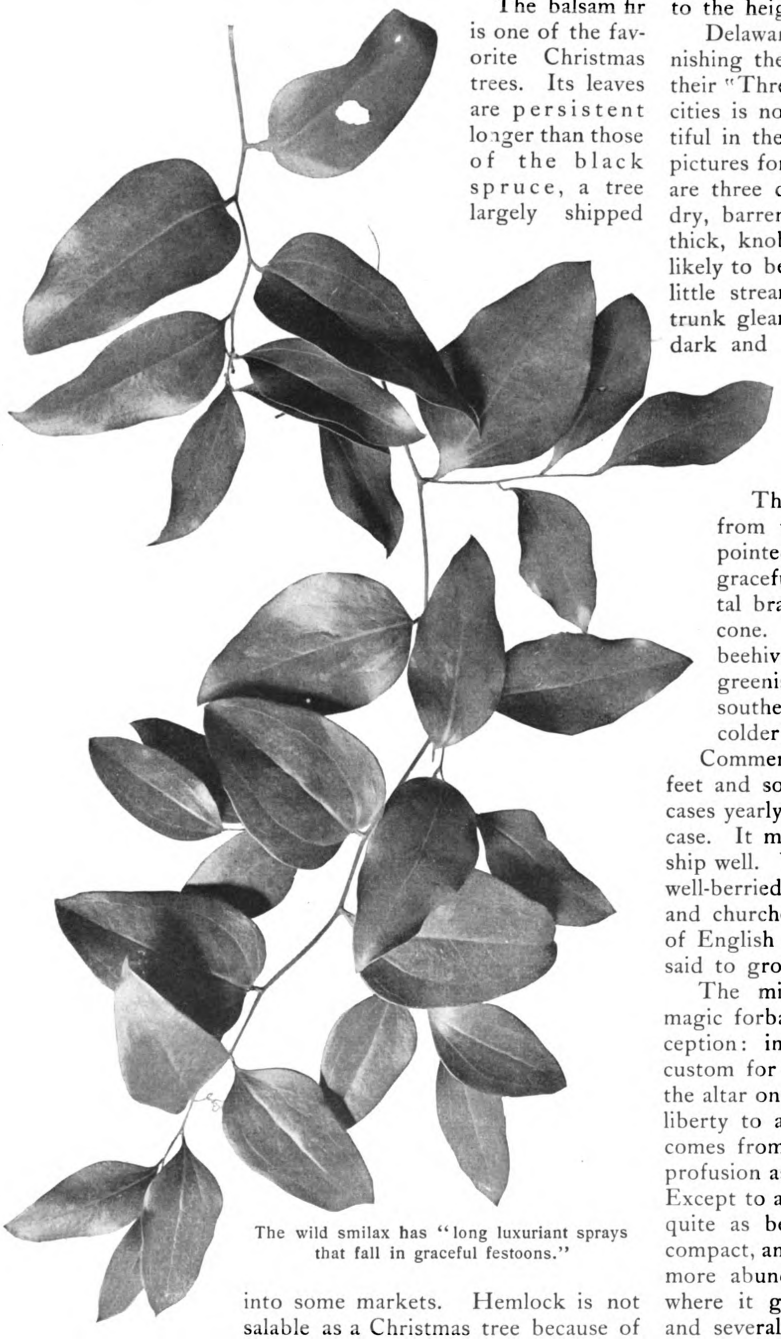
woodmen push their work forward, and pile their trees beside the forest roads, where they will keep fresh for six weeks or more. The trees in open spaces are selected as being more stocky and symmetrical than those in dense woodlands. They are sized, the branches closely wrapped with twine to economize space, and tied in bunches of from one to eight trees, according to size.

The balsam fir is one of the favorite Christmas trees. Its leaves are persistent longer than those of the black spruce, a tree largely shipped into some markets. Hemlock is not salable as a Christmas tree because of the very drooping grace and flexibility that make it so beautiful, but its twigs and branches are used for massing and roping.



The wild smilax has "long luxuriant sprays that fall in graceful festoons."

The old-fashioned Christmas greens were rosemary, ivy and bay, but in the 2,000 tons of wreathing and decorating material which it is estimated that we now use every year there is a much greater variety. Best loved of all is the glossy, red-berried holly. "Holm" was the old English name for it, and it is thought to be identical with the "greenwood tree" of British ballads and of Robin Hood fame. On our side of the Atlantic, the American holly, *Ilex opaca*, is found from Maine, where it grows as a shrub, to North and South Carolina, where it lifts a symmetrical cone of dark, shining leaves set with scarlet berry clusters, along a beautiful trunk of gray and silver, to the height of seventy or eighty feet.

Delaware and Maryland are usually credited with furnishing the best grade of holly to Christmas markets, but their "Three X" brand as seen after shipment to northern cities is not so finely berried as the Carolina holly, plentiful in the region around Asheville, and from which the pictures for this article were made. In this country there are three distinct grades of holly. Trees that stand on dry, barren hillsides, as a rule, are heavily laden with thick, knob-like clusters of berries, but their leaves are likely to be small, yellowish and imperfect. Follow some little stream to a sheltered, sunny glade where a holly trunk gleams white, and there you will find leaves large, dark and perfect, with a thick scarlet fruitage lighting the shadows evenly all over the tree. Still further down the brook where the hemlock shade is deep, the holly leaves grow even finer and darker, but the berries have almost disappeared from among them.

The shape of a fertile holly tree is quite different from that of a sterile one. The first is a sharply pointed evergreen cone, with branches drooping in graceful spray; the second spreads almost horizontal branches out stiffly into a broad, formal, rounded cone. At blooming time both are like enormous beehives, so sweet and full of honey are their small, greenish white flowers. The holly avenues of old southern homes are much admired by travelers from colder climates.

Commercial cases of holly contain about sixteen cubic feet and some large dealers dispose of nearly a thousand cases yearly. The finest holly sells at wholesale for $5 per case. It must be packed carefully and closely in order to ship well. Where plentiful it is wasted prodigally. Small, well-berried trees are often cut down for decorating halls and churches, and for Christmas trees. The importations of English holly do not seem to be satisfactory and are said to grow smaller every year.

The mistletoe's connection with heathen rites and magic forbade its use in Christian churches with one exception: in the cathedral of York, England, it was the custom for many years to lay a branch of mistletoe on the altar on Christmas day, proclaiming at the same time liberty to all. Much of the so-called English mistletoe comes from Normandy, where it flourishes in such great profusion as to injure the poplar trees on which it grows. Except to a few Anglomaniacs our American mistletoe is quite as beautiful as the English. Its growth is more compact, and the pearl-white berries, though smaller, are more abundant. From the swamps of South Carolina, where it grows thickly on gum trees, from Tennessee and several other Southern states, it is shipped in large quantities.

Lycopodium, one of the oldest and most used of Christmas greens, comes from the colder states. In old hillside pastures of Massachusetts I have watched children winding each other into spools of it before it was packed into sugar barrels for shipment. It has largely taken the place of cedar, arborvitæ, hemlock and the smaller evergreen twigs once used for roping, coming into all our

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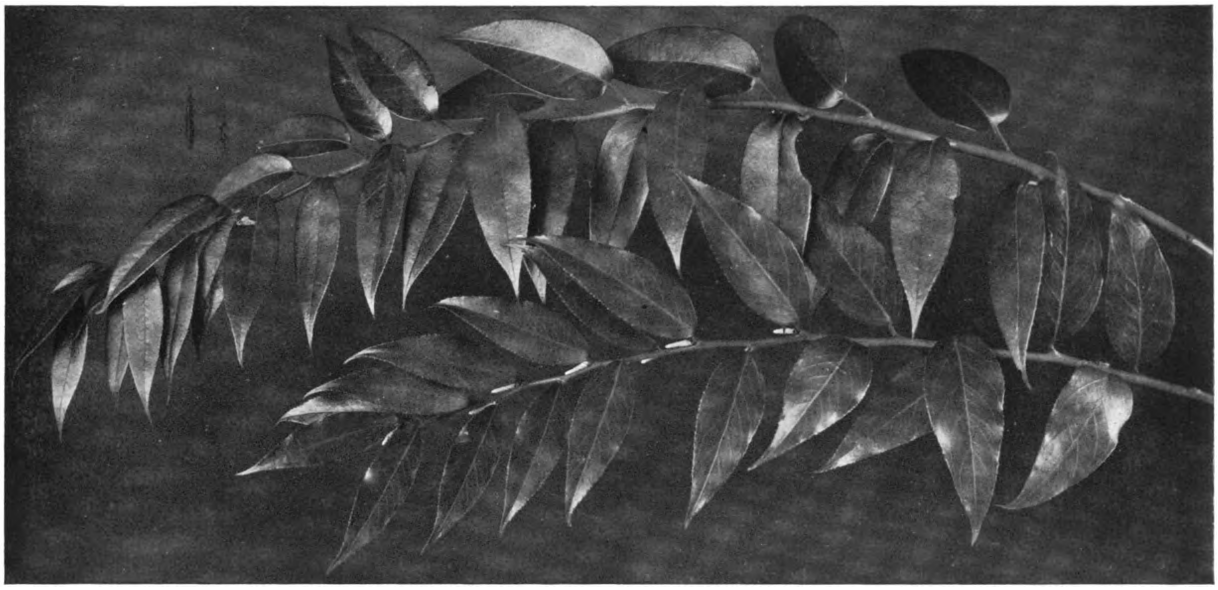

Leucothoe. "Its long sharply pointed leaves grow with fern-like regularity along sweeping stems several several yards long"

principal cities by the carload and selling for about $3 per barrel. Wisconsin alone sometimes sends out from 150 to 200 tons in a season. Lycopodium, or "ground pine," is one of the club mosses.

The far South contributes its quota of Christmas greens in palm tops, wild smilax, dagger ferns and Florida moss. Young palms—usually *Chamærops* (properly *Rhapidophyllum*) *Hystrix*—with bunches of from four to six leaves are cut just below the ground, so that the whole plant is seen entire and can be used with a very natural and fine effect. In Alabama and Georgia the wild smilax festoons trees to the height of forty or fifty feet. It is shipped north in long, luxuriant sprays that fall in graceful festoons about any support over which it may be flung, arranging itself in a charmingly free, unconventional way. The pine regions of the South contribute also sturdy terminal stems of the long-leaved pine, which form a veritable fountain of green when shaken out of their traveling wrap of paper and placed in a flower-pot. These tops will last long if kept watered. They contrast strongly with branches of the great-flowered magnolia of the South, bearing luxuriantly glossy leaves of deep green. These magnolia branches give a note of strength to any plan of holiday adornment.

The leucothoë, locally known as "branch ivy," is another new and artistic bit of greenery. Its long, sharply pointed leaves grow with fern-like regularity along sweeping stems several yards long. From the root these curve outward in all directions, so that a good bush in a deep, moist ravine has a distinct fountain shape. Where exposed to sun and frost the glossy leaves are tinted with bronze-purple. The leucothoë stems are sent to northern markets in bunches, and when disposed in a vase, give a distinct and richly decorative effect.

A companion of the leucothoë along cold north hillsides is the pretty little galax, or colt's-foot, shown at the head of this article and also over the editorial page. The durable texture of its leaves, their lovely shades of bronze and crimson, and their graceful poise upon long, wire-like stems fit them ideally for many uses. They have largely displaced the English ivy for making wreaths and crosses; plain green ones are clustered with gay Christmas flowers; bright ones are mingled with more somber evergreens. A favorite way of arranging them is to place the stems in a small vase or bowl of water and allow them to settle naturally into position. It takes a touch of frost to give them their rich tints of color. In April a slender wand of delicate white flowers springs from the center of the still ruddy leaves.

The mountain laurel, or kalmia, is as much sought for its glossy leaves before Christmas as for its flowers in summer. When used for roping, its festoons are frequently caught up with tips of rosebay, each one having a whorl of great leathery leaves about the terminal creamy white bud that was folded for a flower-cone next June.

In mild winters when there are plenty of berries for the birds to eat, the euonymus, or burning-bush, holds its scarlet berries in queer, four-cornered crimson hoods until the holidays, when they give a welcome variety to our stock of greens. The faithful little everlasting flower of our fields is frequently used for lines of white and silver among somber banks of green. It is particularly useful for lettering, or for mingling with red-berried alder twigs. The hardy Christmas and dagger ferns, when well arranged in jardinières, are almost as effective as the tender sword fern. They are pretty, too, when clustered in bowls or vases with bright berries. These berries are supplied by the spice-bush, and the curious and graceful two-colored fruits of the bitter-sweet are also freely used, serving to accentuate the greens of laurel, ground pine and the berryless holly too often in the market.

What deep breaths from the outdoor world come into our homes with these Christmas greens! They are resinous with the odor of great fir forests where snowflakes are flying; spicy with orchid incense from tropical jungles where palm and smilax flourish; vibrant, perhaps, with mocking-bird songs in swamps where the mistletoe grows.

The great heart of Nature is brimming with peace and good will toward all men, and these Christmas greens for the "Feast of Lights" carry a double message. When decked with Christmas fruits and surrounded by happy faces it is plainly read.

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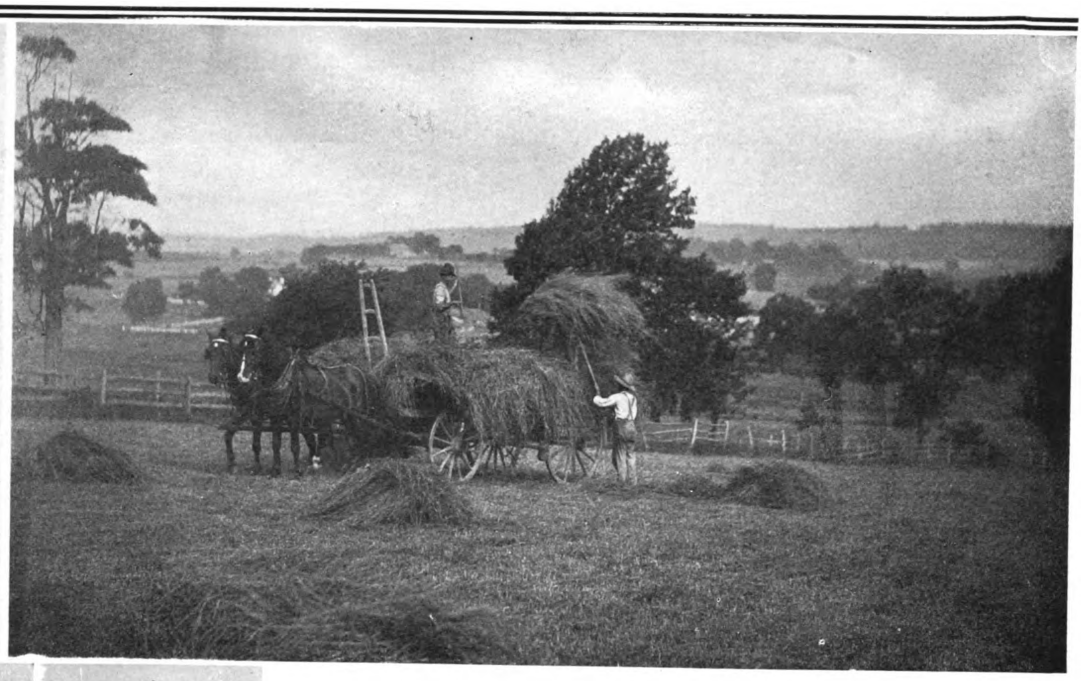
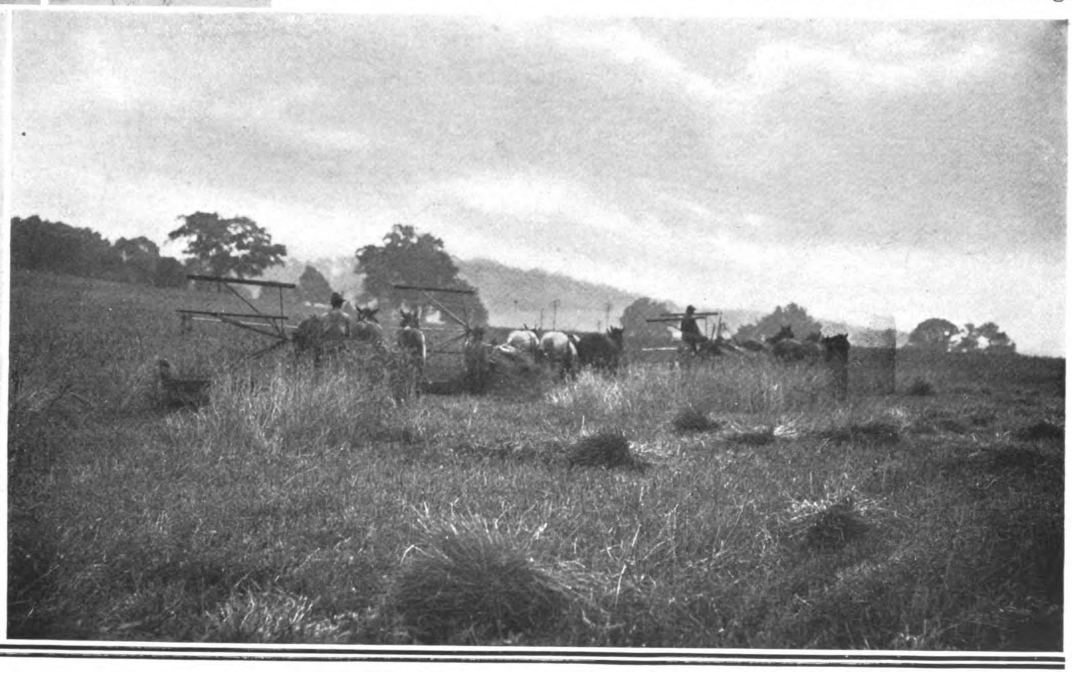


HARVESTING

THE SERIES OF PHOTOGRAPHS, BY HENRY TROTH, WHICH WON FIRST PRIZE IN THE FIRST PHOTOGRAPHIC COMPETITION

IN a large competition for the prizes offered by Country Life in America, the committee gave the award to the four pictures reproduced on these two pages. These pictures seemed to combine in the highest degree artistic feeling and photographic technique. There are many lessons to be drawn from a perusal of these pictures. They are common farm scenes in the eastern states. They suggest the essentially artistic and poetic interest that attaches to our familiar country landscapes. Often we are unaware that these landscapes are interesting,



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because we do not know how to see them. These beautiful photographs will help us to an appreciation of rural scenery, and therefore may have more educational value than pages of written text. If there are persons who have not learned to know the beauty in a common rural landscape, the pictures may be more expressive and helpful than the fields themselves; but we shall be sorry if they do not awaken a desire to go afield.

These photographs illustrate the bounty and richness of the earth. There is plenty, and even prodigality. There is also the contentment and dignity of useful occupation.

Still another lesson is the fact that the camera may give us real works of art and feeling. Merely to make a "good photograph" may not be worth the while. These photographs are also pictures. There is no effort at mere effect. They are natural and satisfying. —EDITOR.

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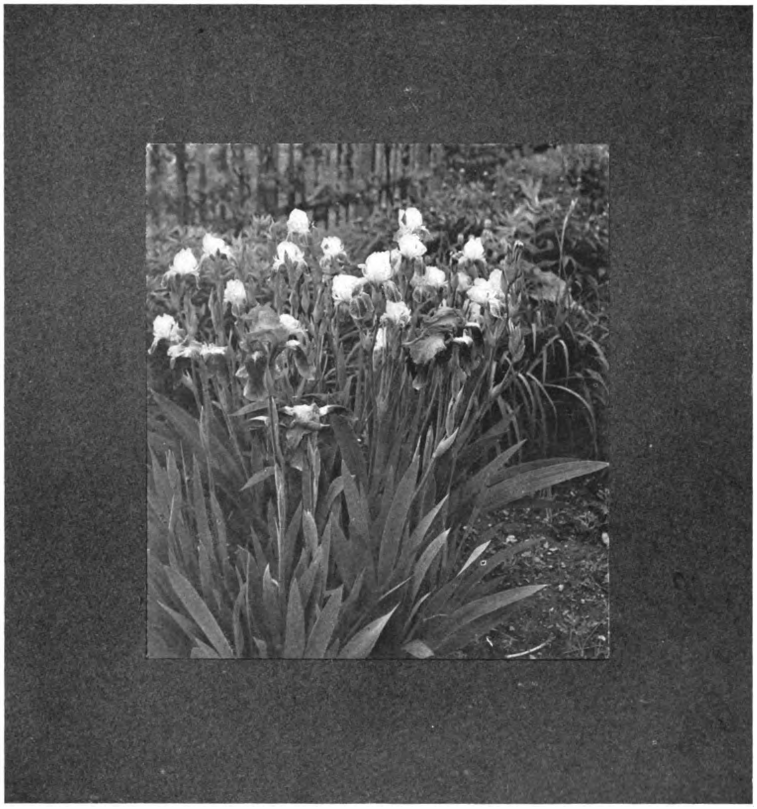
A PLEA FOR GAY LITTLE GARDENS

SUGGESTIONS THAT WILL ADD COLOR AND CHEER TO THE HOME

By ALICE M. RATHBONE

WHEN travelers come back from over the sea with wondrous tales of old-world cottage gardens, our delight is tempered by the impression we get that climate, skill, and years of patient culture have brought about results not to be expected in this newer land of ours. But a true garden-lover is not easily discouraged. "Hope springs eternal" in a garden, if nothing else does, and the impression of the traveler piques one to discover the secret of those charming effects in order that he may transplant them to his own little garden.

The charm was, in part, revealed not long ago in a New England city, at an exhibition of delightful pictures of garden-surrounded cottages in Warwickshire and the Lorna Doone country; and the secret seemed to be much color massed in small space, with some relief of green in hedge and vine, neatness in the keeping of path and border-edges, and the most unstudied abandon among the flowers. The perennial pea gave a soft pink flush to one cottage, a misty, white-flowered climber graced another; tall nollyhocks abloom in reds and pinks, stood out against a quaint white house wall; sunflowers reared their stately heads in corners; marigolds and white feverfew abounded; and in one charming picture called "The Cottage with the Lilies," the little space of earth between house and village street was nearly filled with white annunciation lilies.



"Much color massed in small space"—Iris

These visions of delight determined us to try to approach, at least, the success of these pretty old gardens. Not alone in Europe does the perennial pea flourish; nor can any white-flowered climber be lovelier than *Clematis paniculata*, with its veil of delicate blossoms. The Japanese honeysuckle and Crimson Rambler rose are desirable climbers, and the grape-vine may be grown against the house with good effect, as one sees it at Nantucket, carried up between first and second story windows and there trained along the length of the wall, like a frieze of living green. And for stocking the garden borders, what an array of beauty there is to choose from! Close to the edge let us tuck in bulbs, snowdrops, crocus, tulips, and the lovely scilla with its heavenly blue. Near the edging, too, belong forget-me-nots, while behind their calm blue expanse oriental poppies may flare out like a trumpet blast over a tranquil lake. In the background hollyhocks may find place, with sunflowers and tall blue larkspur near white lilies. Foxgloves, too, we want, and dainty Shirley poppies, daffodils, and the scarlet salvia; and here and there and everywhere let us plant marigolds. With a little store of marigold seeds, some of them started early in boxes, a garden may be as rich as Crœsus with his gold, from the tall, stately, large-flowered Africans, through the tawny, velvety French of medium height, to the dear little dwarfs so fine of foliage and pretty of flower.

Now having secured masses of brilliant color, let us introduce white here and there, for the high lights in our picture. It is interesting to note how essential white is in bringing out the glory of color in a garden. Color runs to riot without it; white brings a note of peace. We get it in sweet alyssum, phlox, asters, foxgloves, the marguerites and lilies; and having these we may be fearless in the use of the strongest color.

One of the telling touches in Mary Wilkins' delineation of New England life is the meager growth about the plain homes of her people. Cinnamon roses, clove pinks, a few currant bushes, perhaps,—bare surroundings that throw out in strong relief the somber limitations of the country life she depicts. If we cannot have the picturesque cottages of the old world to set off so charmingly the little gardens about them, we can have the pretty gardens to make our newer homes more attractive.

Of her English garden Mary Howitt wrote:

"And all among my flowers I walked
Like a miser 'mid his treasure;
For the pleasant plot of garden ground
Was a world of endless pleasure."

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COUNTRY LIFE PHOTOGRAPHS

By J. HORACE McFARLAND

SEVERAL months ago, in anticipation of the issue and the needs of this magazine, the publishers offered a series of cash prizes for "the best series of four photographs of any outdoor subject that would come within the scope of Country Life in America." This offer was not advertised extensively, but it seems to have been seen by many of those who make outdoor photographs. A very considerable number of amateurs competed, sending in a great mass of material.

I have been permitted to see the winning sets, and also to look over the whole collection with the editor and publishers. There were some surprises encountered, and the result of the competition is justly regarded as most encouraging and hopeful.

The winning set by Mr. Troth is shown in this number of Country Life in America. The originals are models of what such photographs ought to be, in conception, composition, and technique. Engraving and printing, however well done, do not convey the full impression of these exquisite pictures.

It was found impossible to decide between two sets second only in interest to the winning set, wherefore the publishers have generously awarded two second prizes. Totally different in composition and treatment, the work of Miss Huntsman and Mr. Rowley is almost faultless.

Under the terms of the competition, any one could submit any number of sets; and so, after the third prize had been decided, it was discovered to belong also to Mr. Rowley, winner of one of the second prizes, sent in under a different nom-de-plume. It is totally different in treatment from the second prize set.

The fourth prize was awarded because of the novelty and beauty of the subjects, despite some technical faults in the work.

The great mass of the unavailable pictures was made so by disregard of the simplest rules of composition and the most rudimentary elements of photographic technique. There were photographs without any point of interest—one wondered what moved the worker to waste his material! Many of these futile offerings were made undesirable by the endeavor to include much in the view, thus making it flat and complex, and without any strong feature. The reproductions of the winning set show the simplicity of good practice.

Others, again, chose interesting subjects to photograph, but failed to place them properly in the view, so that the result was not agreeable. Still others—far too many—had done well in composition, but missed good results by neglect or ignorance of photographic practice.

I might emphasize strongly, therefore, in view of other competitions, as well as of the fascinating field which outdoor photography presents, the primary necessity of good technique. The artist must be master of his tools.

But while technical excellence is commendable, it is purely mechanical after all, and the result which really presents a message, and becomes truly a picture, must have other merits. It must be "artistic," and this much misused word may well be briefly commented upon.

To paraphrase, "he who would have beautiful pictures on his negatives, must see beautiful pictures with his eyes." The camera, the lens, the plates and the chemicals—they are but tools. As with any form of art, it is the conception of the thing to picture that is primarily important. In these days of facility with things cameristic, millions may photograph, and only scores make pictures.

Let me emphasize, therefore, to the worker in the field of outdoor photography, the necessity for a study of the best attainable pictures. Dissect a work of accepted merit; endeavor to ascertain why it is pleasing; study like effects that may come under your own observation. Do not always photograph; look, think! And when a view is selected that seems to have a reason, a message, study its make-up thoughtfully on the camera's ground glass. Consider that the composition is there presented in nature's colors, and that the resulting transcription through lens and plate will be in monochrome only. Many times the view may have to be regretfully abandoned, but the worker will have gained much.

Perhaps I may advert to the use of figures or "life" in landscape composition, only to restate a law that, however trite, is probably painfully violated a thousand times a day. In Mr. Troth's "Harvesting" pictures there is life, but it is the life of action. Imagine these figures all standing up, eyes glued on the lens, in the fashion most pleasing to nearly every amateur at the beginning—what a total loss of merit there would be! Now note, that whenever, in an outdoor composition, a human figure is so disposed as to be staring at the camera, the whole thing becomes a portrait, with landscape accessories,—not an outdoor picture. Children in their grace and freedom from conventional pose, give us an exception to this rule which only proves its universality.

Of rules of composition, the placing of points of interest, the direction and intersection of the "lines," much might be said; but I can best again refer the ambitious worker to good pictures of any sort, whether made by brush, pencil or camera, for information. He will see that the true artist works with great simplicity, and that his pictures tend, in the direction of their lines, to hold the eye, not to divert it. It will be noted that there is usually one strong point of interest, not exactly in the center of the picture, balanced often by a secondary item in the make-up. The position of the horizon, the distribution of light and shade, the direction from which the light comes—all these points will appear, upon study, to be well worth considering. And if the ambitious worker shall be able to go afield with his camera, and return after a half day's invigorating tramp without having made one single exposure of a plate, he will be in a fair way to acquire the sense of selection which will give him satisfactory pictures as he gains control and confidence.

While Mr. Dugmore's wonderful frog pictures, shown in the November issue, and his no less wonderful fish pictures that appear this month, are hardly pure country life photographs, they serve admirably to point the admonition of these lines. Absolute master of technique, Mr. Dugmore is also able to obtain results which are purely natural and artistic. There is no evidence of effort, though the photographic difficulties must have been enormous. I hope he may be induced to tell Country Life readers how he does these wonderful things.

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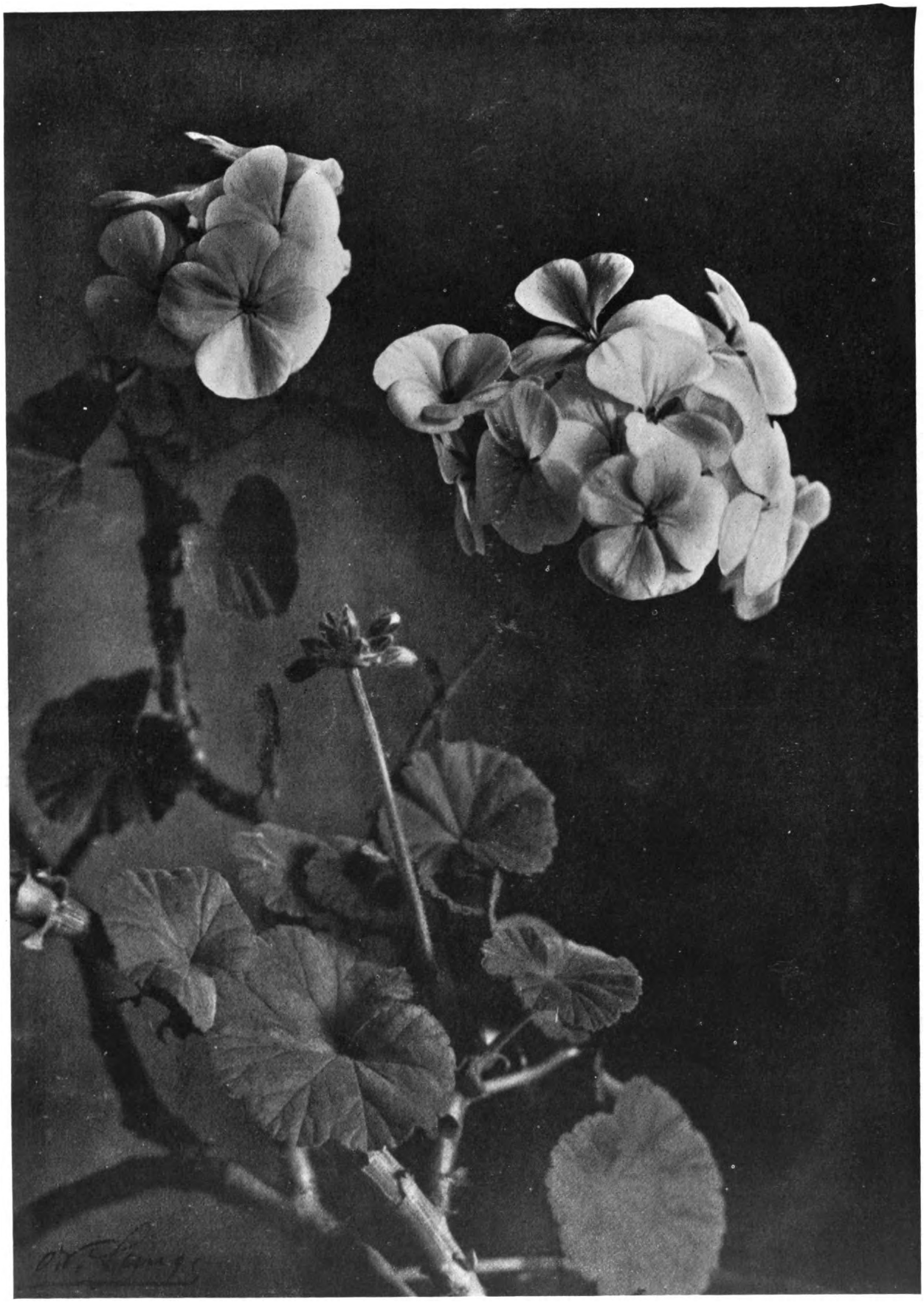

Common Garden Geranium

A Flower of the Million

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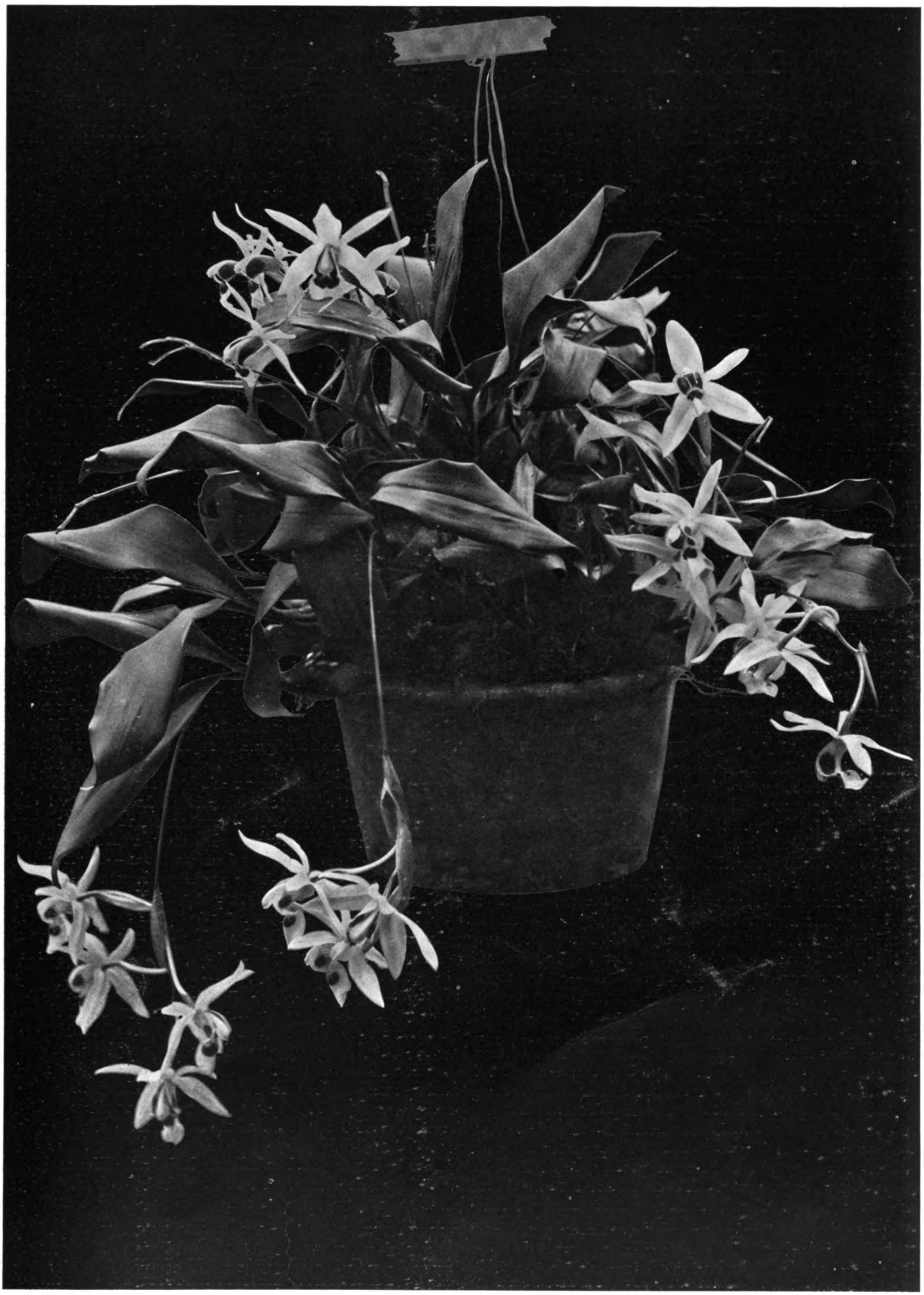

and of the Millionaire

An Orchid — Cœlogyne ocellata

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ON THE MAKING OF HERBACEOUS BORDERS

SOME LESSONS FROM THE PAN-AMERICAN EXPOSITION

AN herb is a plant that dies to the ground in winter, and a border is a strip of planting skirting the boundaries of a place or lying along the walks or drives. We grow herbs because we like them. We make borders of them because they look better in such places, are more easily cared for, and are not under foot. A pigweed in the middle of the lawn is lonesome and a nuisance; or if we pull it up we have nothing to put in the hole. A pigweed in the border is happy and attractive; or if we do not like it and pull it up, there are other plants of its height and size to take its place.

Anybody can make a border. It is a simple matter. But just because it is so simple and easy, there are few men who make attractive ones. Some of the best that we have had the privilege of seeing were on the Pan-American grounds. Probably few of the visitors to the Exposition made more than a casual note of the herbaceous planting at the south end of the grounds, or thought of the care that had been expended there. Twenty acres were devoted to these beds. There were fifty exhibitors and over two hundred plats. The difficulties are great in such plantings as these. The land is only newly prepared. The time is short. There are few plants of a great many kinds. Each plant is to be an exhibit and therefore must have an opportunity to display itself. Exhibition planting is difficult to manage in an artistic way. If each plant is isolated, the mass-effect is lost and the plantation is likely to be a mere nursery.

The two pictures shown on these pages illustrate bold and artistic effects produced with exhibition plants, and there were many other examples as good as these on the Exposition grounds. These plantings are the work of William Scott, Superintendent of Floriculture, and a florist of Buffalo. Mr. Scott had been known chiefly as a florist. We shall now think of him also as a gardener — in the broader sense — and as an artist in dealing with plants. He had the great advantage of knowing how to grow the things. We often seem to lose sight of the importance of such knowledge. It is knowledge that it is troublesome not to have.

A mixed border of hardy perennials, showing forceful contrasts of plant forms

The first picture shows a general mixed bed of hardy perennials, mostly native things. Aster-like Boltonias are in the background. Sunflowers are in the distance. Low things are along the edge. Rods of Liatris or Blazing Star shoot out of the mass. The whole composition is strong and effective, and every plant shows for what it is worth.

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The second picture shows a fine bed of grasses. These plants should be better known. They are good the season through. In the background is the Arundo or Giant Reed. In the middle row are Eulalias, the slenderer ones being *Eulalia univittata* (properly *Miscanthus Sinensis* var. *gracillimus*). The plumy ones in front are *Pennisetum villosum* (known to gardeners as *P. longistylum*).

Fourteen months before these things were planted the land had been only roughly graded. New soil had to be carted on, the final grading and leveling done, and the sod established. The home-maker, with good soil and established lawn, should be able to do at least as well.

It is well to make plans now for the spring planting. Things always go slower than we expect. Spring will soon be here. If the ground is not yet frozen, the earth can be spaded or plowed. Let it lie loose and open: the frost will pulverize it. Weathering is sometimes an efficient means of tilling. Unless the land is already rich and contains much vegetable matter or humus, it is well to turn under manure when you prepare the land this winter. This manure may be very useful in preventing hard clay soils from cementing by the action of frost and rain, as well as in affording plant-food. Even in some of the northern states, hardy bushes may be planted in December, but it is usually better to wait until spring. Large specimens are often moved in the dead of winter because heavy balls of earth can be taken with them. Read the catalogues, and be ready to order your plants before spring opens.

A bed of hardy perennial grasses, which are deserving of more general popularity

THE OLD BURIAL LOT

By CORA A. MATSON DOLSON

The marble slabs are slanted down,
Or lying in the rank tall grass;
The moss creeps o'er them thick and brown,
To hide the names from those that pass.

Forgotten are the joys and pain,
With all the thankless strife of years,
And blighted hopes that beat in vain,
Alike forgotten, smiles and tears.

Yet sheds the even-time her dew,
And sunlight gilds the lonely spot,
To feed the rosemary and the rue,
And tufts of wild forget-me-not.

High in the maple overhead,
Her cradle nest the hang-bird swings;
And o'er the long-forgotten dead
A crooning lullaby she sings.

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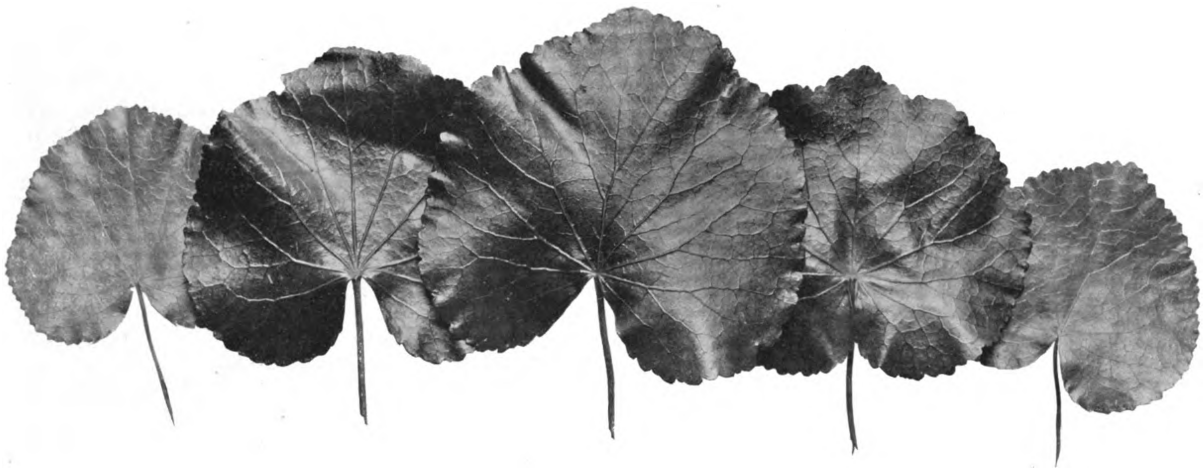

THE LESSON OF THE ABANDONED FARMS

DOES farming pay? Probably more than a third of the persons living in the United States, receive their support from the farm. The question is answered.

THE ABANDONED FARMS This question is really not fundamental. It is merely incidental. A necessary occupation must pay. Too often it is answered in the negative by the mere citing of cases in which farming is unremunerative. The abandoned farms of New England may not pay, else they might not have been abandoned. Yet even here there may be a fallacy. Perhaps the farm that has ceased to be profitable under the old system of farming may be made to pay under a new system. Strictly speaking, there are probably no abandoned farms in New England. There may be change in ownership and in methods, but the lands still yield a crop for somebody. They have not reverted to the public domain.

CHANGE AND ADJUSTMENT The management of land is undergoing a radical change. This change may result in hardship to the individual who will not accept the new order, but it works to the betterment of the farm and consequently of the community. Farming pays, even though a farmer here and there may fail. These changes are due to general economic movements that are consequent upon the rapid evolution of manufacture and transportation, and also upon the remarkable application of science and invention to farming itself. The East suffered from a loss of its rural population. Parts of the West suffered from over-exploitation and from speculation. Perhaps the West was opened too rapidly. The adjustment now seems to be nearing completion. In all sections there are evidences of greater stability and consequently of prosperity.

IT IS THE MAN Successful or unsuccessful farming is not primarily a question of geography, nor even of opportunity. It is a question of personality. Opportunity helps, but it neither creates nor supplies the motive power. When considered with reference to mere investment in land, locality is all-important; but farming can probably be made to pay in every region in which crops grow. Special areas are adapted to special crops and industries. In our last issue we made a defense of New England agriculture because the East is too often considered to offer few inducements to one who would till the soil. Other parts of the country have equal attractions and compensations. Once it was good advice to tell the young farmer to go West. Now it may be equally good advice to tell him to stay where he is, wherever that may be. As Americans, we probably need to encourage the desire to remain rather than to remove. In the long run the best man wins, whether he lives in California, Florida or Maine. The point is that every agricultural region has its marked advantages and opportunities, but no region is best. We wait only for men.

THE INVESTMENT IS SMALL Often we misjudge agriculture by comparing it with manufacture or other organized business. The farmer is not a large capitalist. He employs few men. The business unit is small and these units are scattered. Some observers believe that the business unit will enlarge in time and that the rate of profit may increase. Possibly this may come to some extent as a result of inevitable concentration of effort; but this unit can never become comparable with the business unit in other commercial industries. These are some of the reasons why it cannot: first, the items are too scattered; second, the raw materials are not limited; third, the conditions under which the items exist — under which the farmer works — are exceedingly various; fourth, these conditions are largely beyond man's control; fifth, there is a strong sentiment towards individuality. Agriculture, as a whole, cannot be a corporate business. The farmer is an individual.

THE POINT OF VIEW This is one reason why farming is so attractive to cultured minds — the fact that on the farm even the common man may have individuality. He may express himself. He is free. This freedom makes farming pay. It is one of the assets. It cannot be entered on the ledger, but it may be written on the heart. The sunrise, the rain, and the early fall frost are the farmer's. It is a pity that the farmer himself is not always conscious of it. The city man is aware of it when he goes to the farm. The city has taught us to know the country.

WHAT THE PROFITS ARE Of course farming must pay in money if it is to pay in sentiment, unless one farms it only for recreation and release. Often the farmer expects too much money for the amount that he has invested.

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Many a man supports a family on a farm that would not bring two thousand dollars on the market, and has time for fishing and politics besides. For his investment, he receives more than most men; and his investment should improve with every crop. Not only may the investment itself improve, but he is making a home at the same time that he is making a living. In the best kind of farming, the farm is a home, not merely a factory. Although the return may be great when figured in percentages, it may be small when contemplated in the aggregate. The means to increase the aggregate is to increase the investment. Improvements that augment the productive power of the farm are bound to pay. Intenser farming must come, and the power that will bring it is the demand for more of the comforts of living. Too often, we fancy, the man considers only the money value of his farming. Then it may not pay. He loses the soul of it. The intenser the commercial effort, the less the real profits.

THE CITY MAN'S FARMING

More and more the city man will take up farming. It will be a means of spending a useful vacation and of giving him health and a hold on real growing things. He may not make it pay in direct financial returns, but it will pay in other ways if he goes into it with caution and enthusiasm. Our city friends often wonder why they cannot make a farm pay. The answer is evident: they do not know farming. Farms will not run by proxy any more than mills or railroads will. The business requires close attention day by day. Many of our city acquaintances have made farms pay, but usually they have lived on the farm and have given careful attention to the details. Another difficulty is that the city farmer adds much expense to the farm in order that it may present a good appearance to his city friends. A farm does not look the same to a farmer and to a city man. A pigweed, a thistle, and a burdock may make a happy company, and the farm be none the worse; and they may look quite as well as an ornamented gatepost. A friend drove us to a new vineyard, set by a city man. The posts had been trimmed and planed. The friend admired the posts and asked our opinion. We could only suggest that the man probably would not plane them a second time.

THE FARM AND THE CITY

The gist of it is that a farm is valuable to a city man because it is near to nature. It is fortunate that the great manufacturing and mercantile centers of the East have so much attractive cheap land near at hand. The abandoned and unremunerative lands in time will contribute strongly to the solution of many social and ethical problems that arise in the large cities. They will relieve some of the congestion. They will provide a means of recuperation for tired men and women. They will afford retreats from temptation and stress. They will broaden and deepen many lives. They will aid many a man to find himself. Time is coming quickly when city and country will work hand in hand for a common purpose. It does not matter if farms do not make men rich. They make men happy.

THE COUNTRY BOY

We all know that an unusually large proportion of our successful men were reared on farms. They are successful because they had Spartan training in industry, frugality, self-reliance, and sincere honesty. The strength of their training was the simplicity of it. We have never seen these facts better stated than in a leaflet on "The Country Boy," by Professor Emmert, and published by Juniata College:

"No boy need ever regret that he was born in the country and reared on a farm. He may lack the keenness and polish of his city cousin. He may be embarrassed by his own awkwardness and feel that he is at a hopeless disadvantage in the race; but the country boy has the advantage of a wider range of practical ideas. From the very first his little services are in demand. He becomes at once a part of the force that is making for home comfort and prosperity, and feels the independence of one who is helping to support himself and add to the general store.

"The country boy is likely to regard his life as one of drudgery, and such it may be if he loses interest in his surroundings or is pressed with a continued round of duty. There is something heroic in the country boy's struggle with the elements. Rain and snow and sleet only brace his courage. The garnering of the crops, the housing and feeding of the domestic animals, the gathering and preparation of the winter fuel, give a purpose and zest to his toil. Then there is the long tramp, sometimes of miles, to the district school; lessons learned before and after long hours of labor. Is it any wonder there are keen wits developing all outside of graded systems and in defiance of pedagogical order? It is the intensity of purpose with which the mind acts under the influence of vigorous health and the conscious value of time that accounts for these results. So from the farm is being supplied a stream of active world workers,—men not afraid to do their duty and bubbling over with energy and ambition.

"From the little red schoolhouses come into our colleges and schools of higher grade, aspiring youth. Some are seeking an education as a means of emancipation from the drudgery of labor. Others come with a true thirst for knowledge. They find their way into the professions and business world, but few go back to the farm. What an ideal thing it would be for young men trained in science and holding the key to nature's mysteries and beauties, to go back to live broad, cultured, and quiet lives in the midst of the most delightful environment in which God has ever placed man!

"Touch the country-bred boy, now the merchant prince or the successful professional man, and how responsive he becomes to every suggestion of rural life! The same cannot be said of boys reared in the midst of any other surroundings. It is the contact with nature that makes the indelible impression upon his life. No greater gain could come to the country at large than to promote the love and appreciation of rural life. Health, happiness, purity, and peace are the natural inheritance of those who dwell surrounded by fresh air, beautiful scenes, bright skies, and pure social influences."

THE COMPETITION IN PHOTOGRAPHS

Last spring the publishers offered four cash prizes for the best photographs illustrating country life. Many persons entered the competition and many of the photographs were most excellent. The competition was so sharp that the second award could not be definitely decided between two contestants, and therefore two second prizes were made. The four pictures that won the first prize are reproduced in this issue. The others will appear soon. The successful contestants are as follows:

First prize, Henry Troth, Philadelphia. Harvesting scenes.
Second prize, Ernest J. Rowley, Toronto. Canadian scenery.
Second prize, Miss Mary G. Huntsman, Providence. New England Wood Roads.
Third prize, Ernest J. Rowley. Farm life.
Fourth prize, Miss F. E. Wheeler, Chazy, N. Y. Photographs on Clovernook Duck Ranch.

"At Christmas play, and make good cheer,
For Christmas comes but once a year."

—THOMAS TUSSER

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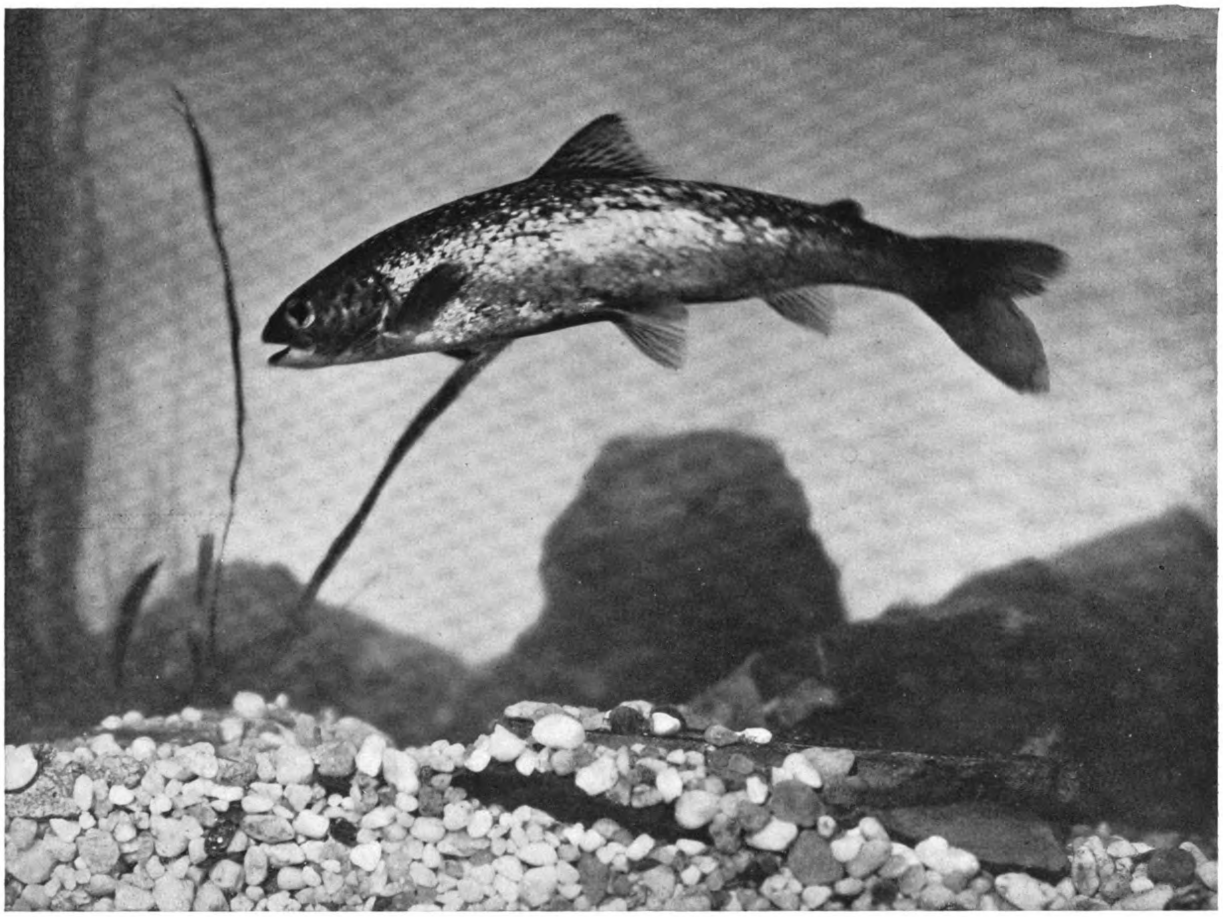

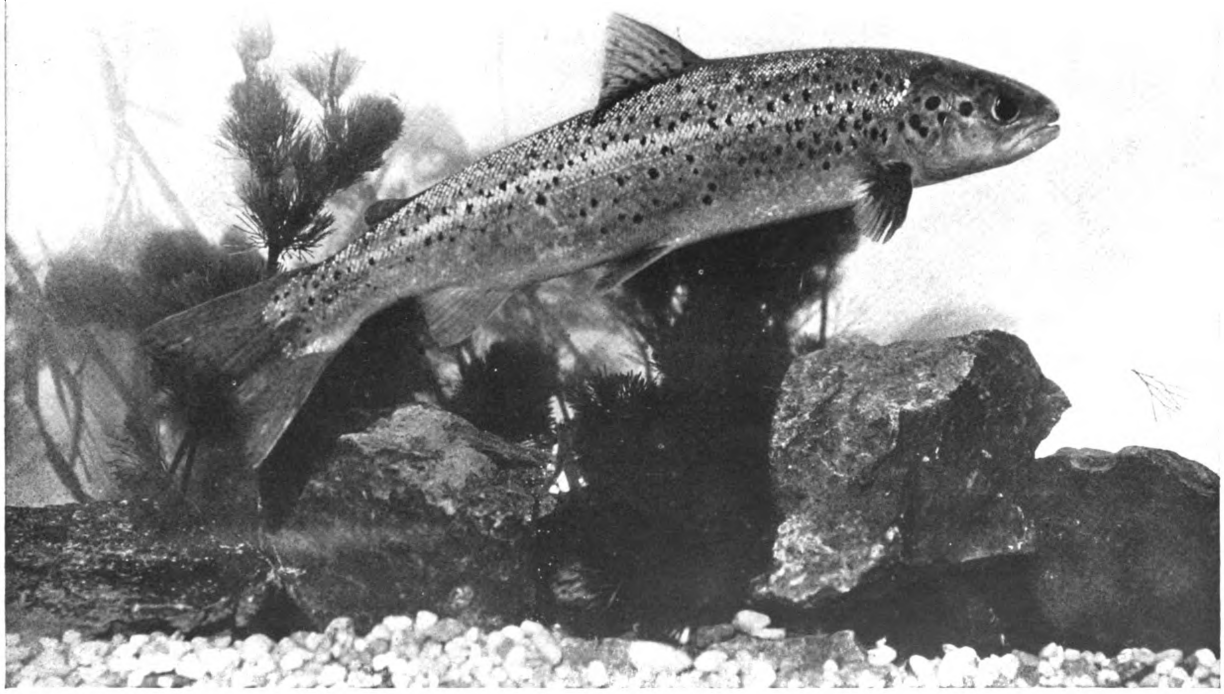

Fishes photographed from life by A. Radclyffe Dugmore. Atlantic salmon above; Land-locked salmon below. (See page 53.)

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From time to time this magazine will make reports on new plants, but only after a personal examination has been made of them. Persons who wish to have their novelties grown and tested may communicate with the Editor

STORING AND KEEPING FRUITS AND VEGETABLES

MODERN methods of living have done much to destroy many old fashioned but essentially home-making, and perhaps I might say, home-endearing customs. These habits developed as a natural result of the dependence of the farmer and villager upon his own foresight and providence for a store of the good things which were at once sustenance and inspiration during the long winter days. Then the prudent housewife manufactured the "natural" apples into the potential pie, stored the popcorn, and chestnut helped to pass the fireside evening hours. Housewives will no doubt remain divided in opinion as to whether it is better to draw from your own store of vegetables and fruit for the day's supply or to telephone Mr. Olericus for a gallon of Maryland spinach, a pound of Spanish onions and a peck of Bermuda potatoes, or order from Pomeranovka a dozen California plums, 6 Florida oranges, 1 Arizona pineapple and 5 pounds o' Tompkins County Kings.

Some housekeepers will continue to buy the seasonable vegetables as they need, while others will prefer the product seasoned at home. Nevertheless, vegetables and fruits must be stored.

37. A barrel of apples, as it opens in the market, properly "faced." "You see top, you see all"

nuts and winter squashes in the cool and dry attic, while the rooty vegetables with the russets and the pippins were committed to the moister atmosphere of the cellar.

In those days of isolation, from the modern view-point, but in reality of rich companionship, the onions and the pumpkins from the attic met daily the cabbage and the parsnips of the cellar on common ground in the kitchen; while pippin

SOME PRIMARY ESSENTIALS

It is a waste of time and energy to store anything but sound mature fruit and vegetables. The most perfect conditions imaginable will not improve the original quality of the article; nor will they preserve it against decay when rough and improper handling has prepared the way for the germs of dissolution to begin their work. Mature unbruised fruit and vegetables are the first requisites. Next in importance stand uniformity of temperature and adequate ventilation. While the various classes of fruits and vegetables differ materially in their preferences as regards temperature, none is uninjured in storage by a fluctuating thermometer. So it is with ventilation, which is essential to all.

Fruit Storage. It is a trite and a true saying that mechanical refrigeration has revolutionized commercial fruit and vegetable growing. It has enabled the Californian to offer his tempting peaches and plums alike to the Montreal "canuck" and the London "cockney." It has allowed the Canadian to hand his Australian cousins samples

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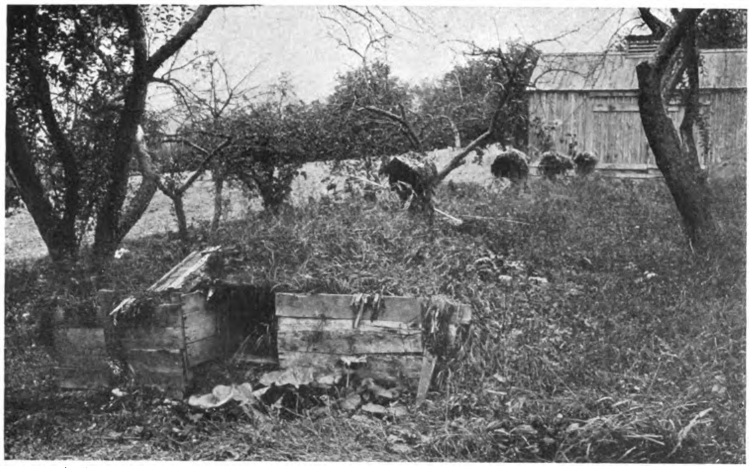


38. The vegetable "cave" or earth-covered store-house. I is the "outside cellar" of old farmsteads

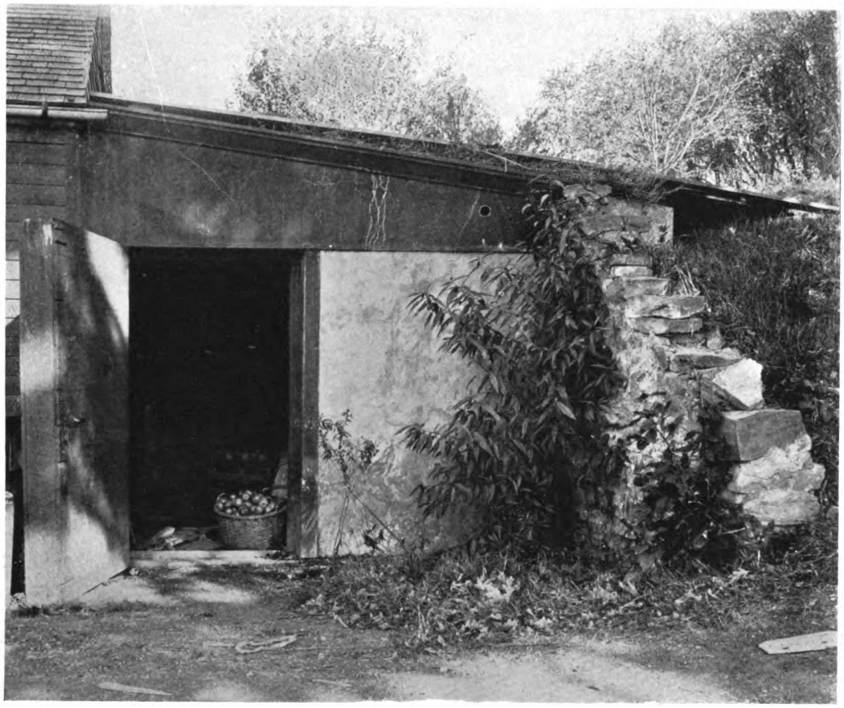
of his toothsome Spitzenburghs and Spys and this at the moment the Tasmanian grower is displaying his red-cheeked pippins in the markets of San Francisco.

But mechanical refrigeration as yet is for the commission man and the dealer. The fruit producer has contented himself thus far with cheaper forms of storage houses. These houses are of two types: (1) those employing a cooling agent and (2) those depending upon insulation and ventilation for a uniform temperature.

The "cooler"—a storage house with properly insulated walls, reinforced above by a chamber for ice—is somewhat in vogue among the Hudson (N.Y.) peach growers. In large buildings it has been found practicable to store the ice above, but this plan is not so feasible in the smaller structures. The labor of filling and the difficulty of saving it for use in late summer or early autumn are serious objections. A separate ice house or one in the form of a lean-to on the north side of the "cooler" is more satisfactory. These buildings are constructed with at least two dead air spaces, are provided with double doors and are covered with building paper and matched siding. When the ice chamber is located over the storage chamber the cold air may be carried below in flues at the sides of the room and opening at the bottom of the cooling room, or by means of large galvanized tubes connecting the ice chamber directly with the cooling room. These tubes are filled above with crushed ice, or ice and salt if a lower temperature is desired. The warm air is carried out by ventilating shafts which open near the ceiling. When the fruit-grower can command a supply of ice at the cost of cutting and storing, this style of storehouse may be satisfactory.

The insulated and ventilated house is becoming increasingly popular among northern fruit growers, and indeed is used extensively by packers. Adequate insulation is secured by building the wall upon 2x6-inch studding, and arranging a dead air space on either side. Paper is nailed to the studs and this is covered with boards; or the paper may be laid on the boards and held in place by perpendicular furring strips, to which the siding is nailed. The building should always be painted, to prevent checking and the formation of small air-ducts, which destroy the insulation. The interior is finished with matched lumber or is lathed and plastered. Plaster does not make a durable finish in a building in which the walls receive frequent knocks and jars in the placing of boxes and barrels. It is strange that many of these houses which are dependent upon ventilation for the maintainance of a comparatively low temperature have very poor means for assisting the ingress of cool air and the exit of warm air. The cold air should be conducted to all lower parts of the building. On the same principle the warm air flues are to be arranged so that the draft shall be prompt and effective. Waugh, in his book on "Fruit Harvesting," estimates that a room 12 x 12 x 8 feet requires a warm air flue 12 inches square, with a length of 6 to 12 feet. Windows are not used in a building of this kind to add to its architectural beauty, but to admit necessary light, and occasionally to supplement the ventilating system.

A low temperature is secured by strict attention to outside fluctuations and a harmonious management of in-take and exit flues. As cold nights come the windows and doors may be opened, in addition to the cold air flues. When the opposite occurs in day or night, all openings should be closed. Studious watchfulness and instant action are demanded in the management of a house of this type; when these are given the results are quite satisfactory. The ventilated house has a marked degree of usefulness as applied to the storing of the grape, the apple and winter pears.



39. A convenient type of bank store-house, built as a shed or lean-to

The underground fruit storehouse is passing into disuse, while the side-hill cellar is also less in favor with growers of fruits, but still frequently employed in vegetable storage. The old "outside cellar" is gradually passing away. Fig. 38. Yet a good outdoor cellar (Fig. 39) may be very satisfactory.

HANDLING THE PRODUCT

This must be discussed from two standpoints—that of the commercialist and that of the amateur. The methods and equipment of the former are more or less stereotyped, while those of the latter are often improvised and inadequate.

The speculator sorts his apples in the orchard, and sends

40. A corner in an apple storage house

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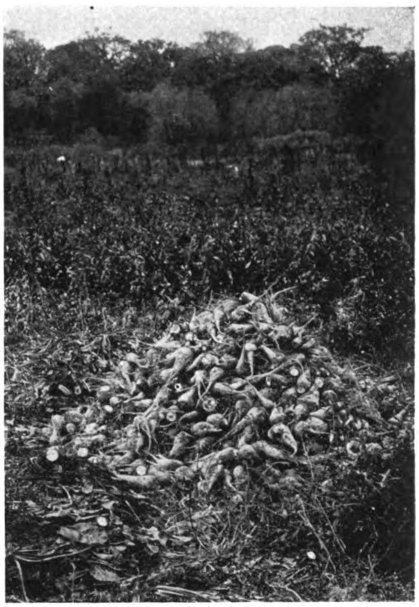
the headed barrels immediately to storage, where they are placed sidewise in tiers (Fig. 40) and kept as near the freezing point as possible if mechanical refrigeration is employed. Whether these apples are repacked depends upon the time they are sold. If a sale is made early in the season they may go out in the original package—but this is the exception. Sorting and packing means a material shrinkage of bulk added to the manual expense. These are considerable but are necessary in the interests of uniformity of grade and soundness of product. With regard to the exact temperature required for the preservation of different classes of fruit—much less varieties—instructive data are still to be obtained. In a general way it is known that while low temperatures will preserve the form and colors of fruits there is an elusive something lost in greater or lesser degree; this we designate by the term quality. In the case of fruits of coarse texture, lacking in aroma and the finer flavors, the deterioration does not attract attention, but when the finer grades are under observation the depreciation of quality becomes emphatic. So we have storage men advising a 32 degree compartment for Ben Davis and a 36 degree one for Jonathan. Perhaps in one instance there is nothing to lose!

Again, in regard to atmospheric humidity there is pronounced diversity in the requirements of different varieties of apples. Comparatively dry air causes shriveling of russets and russetted varieties while glossy skinned varieties are affected less markedly. Kinds susceptible to dryish air should then be stored in tight packages. Wrapping each specimen in paper is a wise precaution. The wrapping improves the insulation and prevents the spread of rot-producing agents. In practice very little of this wrapping is done except by our painstaking California friends.

Turning for a moment to the fruit storage requirements of the home we meet the first difficulty in the furnace-heated cellar of the urban and now often suburban residence. The owner should see to it that his cellar has a fruit and also a vegetable compartment. If these are on the north side, so much the better. Equability of temperature is to some degree insured. It occasionally happens that an inventory of the contents of a compartment of this kind displays an extraordinary range of product. It is sometimes possible in one small room to run the produce gamut from butter to brussels sprouts and from carrots to canned fruit (Fig. 41). The prominent members of the cabbage tribe are offensive occupants of the house-cellar and often as objectionable to the tenants above stairs as to their fellow denizens below.

The home fruit cellar should be a compact room lined with shelves or trays on which the fruit may be placed in boxes or baskets. If at all influenced by the furnace the fruit will shrivel. In this event barrels with tight fitting covers will be required. How it adds to the joy of housekeeping—homemaking—when one can discover in his own cellar not fruit juices alone, but the fruit itself crisp and fresh!

A final word about fruit for winter consumption in the home: let the fruit ripen thoroughly on the tree or vine. Gather the late wind-falls for immediate use but allow Dame Nature ample time to store each apple with all the aroma and flavor which naturally belong to it.



43. Harvesting beets. The roots might be covered and stored where they are

OF VEGETABLES

The storage requirements of vegetables do not differ materially from those of fruits. Low temperature with moisture for some and ventilation cover the main requisites. Still there are marked exceptions. It is necessary therefore to group them according to their needs in storage.

1. Needing a cool relatively moist atmosphere: carrot, parsnip, beet, salsify, turnip, celery, cabbage and potato. The market-gardener usually stores members of this group in pits. The pit is a simple affair. Choosing a slightly elevated and well drained spot, he throws out a few inches of soil and in this shallow excavation makes a conical heap of his roots or tubers. This should not exceed 3 or 4 feet in height and is made after the vegetables have been sorted. The heap is covered first with 5 or 6 inches of straw, hay or leaves. It remains in this condition till the approach of severe weather, when the covering is reinforced with a layer of soil 3 or 4 inches in depth. Ventilation is secured by drawing up at intervals through the soil bunches of the hay or straw covering. During the coldest weather an additional blanket of straw and manure is laid on in central New York. Farther south it may not be required. Figs. 42, 43.

42. Making a pit. Beets in outdoor storage covered with straw until cold weather comes, then covered also with earth

41. The condition to avoid. The general-purpose cellar, where vegetable and fruit flavors intermingle

Celery is stored in various ways. Cellar storage has convenience to commend it, but is undoubtedly attended with more risk than the field trenching system. In the cellar, which is usually a low A-shaped affair even with the surface of the ground, the plants are placed upright with their roots tightly packed in clean sand or loam. Strict attention must be paid to ventilation and the development of rot and rust diseases. Usually only unblanched celery is stored, but gardeners sometimes pack self-blanching varieties for early winter trade. Celery is stored in trenches in the field in increasing quantity each year. The plants are set upright in a shallow trench wide enough to receive four plants. The soil is banked to the tops of the leaves on either side. The trenches remain in this condition until cold weather when the tops are covered with boards to shed rain, and these protected with straw or hay to keep out frost. See Figs. 44, 45, 46.

For home use celery may be packed in boxes with sand and kept for a few weeks at a time, but it is difficult to preserve it in prime condition very long. Bailey, in the "Principles of Vegetable-Gardening," recommends sphagnum moss as packing material for vegetables like parsnips, salsify, and beets possessed of marked shriveling tendencies.

Cabbage is stored in cellars, ventilated storehouse or in trenches in the field. If a low, uniform temperature can be secured in the field, this method is preferred by the amateur.

2. Needing dry and moderately cool storage: sweet potato, squash.

The sweet potato is the most difficult of all vegetables to keep through winter. It will not endure cold, is sensitive to moisture and will shrivel if too dry. Commercially it is stored in barrels in warmed, well insulated houses. As a rule it will pay the consumer to buy as needed in preference to laying in a store in the autumn. Winter squashes may be stored for home use in a warmed attic or a dry cellar. A well ripened warty Hubbard is delicious in winter steamed, or in the less familiar form of pie.

3. Miscellaneous: onion, spinach, egg plant. The onion is a peculiar plant individual. You may freeze it or not, as you wish, but it must not be kept too warm or it will grow. If frozen, on the other hand, it must be kept frozen—alternation of temperatures is not desirable; generally a dryish atmosphere near freezing is best. How to store spinach is something of a problem in the north. If barrelled late and kept in cold storage near the freezing point it keeps well, but this is expensive. Improvising outdoor storage by packing in barrels late in the season and cov-

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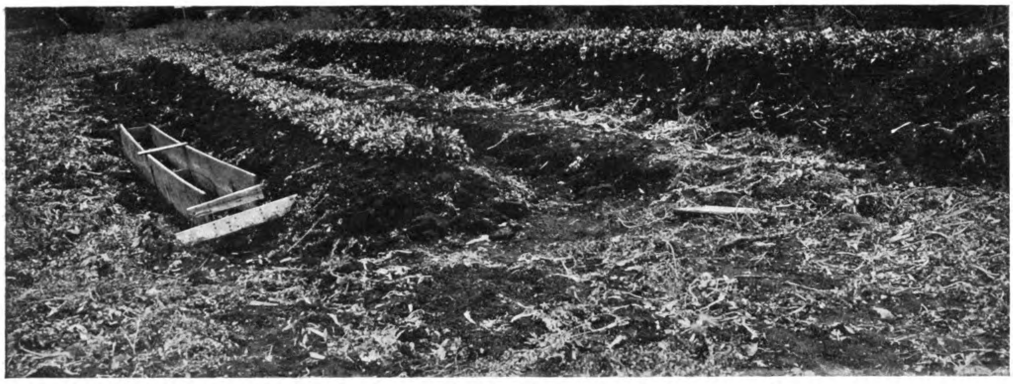


44. Winter storage of celery in the field where trench system is employed. An open trench, with board sides, is shown at the left

ering these with hay is a method frequently followed in New York.

Egg plant is unsatisfactory in almost any kind of storage. Its bulk and price, like spinach, practically prohibit the use of mechanical refrigeration except in a small way. In storing for home use, a cool, dry compartment is best.

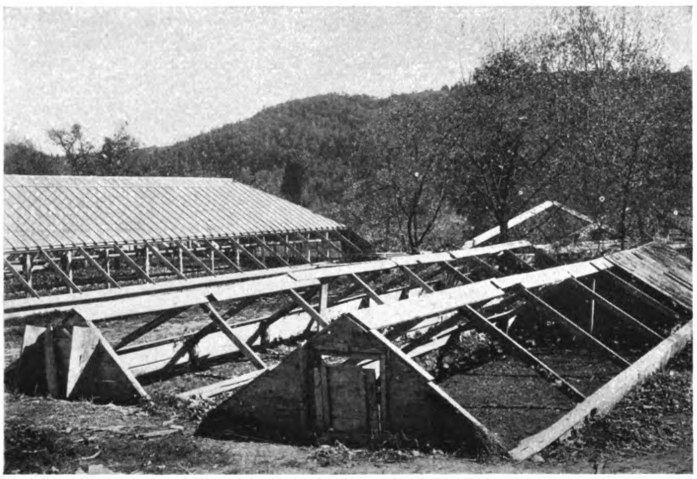
SOME GENERAL ADVICE

1. For storage, select well matured stock. Grade rigidly, rejecting insect- or fungus-infested specimens.

2. In the storage room, arrange for a control of temperature and instal thorough ventilation. The same principles apply to the vegetable pit.

3. Do not make one storage room care for all the fruits and vegetables needed for winter consumption.

4. Examine the stored products from time to time to note conditions, and check the beginning of disease by eliminating infested specimens. Sort them frequently, if they are not keeping well. JOHN CRAIG.



46. The two frames on the right grow lettuce and radishes in early spring and are storehouses for celery in winter

PALMS FOR HOME GROWING

I. AN AMATEUR'S EXPERIENCE

MY best palm is a Phoenix, which is now about seven years old. Its measurements may be interesting. Its height has increased from 2½ to 6 ft. while I have cared for it. The palm has a spread of 10 ft., with ten good leaves each nearly 6 ft. long and 3 ft. wide. Each leaf contains about 90 segments, not counting the smaller ones at the base which are intermediate in character between leaflets and spines. The species, I am told, is *Phœnix rupicola*.

This specimen is getting too large for a dining room bay window. It has the advantage of a southwestern exposure, receiving ample light on two sides. One of the interesting features of a Phœnix is the unfolding of a new leaf. It sends up a narrow, sword-like spike like other palms, but unfolds its crimped, fan-like foliage from one side only. This year the tub in which the Phœnix stands is covered by a luxuriant growth of Tradescantia, which hides the soil and adds a refreshing tint of light green, contrasting well with the rich, dark, leathery, shining foliage of the palm. Last winter some pots of climbing nasturtiums stood upon the soil in the tub and the vine was allowed to clamber freely among the fronds of the Phœnix.

After breakfast the palms receive their daily share of attention. If they are watered they are soaked thoroughly, not merely sprinkled. On the other hand, very little water is allowed to stand in the galvanized iron pan underneath the tub. Once in three weeks or thereabouts the palms are fed. They receive about a teaspoonful of fertilizer. As soon as they show dust their fronds are carefully sponged. This takes time, but is well worth while. In the spring, when scale insects usually appear, the fronds are carefully treated with whale-oil soap, applied with a small paint brush.

The Phœnix is easily moved when necessary, being mounted on a low wooden stand provided with castors, while the tub itself has stout iron handles. In the spring, when the nights are sufficiently mild, the palms are removed to a covered porch which has a southeastern exposure. Here they are syringed forcibly every day or two, and this completes the destruction of the scale, if any exist.

About the middle of June the tubs are sunken into the ground for almost two-thirds their depth. Here, in the half shade and fresh air, with daily sprinklings, the most luxuriant growth of the palms takes place. I. P. N.

45. Celery stored in a common earth-bottomed cellar

II. SUGGESTIONS FROM A PROFESSIONAL GARDENER

On the whole, palm culture in an ordinary dwelling house is fairly simple and easy. An even temperature of 60 to 70 degrees is desirable, but no damage need result if the temperature occasionally runs down to 50 degrees. Cleanliness and drainage are two important points. Dust looks bad on the foliage and makes the plants unhealthy. Palms are impatient of wet feet. The florist attends to the drainage, but the amateur must water the palms discreetly. Avoid extremes, especially in winter. Never allow any plants to get "dust dry," or "killing dry." On the other hand, do not keep the soil saturated or it will get sour and the leaf tips will soon show signs of distress. Use porous pots, not glazed ones. If it is necessary to hide the pots, place them inside a jardinière, or box painted olive-green. A porous pot allows a certain circulation of moisture or alternation between relative wetness and dryness which is desirable. With a glazed or painted pot there is danger of a steady wetness, resulting in sour soil. Do not sprinkle the top every day. Water thoroughly when necessary and then wait until water is needed again.

47. One of the best of house palms, generally known as Areca lutescens

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Avoid draughts from outside in winter. Ventilate by letting the window down at the top. Most of the growth is generally made in spring and summer. Repot in March or April, if necessary. For this purpose the following compost is desirable: three parts of rotted sod, one of well decomposed manure, one of sand and a sprinkling of bone meal. If this is not available at home it can be procured of the florist, who will mix according to directions.

In the summer the palms may be plunged in the earth outdoors in a shady and sheltered place where the wind will not whip the foliage. The pots or tubs may be hidden by the use of smaller potted plants, or they may be half plunged in the earth and the sod so arranged as to make a transition from the lawn to the palm foliage.

ROBERT SHORE.

III. ARE PALMS WORTH WHILE?

Ask this question of any real lover of house plants and watch his eyes sparkle! As if there could be any question about it! Yet there are good people who say that palms cost too much, get too big to move handily, brown at the tips, require frequent sponging and become tiresome because they never flower. Such complaints are nearly always traceable to experience with plants that have sickened from neglect. It is a fact that sickly palms are rather hard and slow to bring into a satisfactory condition. It is true that the first cost of a palm is considerable, but most of the common kinds ought to last five or six years before they grow too large for home use, and they can then be exchanged for smaller sizes, if in good condition. It is possible to buy a young Chinese fan-palm for as little as twenty-five cents. Such plants have four to five leaves, are 12 inches high and are sold in 3-inch pots. Ordinarily it will be more satisfactory to pay $1.00 for a 6-leaved Chinese fan-palm 15 inches high, in a 5-inch pot, or $1.50 for a plant of the same variety and number of leaves in a 6-inch pot and 20 inches high.

Palms need no defense. Every one feels their peculiar beauty, but it is a beauty that is difficult to analyze. When one reflects that they lack the charm of cut-flowers and the various colors of flowering plants the deep-seated appreciation of palms is all the more surprising. They are not obtrusive, showy or gaudy, as some flowers are. The whole spirit of them is restful, quiet, subdued, refined. Their beauty is the beauty of lines, and of green foliage,—thoroughly satisfying to live with day by day and year by year. In winter, palms in a living-room give a rich but quiet tone of tropical warmth and luxuriance. As a background for flowers, palms and ferns are unrivaled. The popular appreciation of palms is one of the most remarkable and satisfactory features of American floriculture during recent years.

IV. THE KINDS OF PALMS

Although the botany of palms is extremely complicated and difficult, the choice of varieties for home use is reasonably simple. At least, it can be made so. There are only five kinds of the first importance. Their trade names are as follows: *Areca lutescens* (Fig. 47), *Kentia Belmoreana*, *Kentia Forsteriana*, *Cocos Weddelliana*, and *Latania Borbonica*. These are the kinds which every local florist has or can secure. The larger firms catalogue about two dozen kinds, which they recommend for home cultivation. In addition, there are perhaps two hundred species that are cultivated in glass houses of considerable size. There is no question, however, that the five kinds named above are sold in the largest quantities. Experience shows that these ordinarily give the best satisfaction in homes. Some of the Phœnixes will probably increase in popularity.

There are two main types of beauty in palm foliage, the feathery style and the fan-shape, or, in botanical language, the "pinnate" and "palmate." Of the five kinds mentioned above, only one is fan-shaped, namely, *Latania Borbonica*. This offers an interesting comment on popular taste, indicating that the feathery style of palm beauty is the one most admired. *Latania Borbonica* is generally considered the easiest of the five to grow, but it is not the greatest favorite of the set.

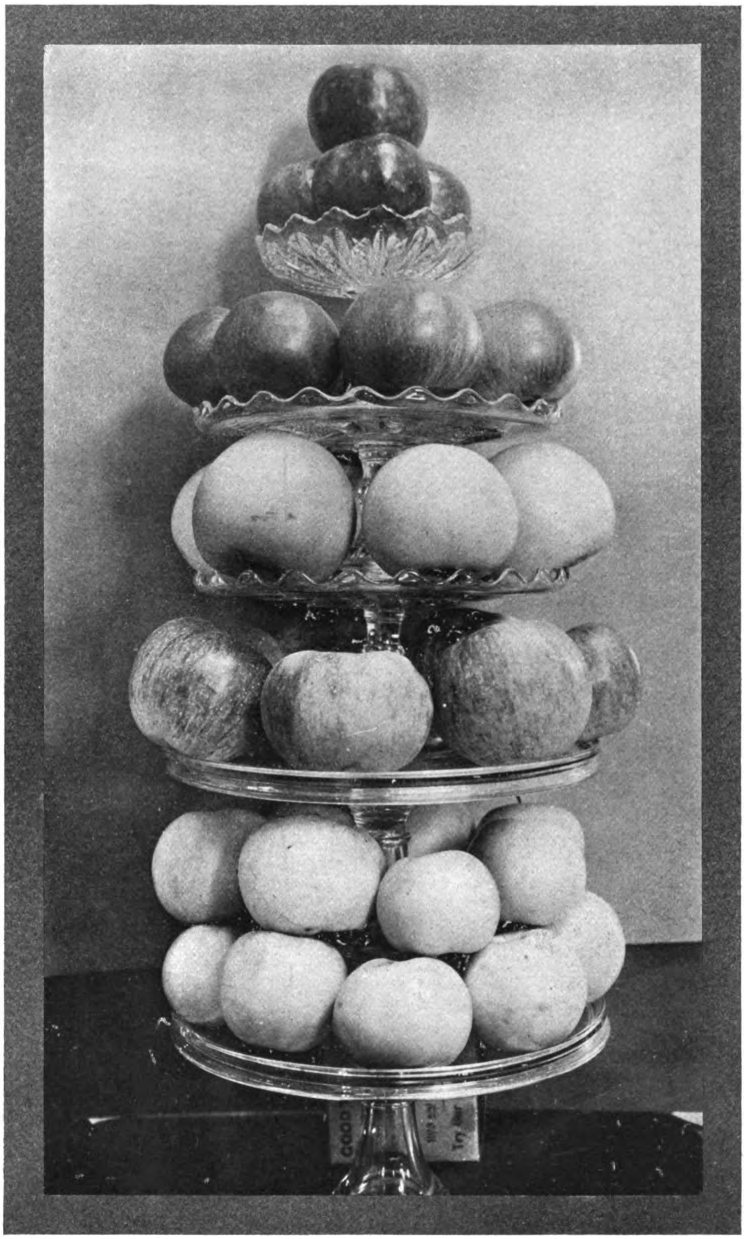
The greatest favorite of all, probably, is *Kentia Belmoreana*, though its running mate, *Kentia Forsteriana*, is a close second. In young plants it is almost impossible to tell the two apart, but when they get to be about four feet high they can be distinguished when placed side by side. Belmoreana has more nearly erect leaves; those of Forsteriana are more arching.

Personally, I prefer the Areca to the two Kentias. I think it has more character. The leaf-stalks of the Kentias are green and fibrous at the base, while those of the Areca are yellowish, smooth and reedy in character, more or less covered with a glaucous or mealy cast, and peppered here and there with a few small black dots.

There can be no question about *Cocos Weddelliana*. We want it. It is unique. Unlike the others, it always remains small. Its leaf segments are always narrower. The whole effect is one of slenderness. It is naturally diminutive, and one feels it instinctively. It never seems undersized or weakly. Some people cannot make a success of it. It is, perhaps, harder than the others to bring into health if it ever becomes sickly. A single plant in a pot is not nearly as effective as the "made up" specimens, with three placed in a pot. The same is true of the young Arecas.

The correct scientific names of these five palms are now coming into use. They are, in the order first named above: *Chrysalidocarpus lutescens*, *Howea Belmoreana*, *Howea Forsteriana*, *Cocos Weddelliana* and *Livistona Chinensis*. Those who insist on "common" names may use the following, but they are not always understood by florists: (1) Areca, (2) Curly Palm, (3) Flat Palm, (4) Dwarf Cocoanut, (5) Chinese Fan-palm.

After the first five the subject becomes more complicated, and there is more difference of opinion. For example, the Fish-tail Palm presents a style of beauty utterly distinct from those mentioned above. W. M.



48. A striking method of exhibiting apples, used in the Wisconsin Exhibit at the Pan-American Exposition

WHAT THE BIRCH TREES DO

BIRCHES come quickly into "new" land, where the trees are felled or cultivation lost. They are pioneers, with the dash-and-go, the jaunty air and the instability of frontier character. They come and go quickly. On the forest edge, on the river bank, on cleared bottoms, or the dry-weather island in the river, they never lose character, or tell a misleading story of the passing of the old and the coming of the new order in the plant world. F. A. WAUGH.

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SPECIMEN PLANTS

SOME OF THE IDEALS IN PLANT-GROWING—WHAT THE GARDENER MEANS BY A "WELL-GROWN" PLANT

THE gardener's term "specimen plant" may stand for many ideals. In its last analysis it means any plant in which the owner takes particular delight. In order that one shall take this delight in a cultivated plant the specimen must exhibit full health and vigor, it must properly represent the species or variety of which it is an example, it must be comely and of the full size for its age, and it must be productive of whatever parts it is intended to furnish, as leaves, or flowers, or fruits.

All these demands may be satisfied and yet there may be wide differences between any two specimen plants of the same kind. There is wide latitude in what constitutes a comely plant or even a healthy one. If the plants are to be used for exhibition purposes those of one kind will run more uniform, for exhibition standards are usually not flexible and they are more or less arbitrary and therefore easily defined.

The gardener wants a "well-grown" plant. It is one that reflects his skill and does him credit. There is great satisfaction in growing such a plant. You feel that you have put something of yourself into it. The ideals in widely different kinds of plants are shown in these pictures. Whatever the plant, you can exhibit your care and skill and can work out your own conception of what a good plant should be.

A specimen plant is a single plant. It is one that is good enough to stand by itself and to be its own excuse for being. It is not a part of a mass effect. If planted in a border with other things it is given sufficient room for full development. On the lawn, specimen plants are usually isolated. They are individual objects. One must be careful that he do not have so many specimen plants that the place looks patchy. For the general framework of a place, mass-planting is to be advised, particularly if the place is to have a nature-like effect; but a few good single specimens are nearly always effective and add variety and interest. Every person feels a satisfaction in a symmetrical and handsome individual plant. Usually these specimen plants make pleasanter effects if placed somewhere near the border-planting. Only a very few of them can be placed out in the open lawn without interfering with the continuity of the picture.

Some specimen plants are most pleasing when young and lusty; others when old and mature. It depends on the effect which is desired to be made. Trees usually improve with age. They take on their full and striking characters. The *Aralia Chinensis* shown on this page is pleasing because it is young and verdurous. The plant has been cut to the ground and the strong root has thrown up a very rapid-growing cane. When this species is allowed to grow to full maturity it has a rugged beauty wholly different from the delicateness of the strong young shoots. These two kinds of beauty inhere in almost every plant. We usually associate the hollyhock with tall spikes of flowers, yet the young plant has a striking interest.

Despite all these varied ideals, there is unity in specimen plants, of whatever kind they may be: they are healthy, well grown—the expression of loving interest on the part of the grower.

49. A good Norway Spruce, with the lower branches allowed to remain

50. Good specimens of winter-grown strawberries

51. Begonia Scharffiana, one of the best "foliage" species

52. Well-grown specimen of egg plant, the striped variety

53. Young plant of Aralia Chinensis

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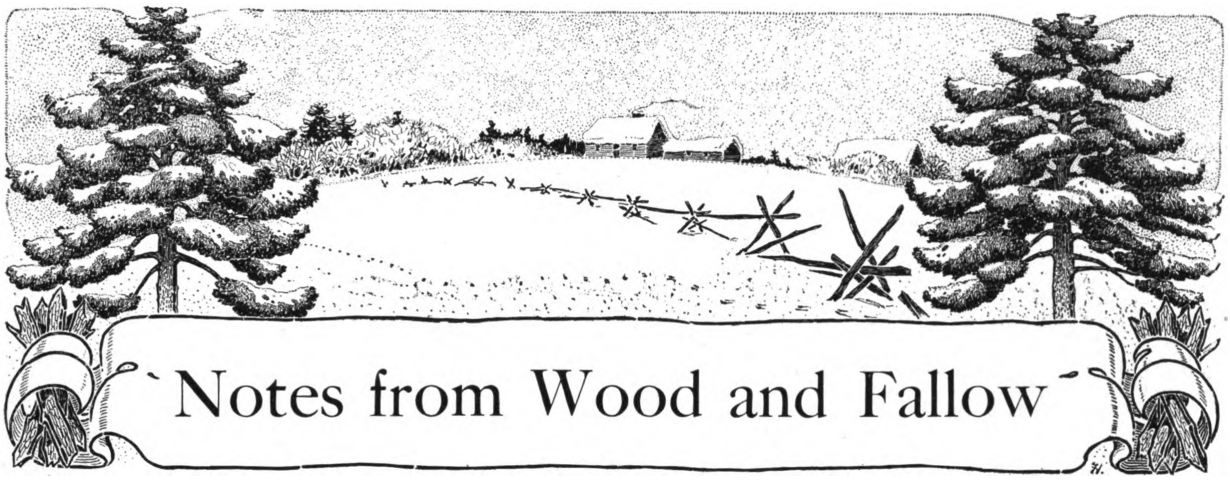


Notes from Wood and Fallow

THINGS TO SEE IN DECEMBER

ARE you one of those that cower at home, sighing over faded woodlands and meadows brown and sere? There's something for you in your neighbor's wood lot, and faith, you need it!

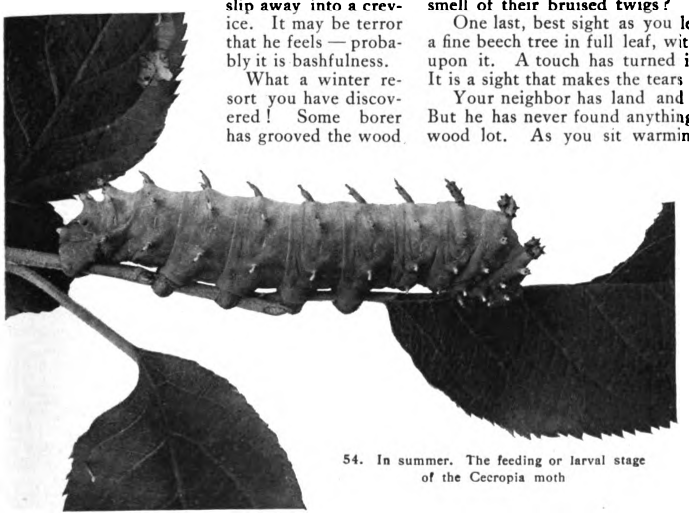
Never mind where the paths are. Make one of your own. Shuffle your way through the drifts of leaves, all crisp and dry and brown. What a din they make!

The bluejay scolds you roundly for coming, but at heart he respects you. Not many have the hardihood to dare the silence and the cold.

What a sting there is in the gusty atmosphere! But there is a tingle in your blood by this time that answers the challenge. You catch your foot in a matted tangle of trailing yew. In falling you uncover a pocket of chestnuts hidden by some thrifty squirrel. What an exceptional flavor! And this little plant with the mottled leaf must be wintergreen! How the years fade out that separate you from the days of your youth as you nibble that leaf!

But listen! Is it a voice far off, or only the echo of a summer voice still wandering in the woods? It comes again! — the faintest little broken chirrup, and now you are sure. Off comes a strip of loose bark from the stump beside you, and there is your musician — a tiny, brown cricket. Under your gaze, he moves uneasily, and tries to slip away into a crevice. It may be terror that he feels — probably it is bashfulness.

What a winter resort you have discovered! Some borer has grooved the wood into an intricate pattern, leaving a trail of sawdust behind. In this soft bed lodges many a creature, waiting for the warmth of spring. Here is the chrysalis of a butterfly, lashed to its support with ropes of its own making. Hung all about are silken bags filled with the eggs of spiders. A yellow woolly caterpillar has spun a scanty cocoon and lies within it — a shiny, cartridge-shaped pupa. He wags his tail sleepily as you poke at him. Alongside is a relative of his, brown and black, who has gone to sleep with his clothes on! It is reverence that you feel as you fit that bark carefully into its place and bank it up with leaves. Truly our winter means not death, but only sleep!



54. In summer. The feeding or larval stage of the Cecropia moth

But it's cold on the ground. You pocket a handful of chestnuts and munch them as you forge ahead. Instead of the vivid colors seen in October, there are browns and dull purples and pale yellows. They do not startle and waylay, but they do not weary you. There is a quiet restfulness in the picture — and it satisfies.

It is a joy to see the evergreens. Their time has come at last, and against a russet background they stand proudly up to be counted. You had forgotten how soft are the plumes of the white pine, and how beautifully fleecy the dark green sprays of the hemlock. Can anything be more heartening to a man than the smell of their bruised twigs?

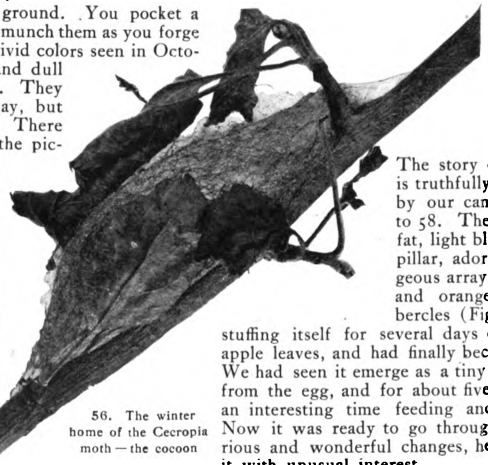
One last, best sight as you leave the woods is a fine beech tree in full leaf, with the setting sun upon it. A touch has turned its dross to gold. It is a sight that makes the tears start!

Your neighbor has land and you have none. But he has never found anything but fuel in his wood lot. As you sit warming your hands at the fire, and picking off the burs you brought home, you incline to feel compassionate toward him. In spite of his riches, he is poor, indeed. And you thank whatever gods may be for that best gift — the power to see and to feel.

JULIA A. ROGERS

A CATERPILLAR'S WINTER HOME

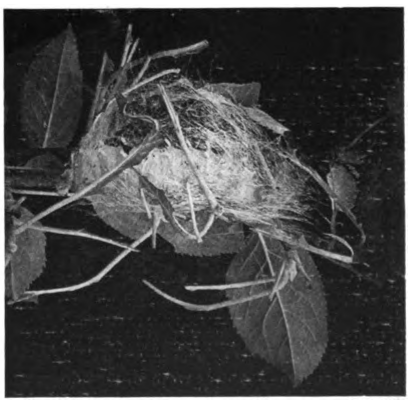
QUIET reigns throughout the insect world during that part of the year when almost everything is in the grasp of Jack Frost. The busy bee and wasp, the humming mosquito, the buzzing house-fly, are alike silent; and the jaws of the destructive caterpillar or beetle are resting. Mother Nature so arranges the yearly household affairs of these little creatures that by Thanksgiving time most of them are settled in their hibernating quarters; some of them, like the familiar tent-caterpillars, get ready for winter's sleep as early as July.



56. The winter home of the Cecropia moth — the cocoon

In August, we watched with much interest how one of our giant silkworms, the Cecropia caterpillar, prepared winter home. The story of what we saw is truthfully and vividly told by our camera in Figs. 54 to 58. The large, sleek and fat, light bluish-green caterpillar, adorned with a gorgeous array of yellow, blue, and orange-red spiny tubercles (Fig. 54) had been stuffing itself for several days on crisp young apple leaves, and had finally become full-grown. We had seen it emerge as a tiny black caterpillar from the egg, and for about five weeks had had an interesting time feeding and caring for it. Now it was ready to go through further mysterious and wonderful changes, hence we watched it with unusual interest.

Selecting a suitable place along a branch, it proceeded to fasten together with silk the surrounding, partially eaten leaves, thus gradually outlining the framework of a silken net or case around itself. It worked unceasingly, and in an hour or two after the picture in Fig. 55 was taken, it had thickened the network of silk so that it could not be seen from the outside. Beginning late in the afternoon, it had practically completed its winter home, or cocoon, by the next morning; it is shown as it appeared in winter in Figs. 56 and 57. A short search in most parts of the country by an observant boy or girl



55. Caterpillar spinning the cocoon.

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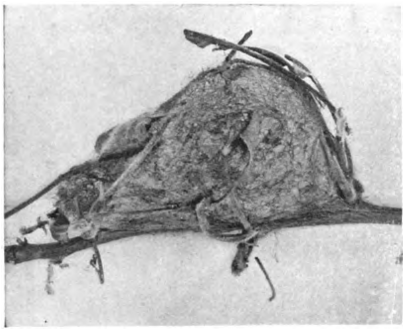


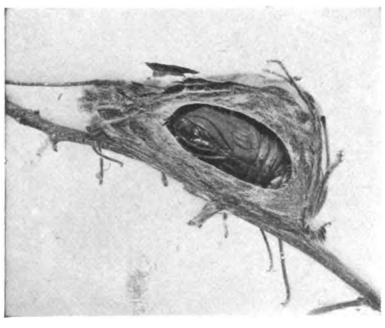
57. The winter cocoon. Another view

will usually reveal one or more of these large conspicuous brown Cecropia cocoons firmly attached to a small branch of some apple, cherry or shade tree. They will amply repay careful study and loving care; for let us take a peep inside one a few days after it is finished by the caterpillar.

With small, sharp scissors, we carefully cut away one side of the cocoon, and the camera has faithfully recorded some of the things we saw (Fig. 58). There is practically a cocoon within a cocoon; for a loosely-woven network of silk separates the papery, outer covering from the thin, closely-woven, smoothly-lined, inner cocoon or compartment containing the insect. This inner cocoon would seem, at first glance, to have perfectly tight walls, but by inserting a small round stick or pencil between the valve-like wrinkles seen in the wall at one end, the surprising fact will be learned that the stick can be readily pushed through a loosely-woven network to the outside. Remove the stick and attempt to push it through the same channel from the outside, and the nice adaptability of this "open-door" to facilitate the emergence of the adult insect, and its effectiveness in keeping out intruders, will greatly increase one's appreciation of the architectural capabilities of the caterpillar builder.

But instead of the large green caterpillar which built this interesting winter home, we find inside a much shorter, dark brown, mummy-like, quiescent object quite unlike any other stage of the insect. In insects, this stage was long ago named the *pupa* (a Latin word meaning *baby*), for with its wings, antennæ, and legs closely soldered to its breast, it resembles somewhat a babe swathed in bandages, as was the fashion among the Romans. Soon after completing the cocoon, the caterpillar had shed or moulted its skin and the transformation to the pupal stage was accomplished. At the tail end of the pupa in Fig. 58 may be seen the compressed and shriveled remains of the caterpillar's now useless garment or skin.

Inside the pupa, wonderful processes go on. It was once thought that in this stage the caterpillar tissues and organs were all torn down and made over into the adult insect. But we now know that there exists even in the embryo caterpillar in the egg certain germ cells whose business it is gradually to grow into the organs of the adult insect under the guise of the caterpillar and pupa. The wings and legs of the adult insect are so far developed inside the full-grown caterpillar that a careful manipulator can find them. The now useless caterpillar tissues are then broken down in the pupa and are used in building up the adult organs. This building-over process, one of the most wonderful things in nature, is not completed in the case of this Cecropia silkworm until the next May.



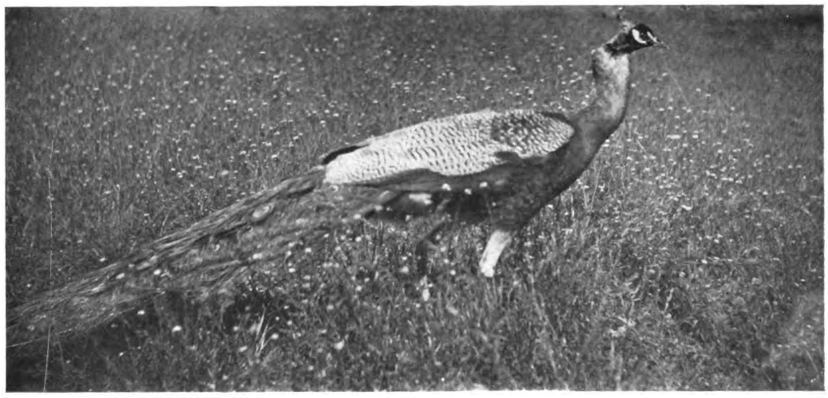
58. The cocoon with one side cut away to show the pupa

Try to find a few of the interesting silken homes of this giant silkworm this winter. After carefully opening one or two, and thoughtfully considering the lessons that may thus be learned, put the cocoons away with loving care, in some cool place, and next May you will be well repaid; and perhaps our camera will then finish the story of its life.

M. V. SLINGERLAND.

THE PEAFOWL

FOR the king had at sea a navy of Tharshish years came the navy of Tharshish, bring- with the navy of Hiram: once in three ing gold, and silver, and ivory, and apes, and peacocks." This account of Solomon's navy, in I Kings x: 22, is supposed to refer to the bird that we yet know as peafowl. This fowl is the most brilliant in plumage of domesticated birds. There are two or three species of peafowl, only one of which is generally known in domestication. This common peafowl is native to India, where it lives in the jungles, coming out to feed morning and evening. It roosts on high trees, a propensity that it retains under domestication, for our peafowls delight to pass the night in trees and on the tops of buildings. In some places, the Hindoos forbid the killing of the peafowls, and the birds therefore increase in great numbers. Although the peacock was known to Solomon and was much liked by the Greeks and Romans, there are practically no well-marked breeds in domestication. Darwin remarks that it has "hardly varied under domestication, except in sometimes being white or piebald."



59. The peacock, proudest of domestic birds

The male bird, or peacock (Fig. 59) is one of the proudest of birds, particularly when displaying his gaudy train to the modest but admiring peahens. This train is composed of many long and most remarkably colored feathers constituting the tail-coverts and some feathers of the back. This fine plumage does not develop to perfection before the third year, and it usually increases in size with the age of the bird.

In domestication, the peafowl is usually wild and reserved. It requires a wide range. Although a large and heavy bird, it flies with ease. During the moulting season it is unusually retiring. Peafowls are omnivorous feeders. They often destroy garden crops, and also eat insects, grain, and the food commonly given to other poultry. They are usually not difficult to rear if the chicks are given good care. The mother prefers to choose her own nest, and she often keeps the same one year after year. This nest is made on the ground. The eggs are five or six. The period of incubation is twenty-eight to thirty days. The peahen cares for the chicks usually for months, sometimes almost till the next mating season. This carries the chicks through their helpless stage. Common hens are sometimes employed as mothers, but they soon leave the peachicks and the little ones suffer unless given good care in a dry and healthy place.

In this country, peafowls are reared only for fancy. They can scarcely be said to be domesticated. Young fowls, however, are said to be very good eating. Although the plumage of the cock is most gaudy and striking, yet the loud shrill cry is an objection. Peacocks are also likely to be quarrelsome and vicious. They often injure other poultry, and have even been known to attack persons. One rarely sees them on farms, although, where wide range can be given, they are an interesting addition to the farmyard. They are frequently seen in the zoölogical division of parks, where they always attract attention. It is said that peafowls reared by common hens are tamer than others; but hens often are not successful mothers.

THE GIANT CACTUS

OF all the many and varied kinds of cacti that form the larger portion of the vegetation of the arid regions of southwestern United States, the Giant Cactus, on account of its size and striking aspect, is the most impressive. On the southern foot-hills of the Santa Catalina mountains, in Arizona, this cactus, known as the *Sahuaro* by the Mexican population, is found at its best. Here, in places, it forms pure forests, often a hundred or more trees, with their huge, green columns towering to a height of fifty feet, growing on a single acre.

As may be seen in our illustration, the main trunk and candelabra-like branches are conspicuously ridged, These ridges are surmounted by bunches of very stiff, sharp spines. The entire plant, with the exception of a number of strong, woody, rib-like structures an inch or two under the epidermis, is soft and succulent, and were it not for its protective covering of spines, would be destroyed by animals feeding upon it in its early life.

In the desert where few other trees are found, the Giant Cactus is of considerable economic importance. The strong, woody ribs, not unlike huge poles, twenty to forty feet long, and from one to three inches in diameter, persist long after the softer parts of the plant have decayed. These poles are gathered by the Mexicans and Indians, not only for fuel but for fence and house construction as well. They not only make excellent pickets, but also serve to support the dirt roofs of the adobe houses.

In midsummer, as the fruits of the *Sahuaro* ripens, it is harvest time for both birds and Indians, and the prospector leaves his beans and bacon for a change of diet. The fresh fruit is not unpleasant, even to the cultivated palate.

J. W. TOUMEY.

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WHAT *the* PIANOLA REALLY IS *and* Why Musicians Endorse It

(See Note)

THE Pianola was designed to simplify the playing of the piano. Not to play the piano of itself, as a machine, but to serve as a faithful conductor of the moods and passions of the human mind controlling it. This is the excuse for its being, and the secret of its ready acceptance in the highest circles of musicians

The performer does not play the Pianola. With the *Pianola's assistance* he plays the *piano*, though he may not know one note from another. By a slight movement of a lever, the nimble little fingers of the instrument that are pressing the piano-keys are made to vary the force of the attack. A touch on another lever, and they hesitate, stop, bound forward again in their marvelous play. No mechanism is apparent, and the player, forgetting the Pianola, forgetting the keys and complicated action of the piano, is absorbed in the wonderful effects he is producing from the instrument before him.

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V. DE PACHMANN.

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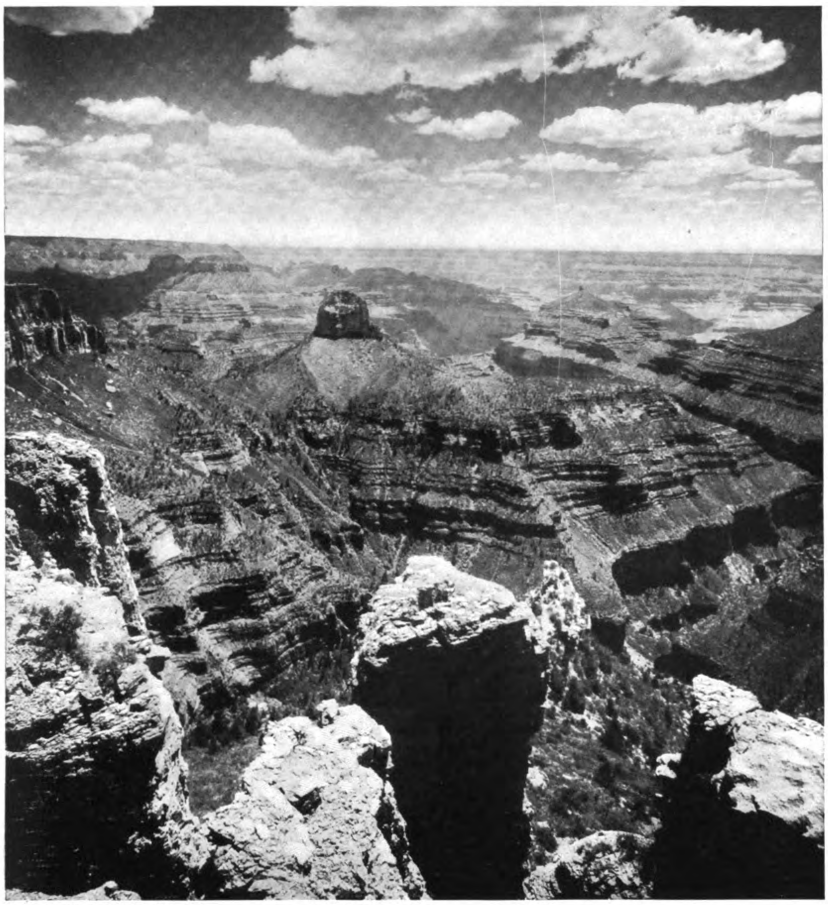

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TRAVELERS TO CALIFORNIA

SHORT BOOK NOTES

Plums and Plum Culture. By F. A. Waugh. Publishers: Orange Judd Company.

The appearance in America of monographs devoted to a single class of fruits in contradistinction to the old-time fruit manual is expressive of the horticultural progress of the age. "Bush Fruits" (Card) was a beginning in this new departure. Waugh's plum book marks another advance. This is an attractive, fully illustrated volume of 371 pages. It is written distinctively from the American standpoint. Fundamentally, it tells the story of the evolution of the various types of plums indigenous to North America. Incidentally, it devotes a chapter to descriptions of Domestica or European varieties.

The book is written in that spirit which characterizes the fruit-growing of the present day—a liberal progressive attitude. This is in marked contrast to the conservatism and didactic finality expressed by older fruit books. The author says that if readers will point out the errors "they will be corrected in future editions." The author divides the volume into two parts: 1. Description, nomenclature and classification; 2. Culture and management. This is logical and happy. The descriptions of varieties are mostly original, but occasionally incomplete. One of the most important chapters from the historical standpoint is that devoted to hybrid plums. The author takes an optimistic view of the value of many of these varieties, which to the writer appear potential rather than presently intrinsic. A magnificent beginning has been made, but a beginning only. The book is written in a lucid, vivacious, thoroughly readable style. It is profusely illustrated with half-tones, not always good. The mechanical work is fair.

It is a valuable contribution to systematic pomology. J. C.

Fruit Harvesting, Storing and Marketing. F. A. Waugh. Orange Judd Company.

This book is evidently written to meet a demand for information regarding the handling and disposal of fruits. It is a brief hand-book of this phase of the industry. It is a book for the business fruit-grower. Fruit-growers, in common with other classes of farmers, often fail on the business side. A book of this kind has been needed. The volume—a modest one of 221 pages, illustrated with line drawings—is divided into five parts, to which is added an appendix. The parts are devoted respectively to "The Fruit Market," "Picking," "Grading and Packing," "The Fruit Package," and "Fruit Storage," while the appendix deals with imports and exports of fruit, laws governing fruit packages, the various national fruit shipping and dealers' associations, together with notes on the handling of special crops, like cranberries and southern grapes.

The chapter on storage houses is incomplete in that it deals only with the unrefrigerated house used mainly by the apple grower. The "cooler," now quite freely employed by the larger peach and pear growers, is not described, nor is any space given to mechanical refrigeration. So important is this latter phase of the subject that a companion volume of equal size might easily be devoted to it. The book is filled, however, with a large amount of exceedingly useful data, which, if not always complete in detail, is always suggestive and helpful. J. C.

Nature Biographies: The Lives of Some Every-day Butterflies; Moths; Grasshoppers and Flies. By Clarence Moores Weed. With 150 photographic illustrations by the author. Published by Doubleday, Page & Co.

This is a charming little volume of fourteen essays on several common insects, their lives,

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how they may be caught with a camera, and insects in winter. The Making of a Butterfly, Locust Mummies, An Insect Potter, and Studies of Insect Parasites are the enticing titles of some of the chapters. The simple, accurate and detailed way in which the observations and the life-stories are told makes the book interesting reading even to an entomologist familiar with most of the facts, and doubly so to the untrained nature lover. The author evidently saw most of the things he describes; this gives to the work a certain freshness often lacking in compiled narratives. Nearly every page is embellished with one or more aptly chosen photographic illustrations. Skilfully used, this method of illustration is admirably adapted to depict the larger insects in all stages, and especially their work on plants; and many of the author's pictures are artistic and clearly illustrate the point desired. In the chapter on the camera and the entomologist Dr. Weed states that pictures of insects taken in very light rooms, like greenhouses, are usually flat and lack detail, whereas his method of photographing in a basement room, lighted only from one side by comparatively small windows, gives greater detail and more rounded light effects, so that the form of the insect or plant is more distinctly brought out. This is theoretically true, perhaps, and yet some of the illustrations in "Nature Biographies" are lacking in detail and other qualities necessary to a good insect picture. The volume is a worthy addition to our scanty list of accurate, and yet popular, books about our every-day companions — the insects. M. V. S.

The Life of the Bee. By Maurice Maeterlinck. Translated by Alfred Sutro. New York: Dodd, Mead & Co. 425 pages. $1.40 net.

On the Threshold of the Hive; The Swarm; The Foundation of the City; The Life of the Bee; The Young Queens; The Nuptial Flight; The Massacre of the Males; The Progress of the Race; — these are the titles of the chapters of a book that reads like a story. In fact, it is a story, although devoted to a straightforward exposition of the whole life of the bee as the author understands it. It is intended as a reading book, not as a treatise. The author has "ceased to look for anything more beautiful in this world, or more interesting, than the truth." He has been for twenty years a bee-keeper, although he is known to the world as a writer. The bee affords a good subject for entertaining writing. We believe this book to be a distinct contribution to the literature of nature, and that it is all the more valuable because it unfolds one continuous subject. The interest of the book does not depend on pictures, for of these it has none, but upon the strength and purity of its writing.

The Art of Building a Home: A collection of Lectures and Illustrations by Barry Parker and Raymond Unwin. London and New York: Longmans, Green & Co. 133 pages. 68 plates. 8¾ x 5¾ inches.

This book contains plain and direct advice on common architectural subjects, for homemakers, as: The Smaller Middle Class House; The Dignity of All True Art; Our Education in Art; Art and Simplicity; Furniture; Building and Natural Beauty; Coöperation in Building; The Art of Designing Small Houses and Cottages. Although of English origin, the book is very suggestive for the American home-builder. The authors appreciate the value of the simple and homely settings of common lives. The essay on "Building and Natural Beauty" is especially pleasing. It accounts for the inharmonious effect of the "modern town suburb" and gives excellent advice as to the kinds of buildings, and the positions of them, that harmonize best with natural scenery. "Too often now we place a building so as to strike a note of defiance with surrounding nature. The thing stands out hard and prominent in the landscape; shouts at you across the valley; and through not coöperating with the scene, fails to convey anything of that sense of nestling in a fitting nook, or an appropriate ledge — that sheltering under Nature's wing, as it were — which makes a building really look at home." The essay on building coöperative houses should also be suggestive to us on this side. The many plates show both ground plans and interiors.

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Woodland and Meadow. Out-of-door papers written on a New Hampshire Farm. By W. I. Lincoln Adams. Illustrated with photographs from nature by the author and others. New York: The Baker and Taylor Co. 123 pages. 10 x 7½ inches.

This is an elegantly made book, abounding with pictures of simple rural scenes in New Hampshire. Mr. Adams is well known to the amateur photograph craft for his writings on outdoor photography. The whole spirit of the book is a simple and unaffected interest in farm life, and it well reflects the awakening desire in this direction. The pictures are excellent, and are the distinctive feature of the book. The chapters are as follows: The New England Farm; In the Sugar Camp; An Early Morning Ride; In the Hayfield; Harvesting the Corn; An Autumn Walk; The Golden Hour; At Dusk; When It Rains; Photographing on the Farm; Winter Days.

NOTES AND SUGGESTIONS FROM VARIOUS SOURCES

Peaches in Texas. "Pruning and Training of Peach Orchards" is the title of a 42-page bulletin by R. H. Price issued by the Texas Experiment Station at College Station, Texas. The bulletin is illustrated with 15 figures.

Apples for Northern Climates. Our Canadian friends will be interested in Professor Waugh's analysis of "Apples of the Fameuse Type" in Bulletin 83 of the Vermont Experiment Station. Some of the very hardy varieties of this type are the Canada Baldwin, Bissing, McIntosh, Shiawassee and La Victoire. The bulletin is charmingly illustrated.

Orchard Fumigation. A fumigator for small orchard trees is described and pictured by V. H. Lowe in N. Y. Agric. Exp. Sta. Bulletin 181, published at Geneva, N. Y.

Grapes for the South. "Grape Growing in the South" is the title of Farmer's Bulletin No. 118, just published by the U. S. Dept. of Agric. It is written by S. M. Tracy, formerly horticulturist of the Mississippi Experiment Station.

Peach leaf-curl is a wide-spread enemy of peach culture, which is estimated to destroy three million dollars' worth of peaches in America every year. An elaborate monograph on the subject has recently been published by the U. S. Dept. of Agric. The work was done by Newton B. Pierce in charge of the Pacific Coast Laboratory at Santa Ana, Cal. The report is a bound book of 204 pages, published in 1900, but still timely.

Potato. Market-gardeners should be on the lookout for a new disease of the potato which is common in Germany but has only lately been discovered in America. It is likely to make much trouble the next few years. Send for Bulletin 186 of the Cornell Exp. Sta., Ithaca, N. Y., or Bulletin 186 of the N. Y. Exp. Sta., Geneva, N. Y. The disease is produced by a fungus called rhizoctonia.

Violet Disease. At least a million dollars' worth of violet flowers are sold in the United States every year and the loss to florists from "spot" alone is estimated at $200,000 annually. No florist can claim to be up-to-date who does not secure a copy of P. H. Dorsett's recent bulletin on the "Spot Disease of the Violet." This is a fully illustrated pamphlet of 16 pages issued as Bulletin 23 of the Division of Vegetable Physiology and Pathology of the U. S. Dept. of Agriculture. Mr. Dorsett is a practical violet-grower as well as a scientist, and has been associated with Prof. B. T. Galloway (author of "Commercial Violet Culture") in plant-breeding and other experiments which are doing much for violet culture in America.

Carnations. The widespread carnation disease hitherto known as bacteriosis is now known to be produced by aphids and red spider and not by bacteria. As the disease progresses various fungi and bacteria may appear, but their presence is not constant. Infection experiments with *Bacterium dianthi* resulted negatively in every case. No matter how badly diseased the plants may be, if otherwise vigorous they will outgrow the disease if kept completely free from aphids, thrips and red spiders. These conclusions are reached by

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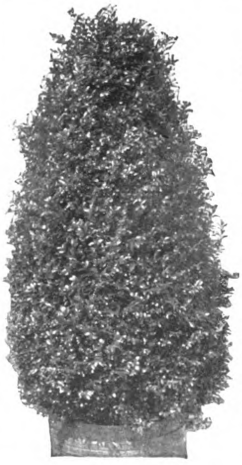

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Albert F. Woods, now Chief of the Division of Vegetable Physiology and Pathology, in Bulletin 19 of that division of the U. S. Department of Agriculture. The bulletin contains 30 pages and is illustrated.

Chrysanthemums. H. J. Jones' "Portfolio of New Chrysanthemums for 1901" contains 20 half-tone pictures of monster exhibition blooms. Each picture measures 7½ x 9¾ inches and in every instance the flower nearly fills the whole page.

Perfumery Gardening. "Can Perfumery Gardening Succeed in the United States?" is discussed by Edward S. Steele in the Year-book of the U. S. Dept. of Agric. for 1898. A reprint of this article has recently been published. Mr. Steele has also written a comprehensive review of the same subject for the Cyclopedia of American Horticulture.

Village Improvement. State and local societies interested in country life, nature-study, horticulture, tree planting, etc., should send to the Department of Forestry of the Commonwealth of Pennsylvania for a recent bulletin by Miss Mira L. Dock, on libraries suitable for such societies. The bulletin contains a list of 36 books on domestic economy alone, giving the publisher and price, but no abstracts or comments. This bulletin is published at Harrisburg. This is a different publication from the one mentioned in our November issue.

Landscape Gardening. A dainty little pamphlet on *Rhododendron maximum*, our matchless "Great Laurel" or "Rose Bay," has been issued by J. Woodward Manning, of Boston, Mass. The illustrations show the wonderful advance that has been made in the artistic photography of plants within the last five years. They also illustrate the best methods of planting Rhododendrons for natural effects.

Forestry. "A Primer of Forestry, Part I.—The Forest," by Gifford Pinchot, is a small bound book of 88 pages with 83 figures and 47 plates. A second edition has been published by the U. S. Dept. of Agriculture.

Botany of all known plants. A. Engler proposes to publish, with the aid of the botanists of the world, a description of all known species of plants. This work is not to be confused with "Die Natürlichen Pflanzenfamilien," which aims to describe all known genera of plants. The description of the species is a much greater task. If this work is carried to completion it will probably contain a greater number of volumes than any botanical work ever published.

Experiment Station in Porto Rico. The President's message to Congress on this subject is a pamphlet of 32 pages, with 7 plates. It consists of the report on the agricultural resources and possibilities of Porto Rico by Special Agent S. A. Knapp. Mr. Knapp suggests an expenditure of $10,800 for buildings, recommends that the "model farm" idea be a prominent feature, and gives four reasons why the station should be located near San Juan.

How to get government bulletins and other literature about agriculture and all subjects pertaining to country life. Write to Geo. Wm. Hill, Chief of the Division of Publications, U. S. Dept. of Agric., Washington, D. C. Ask him to send you regularly the "Monthly List of Publications." Do not ask people for "all their publications." The "Monthly List" gives a catalogue of everything the Department publishes, with enough description so that you can tell whether you want the publication or not. There are two kinds of publications issued by the Department—free publications and those to which a price is attached. For the former, write to the address given above. For the latter, write to the Superintendent of Documents, Union Bldg., Washington, D. C.

Every school teacher and school officer should send for an illustrated pamphlet entitled, "Tree Planting on Rural School Grounds." It contains 28 pages and 17 figures. The pamphlet is prepared by Wm. L. Hall of the Division of Forestry. Write to the Chief of the Div. of Publications, U. S. Dept. of Agriculture, Washington, D. C., and ask for Bulletin No. 134. The crusade for beautifying country and city schools has begun in earnest and it is likely to be one of the most characteristic features of American progress dur-

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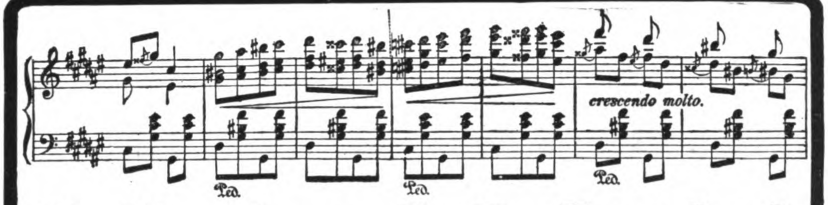

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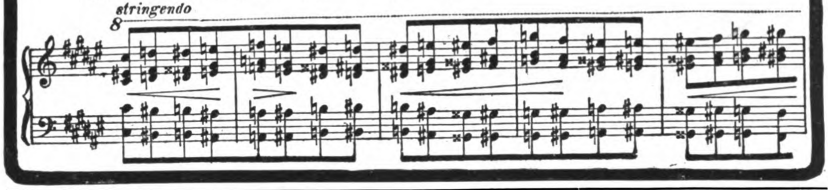

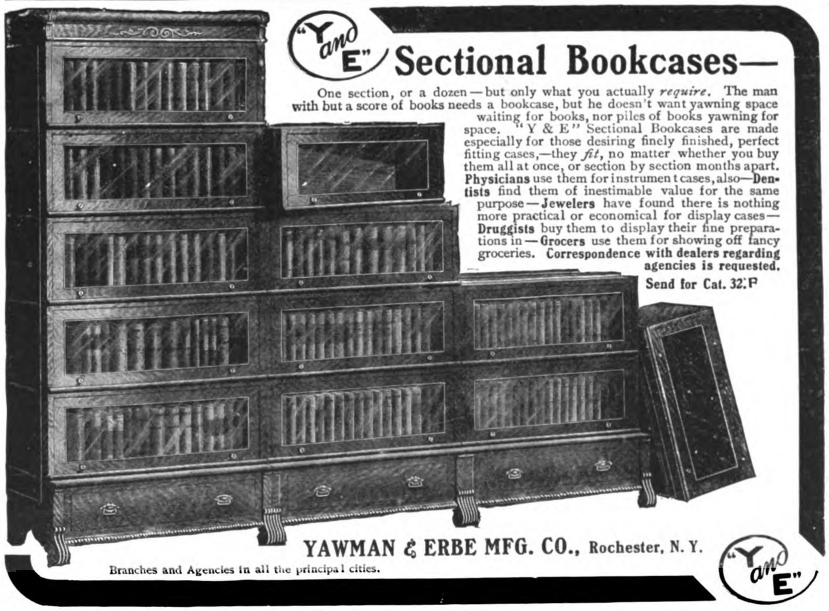

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ing the coming century. No ambitious teacher can afford to neglect this movement. The bulletin mentioned contains many practical suggestions which will be new and valuable to discouraged teachers. Some of the illustrations are not up to the Department standard, but they are all useful. Bulletin 160 of the Cornell Experiment Station (Ithaca, N. Y.) is on the same subject.

The chemical changes which stored apples undergo were made the subject of study during the winter of 1900–1901, at the Royal Pomological Institute of Proskan. Under the direction of the chemist, Dr. Otto, 8 varieties were twice examined, once when ripe in the "pomological sense," and again after nine to thirteen weeks' storage in a fruit cellar. The results show that in six out of eight varieties there was a constant and considerable decrease in specific weight, acid, sugar, and extract content of the juice pressed from the apples. The other two varieties showed a decrease of starch and acid content, but the specific weight, sugar and extract content showed a very slight increase after storage. The explanation given is that ripe apples on being stored become richer in sugar, in the percentage composition of the juice, by reason of the loss of water in transpiration; in consequence of this greater concentration the acid content must at the same time become relatively smaller. Later, after longer storage, there is found, in consequence of respiration and other decomposition processes, a very considerable decrease in the sugar and extract content. Starch, however, is earlier changed to sugar at time of ripening or storage. The same results were determined by Kulisch at an earlier date, and Dr. Otto closes his paper with some further results of Kulisch as follows: "In very many apples, especially the late ripening varieties, more or less large quantities of starch are present at time of tree ripeness, and these quantities of starch are changed to sugar earlier or later, depending on the variety and method of storage. Thus there can be brought about, after picking, under certain conditions, an increase in the absolute sugar content. The relative sugar content can, in addition, be considerably increased by the concentration of the juice through transpiration. Both causes determine in addition to the concomitant absolute and relative acid decrease, also the sweeter flavor of storage ripe fruits." The details of the experiments and references to literature may be found in "Gartenflora," Vol. 50, No. 12, June 15, 1901, page 318 et seq.

Hybrids between Dianthus Chinensis and *D. Caryophyllus*, the work of Amelung, are described and illustrated in "Gartenflora," Vol. 50, No. 17, Sept. 1, 1901, p. 449. The aim was to combine the habit of the stiff, upright-growing flowers of Chinensis with the beautiful, bright and self colors and the odor of *D. Caryophyllus*. The first results (1893) were not very valuable, but repeated selection and a double use of the pollen of the garden pink "Grenadier" gave the results shown in the plate. The stem has the stiff habit of Chinensis and the colors vary between those of the parents. The odor is but slightly apparent at the opening of the flower. The hybrids, on account of unfavorable capacity for propagation and their poor growth, are not yet ready to be placed among the garden flowers. This work was done at the Joachimsthal Gymnasium, Berlin, in constant view of the students of the institution.

The Garden and its development is the title of a very excellent paper in the Annual Report of the Smithsonian Institution for 1899, translated from the German of Dr. Paul Falkenberg. It traces the history of the garden-idea from the time of the Greeks, giving salient points in the development of mere gardening and also of garden art. Unlike most of the historical sketches with which English readers are familiar, it gives a prominent place to German influence in the evolution of the garden.

The influence of ringing on herbaceous plants is reported by Lucien Daniel in Comtes Rendus de l'Academie des Sciences of Paris, and quoted by "Gartenflora," Vol. 50, No. 10, May 15, 1901, p. 274. The experiments were made on various types of Brassicaceous plants and Solanaceæ, which give edible products. On cabbage and brussels sprouts the heads opened up more and remained smaller. With the cabbage-turnip the

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development of the root was above the ring and took on the shape of a bottle instead of that of a sphere. Ringing under the bunch of leaves caused a lengthening of the leaves, the roots reached out and developed numerous superfluous hairlike threads. On these plants ringing had an unfavorable influence. Eggplant New York without ringing produced fruits of about 500g. (1.1 lbs.), whereas on plants that had been ringed the fruits weighed to 1 kg. (2.2 lbs.). The tomatoes also showed larger and more numerous fruits, but the flavor was less pleasing. Daniel concludes that on Solanaceæ ringing may be done to advantage.

Feeding of plants is a subject which is every year demanding more attention. Under the conditions of soil treatment which are common in many sections, commercial plant-food has come to occupy an important place. Within recent years there has been much discussion as to whether potash as an article of plant-food can be displaced in whole or in part by soda. Some agricultural writers have asserted that it can be made to take the place of potash as a fertilizer. Were this true it would be a matter of importance, for soda can be purchased at a much lower price than potash.

The New York State Experiment Station, Geneva, N. Y., in Bulletin 192, gives some valuable information on the subject. Pots were filled with pure quartz sand that contained the merest trace of potash, less than $\frac{1}{1250}$ of 1 per cent, and none of the other ingredients of plant-food. In this quartz sand the plants were grown. Distilled water was used in supplying moisture and the plants were given definite quantities of food in solution. The tests were made in a greenhouse where all conditions of temperature and light were under control. Twelve pots were used for each kind of plant grown, in duplicate sets of six. In the first pot a complete fertilizer containing both soda and potash was used, in the second pot the soda was omitted, in the third the potash was left out, in the fourth neither potash nor soda was given, in the fifth nitrogen only was given, and in the last pot the plants were permitted to make what growth they could in the quartz sand.

The results were conclusive and gave striking proof that soda cannot take the place of potash as an ingredient of plant-food. It was found that soda was not even essential to plant life, and that potash is essential.

While potash is used in very minute quantities, yet that small quantity is a requisite and cannot, so far as we know, be displaced by anything. When potash was lacking and soda was abundant the plants took up large quantities of soda, but it seemed in no way to increase their vigor. It is probable that in using fertilizers, much more potash has been supplied than was actually necessary. Nitrate of soda cannot be made to serve in place of potash, and for general agricultural purposes the muriate of potash should be used.

Wheat farming and its effect upon soil fertility has been made the subject of investigation by the Minnesota Experiment Station, and the results are reported in Bulletin No. 0 of that Station. This reports a continuation of the work which was commenced some years ago, and which bids fair to yield important results. The results show that wheat is not necessarily an exhaustive crop, but the way it is usually cultivated does impair fertility. The experiments show that it is not the crop itself that is responsible for the loss of nitrogen and decline in fertility, but the method or lack of method that has been followed. When properly grown in a rotation it takes less plant-food from the soil than many other farm crops. The old practice of "summer fallowing," or letting the land remain bare all summer, is most wasteful, and causes heavy losses of nitrogen and humus. While larger crops of wheat may be produced after a summer fallow, this increase is followed by a heavy loss in nitrogen. By a rotation of crops, the use of farm manures and the cultivation of clover, the losses of nitrogen and humus from the soil can be checked, and larger yields and better quality of wheat secured. If the advice given in this Minnesota bulletin is followed by the wheat farmers of the West the day of soil depletion will be delayed.

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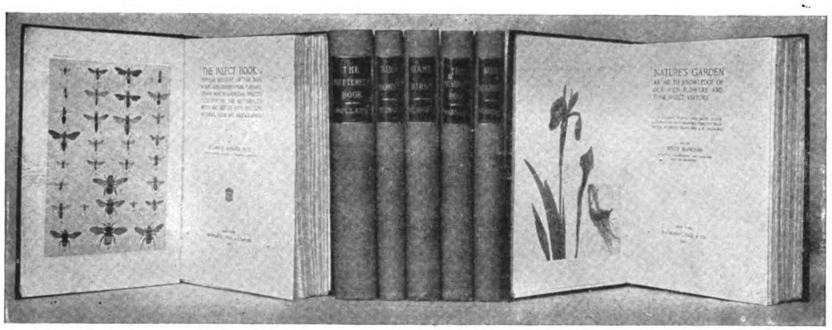

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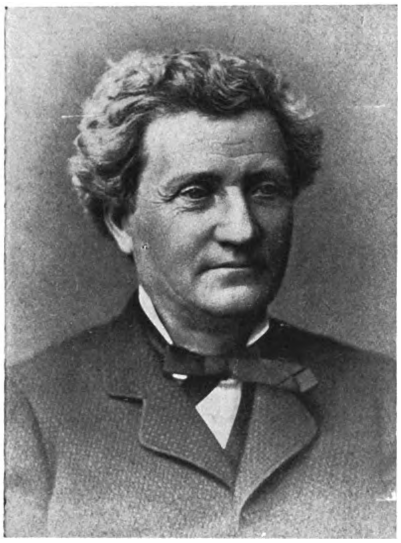

I. JAMES VICK

Seedsman and Editor

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Vick was English by birth, and as a lad he was acquainted with the youthful Charles Dickens. He was born at Portsmouth, November 23, 1818. At the age of twelve he came with his parents to America. At first he lived in New York, where he learned the printer's trade, setting type on the old "Knickerbocker" by the side of Horace Greeley. Several years later he went to Rochester, N. Y., working in other newspaper offices. To the passing generation the name of James Vick also suggests that of Rochester—the most famous nursery city of the western world. It was not until 1860, however, that Vick's career as a seed merchant began. During the preceding years he was chiefly editor and publisher. In 1850 he became editor of the "Genesee Farmer," then published at Rochester by Luther Tucker, of Albany. This paper was subsequently absorbed by "The Cultivator," which still lives in the form of "The Cultivator and Country Gentleman." After this consolidation another "Genesee Farmer" was established, of which James Vick became editor and publisher for a short time, during which it had a large circulation. In 1853 he purchased the famous monthly magazine known as "The Horticulturist," which had been founded in 1846 by Luther Tucker at Albany. The guiding spirit of this noble magazine was Andrew Jackson Downing, America's first great landscape

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gardener and horticultural genius. After the untimely death of Downing, "The Horticulturist" was published for a while by James Vick, at Rochester. Vick's editor was Patrick Barry, who had formerly been associated with him as editor of the horticultural department of the "Genesee Farmer." Vick's connection with "The Horticulturist" was a short one. In 1857 he became editor of the horticultural department of "The Rural New-Yorker," then known as "Moore's Rural New-Yorker," and published at Rochester. It was at this time that Vick's interest in the distribution of seeds began to grow and in 1860 he went into the seed business with his whole heart. He was thus forty-two years old when he found his life's work—for his previous years, though busy and useful, may be considered years of preparation.

His seed business soon grew to great proportions. Three thousand letters daily was not an unusual mail. He spent $30,000 a year for postage, and his annual catalogue was issued in editions of 200,000 or over. His former typographical and editorial experience suggested to him many novel pictures and attractive features for his catalogue. He did all his printing, binding and paper-box making at his place of business, as well as certain other things that were usually separated even at that day. The trial grounds were a great attraction to visitors. Vick did much to make Rochester the beautiful city it is, and his name is still commemorated in Vick Park and Portsmouth Terrace.

In 1878 he founded "Vick's Monthly Magazine." This cost a dollar a year and made an annual volume of about 384 octavo pages. There are very few copies of the early volumes in existence. The engravings are usually small and unpretentious, but they are very numerous and at this distance have an interest of quaintness. The colored plate was not the highest type of art. But we must remember that it was the "chromo age." On the whole, "Vick's Monthly" was the best illustrated magazine of floriculture that America had in the late seventies and early eighties. It is in these five volumes, from 1878 to 1882, that we have the fullest and most amiable expression of James Vick's personality. "Botany for Little Folks" was one of the features, and throughout the magazine one feels the fatherly spirit with which he answered the questions of the youngsters. The breathless interest of a boy in a plant or bulb was a sacred responsibility to this man, who held the secret of a storehouse full of wonders. "Dear Mr. Vick," the letters began, and the children all meant it. To him they told their troubles, hopes, fears, successes. He was their own "Mr. Vick," who knew "all about plants." Countless letters fill this magazine, from people all over this wide country who were far too interested to stop and think how things sounded or looked. And to all these people Mr. Vick made answer after his fashion.

James Vick died May 16, 1882, of pneumonia, after a few days' illness. When he passed away many little ones missed their "Mr. Vick;" but the best of his spirit lives for us to-day. W. M.

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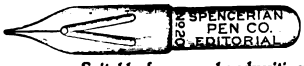

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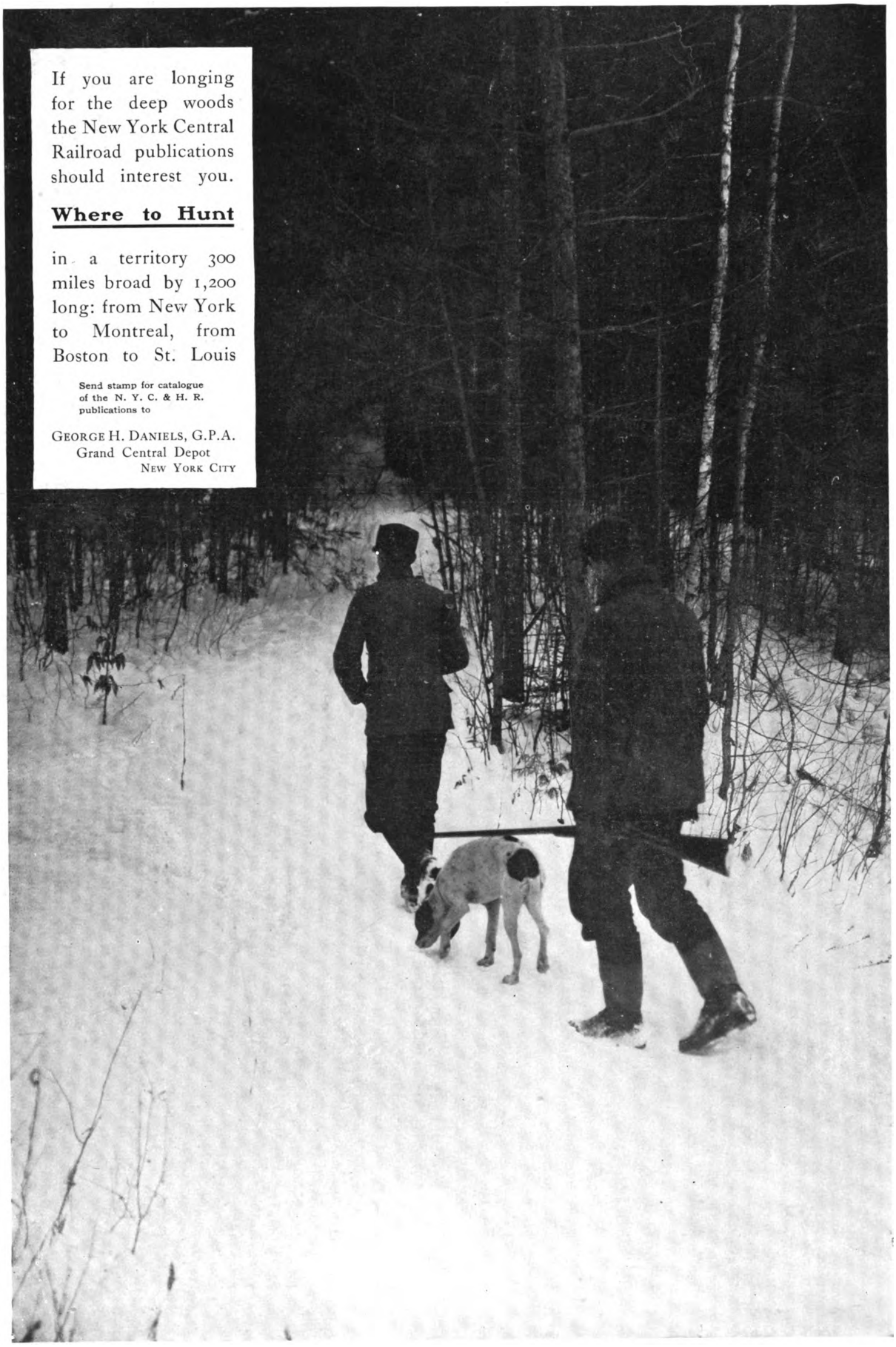

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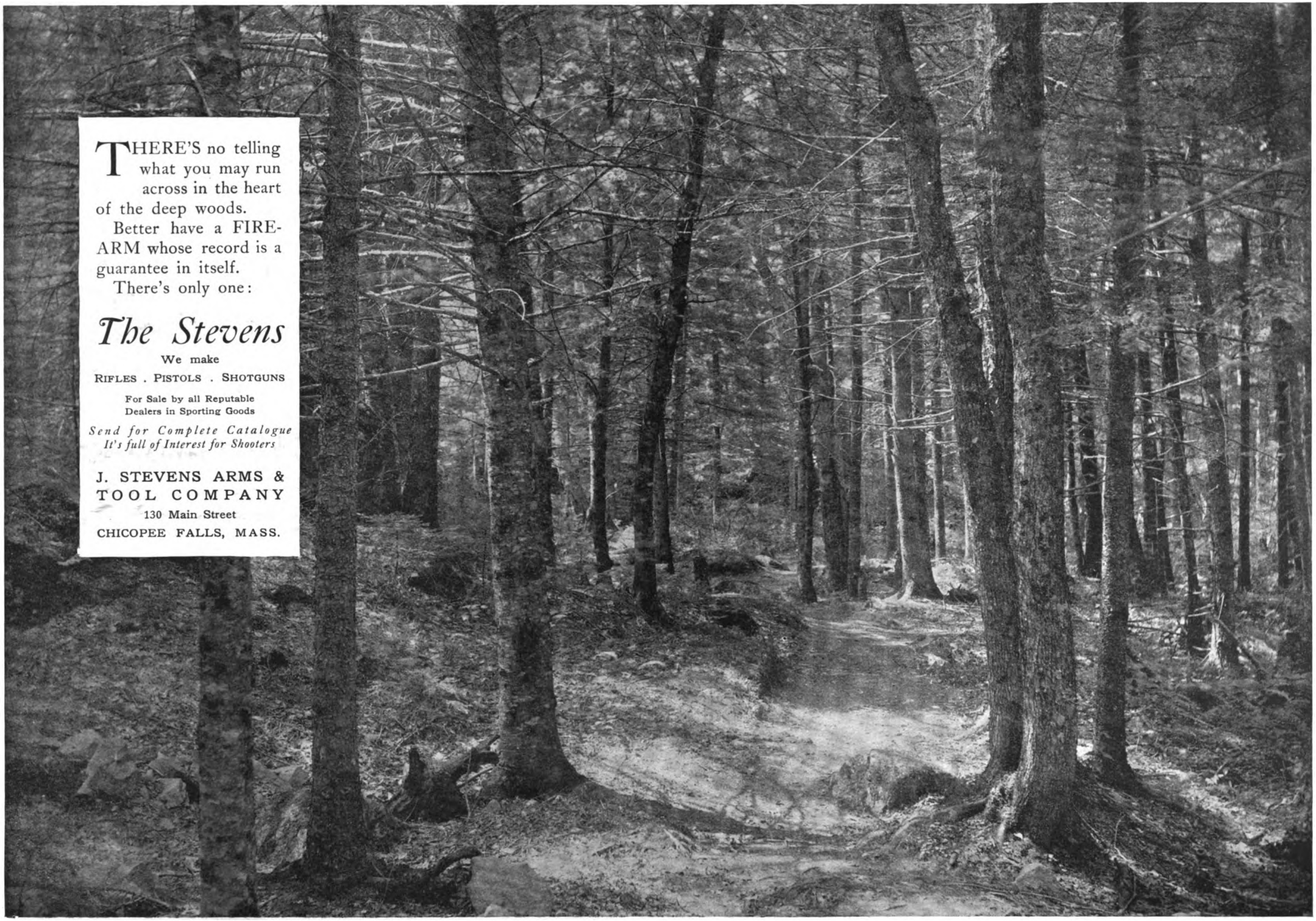

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THE last half mile of the most lovely park road in America, the famed Wissahickon Drive, borders on the Andorra Nurseries, of which the tree-embowered office marks a turn to the left, where the park conditions are effectively continued in the beautiful nursery grounds. Across the end of the Drive is Mr. Harper's quaint old residence, pictured above. Every part of the nurseries is unique, in differing radically from the conventional tree-manufacturing idea. Here at every turn appear suggestive uses of the hardy trees and plants which are so carefully grown and prepared for an appreciative clientèle. With their wide extent, including hundreds of acres of varied contour, there is present always a special attractiveness. No day in the year is without interest or charm at Andorra. The absence of the summer's rich foliage accentuates the beauty of the Evergreens that are a special feature of the establishment, and a perfect gamut of greens is continually visible. As the snow comes, it brings into sharp relief the varied trees and shrubs with bright and showy twigs. From earliest spring Andorra is a rapidly changing panorama of beauty.

Every effect is produced by *hardy* shrubs and trees of permanent value. Planting such stock as is suggested by these nurseries is making a good investment, for grounds so adorned increase rapidly in value, and there is a minimum of expense in caring for the thoroughly hardy and well-grown specimens here provided. The rarer and finer things are found in great supply. Whole fields of Rhododendrons and Azaleas, Laurels and Hollies; great masses of Iris and Pæonies of the richest beauty; splendid blocks of the best Oaks, Maples, and those trees which a wide experience has shown to be best adapted for ornamental effects; superb specimens of the rarer coniferous Evergreens—all these may be seen and admired.

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VOL. I. NO. 3
Old Series: Vol. VI—No. 7

JANUARY, 1902

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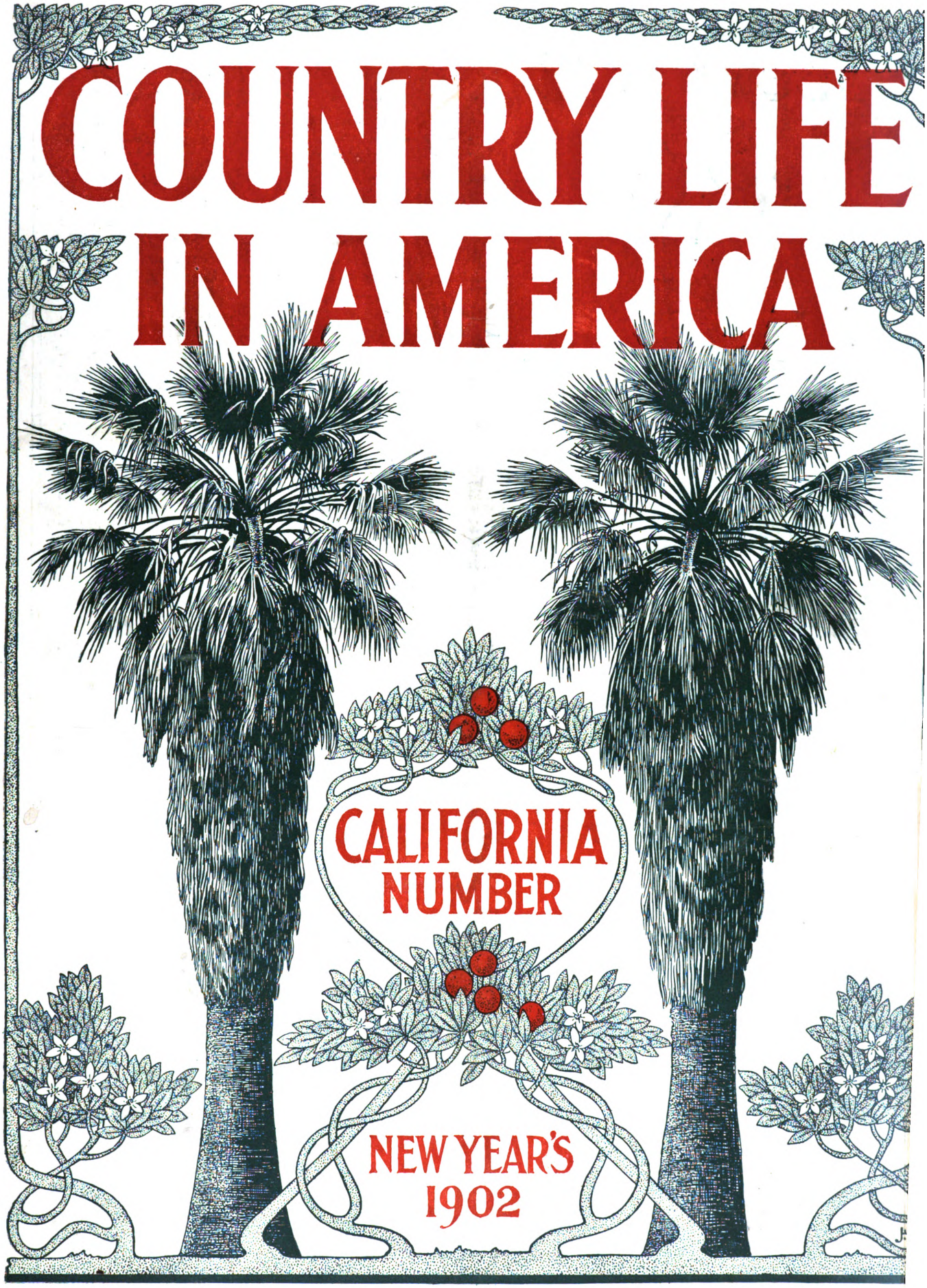
COUNTRY LIFE IN AMERICA



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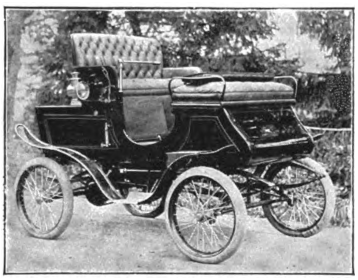
LIGHT "MOBILE" SURREY



"MOBILE" TOURING CARRIAGE

"MOBILE" RUNABOUT

The Purchaser of an Automobile

Should bear in mind that

There is a vast difference between the theoretical manufacturing stage

Where experience is confined at best to a few wagons, perhaps of a single type, and that perfection of detail and thoroughness of construction which come

Of the widest experience, covering many thousands of automobiles of more than twenty types, in every-day use,

Operated over every kind of road from California to Maine.

If the dealer in automobiles coming to New York during the recent Madison Square Garden automobile show had secured the agency for every other automobile there exhibited by all other companies, he would not have been able to offer his customer as many styles of carriages, designed for the various purposes of business and pleasure, as The "MOBILE" COMPANY alone offers.

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While other companies are still in the "runabout" stage of manufacturing, The "Mobile" Company's exhibit illustrated the wonderful progress which the Company has made during the past two years.

It included the only twelve-passenger automobile vehicle today in successful operation anywhere.

The "Mobile" Company has had a dozen of these wagons in operation during the past six months at its own expense in order to learn from practical experience. More than twenty improvements have been made on the original carriage first put on the streets of New York. One of these wagons was sent through to Buffalo—starting four hours after the Automobile Club run and arriving in Buffalo thirteen hours ahead of the first carriage—with a view to testing its capacity. Another carried a party of eight to Washington, occupying three days and one hour—an average of eighty-three miles per day.

Weighing but 1,900 pounds, this wagon with its latest improvements is an ideal omnibus, and has solved the rapid transit problem.

Perhaps the most important automobile carriage yet turned out in either Europe or America is the

NEW "MOBILE" TOURING CARRIAGE

shown for the first time at the Madison Square exhibit.

Entirely doing away with the objectionable features of the European machines.

Operating with the slightest jar or jolt.

No delicate adjustments necessitating the services of an expert chauffeur.

It possesses a strength of construction equal to the most expensive European wagons, and power to climb the steepest grades and to **maintain steadily twenty to thirty miles** per hour on fair roads.

It carries a supply of gasoline good for from 125 to 225 miles according to character of road. The "By-pass" and all necessity for the driver regulating water in the boiler, hitherto a necessity on steam carriages, has been done away with by a new and most important invention of which the patents have been bought by The "Mobile" Company of America.

The Touring Carriage shown at Madison Square was just back from a run covering the distance of 250 miles (via Ellicott's Mills) between New York and Washington City.

The machine was driven by the President of the "Mobile" Company of America at night from New York City to Philadelphia, 100 miles, in 8½ hours, including all stops for water, crossing of ferries, et cetera. Philadelphia to Baltimore, 100 miles, 9½ hours. From Baltimore to Washington, by the Ellicott's Mills route, 49½ miles, in 4 hours. The entire trip was made in 37 hours and 5 minutes, including a night spent in Baltimore, et cetera. The route included some of the worst roads in the country and required a speed of from 20 to 25 miles an hour on first-class sections in order to make up for the more difficult portions. An attempt to avoid a street-car collision while running rapidly on the slippery streets in Philadelphia, resulted in smashing a rear wheel and a loss of more than 4 hours in rebuilding same. With the exception of the collision, the machine was never out of order for one minute. Pumping air, oiling, et cetera, were all conducted while the machine was running.

"MOBILE" LIGHT DELIVERY WAGON

Only two-thirds of the gasoline capacity was required to go from New York to Philadelphia. The full capacity is equal to more than 200 miles on good roads or 150 miles on average roads. Water required to be renewed every 25 to 35 miles.

The "Mobile" Dos-a-Dos—a light inexpensive carriage for four persons—proved one of the most popular selling carriages during the past season. Hundreds of these were shipped to various parts of the country and gave the utmost satisfaction. Not intended for long trips over rough roads—as is the Touring Wagon—they have, nevertheless, sustained the severest tests and given the fullest satisfaction in the hands of careful drivers.

The "Mobile" Company has under construction delivery-wagons ranging in carrying capacity from 400 to 4,000 pounds.

A coupe carrying six persons, for city depot-work, is another specialty of The "Mobile" Company.

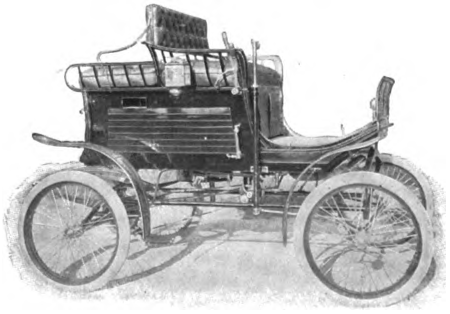
A large brick addition is now being made to The "Mobile" Company's factory at Philipse-Manor-on-the-Hudson. Still another and larger building will be pushed forward with the opening of the spring.

The "Mobile" Company of America

Philipse Manor **Tarrytown-on-the-Hudson, N. Y.**

HEAVY "MOBILE" SURREY

VICTORIA TOP "MOBILE"



"MOBILE" DOS-A-DOS

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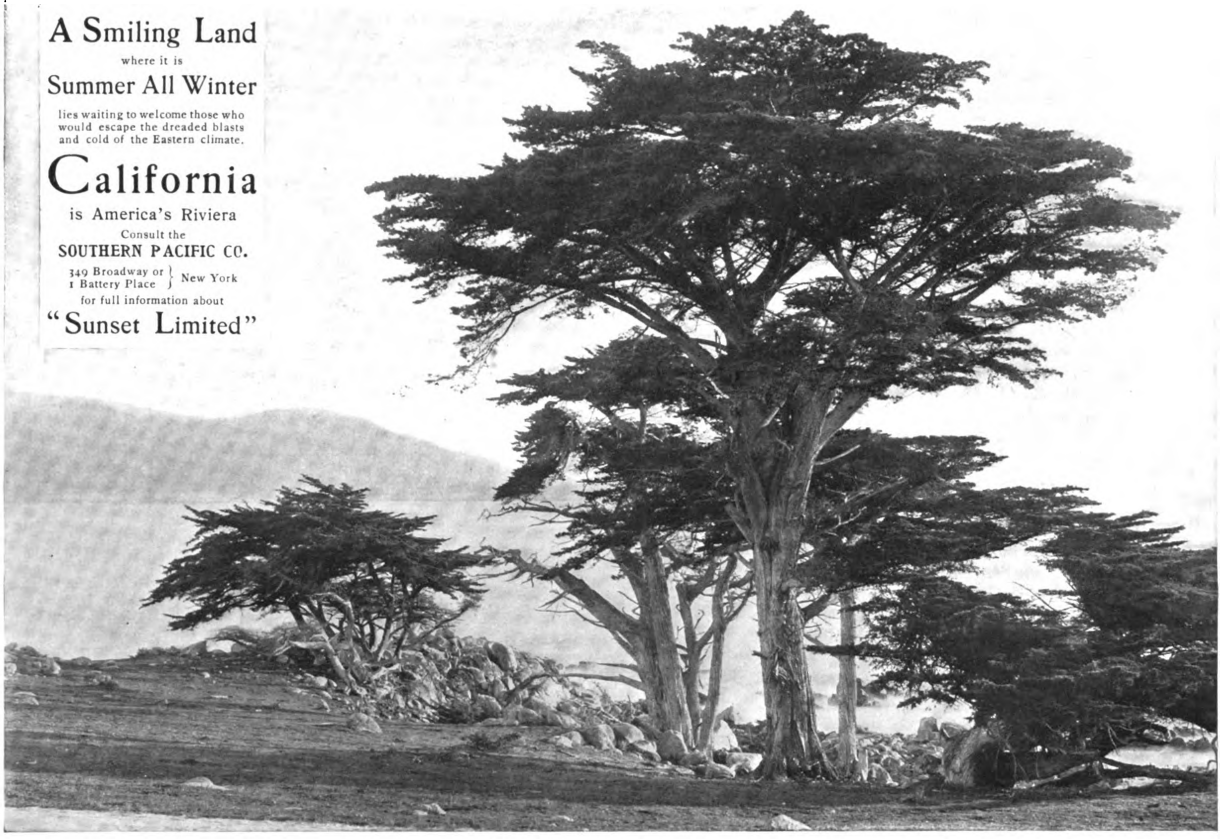

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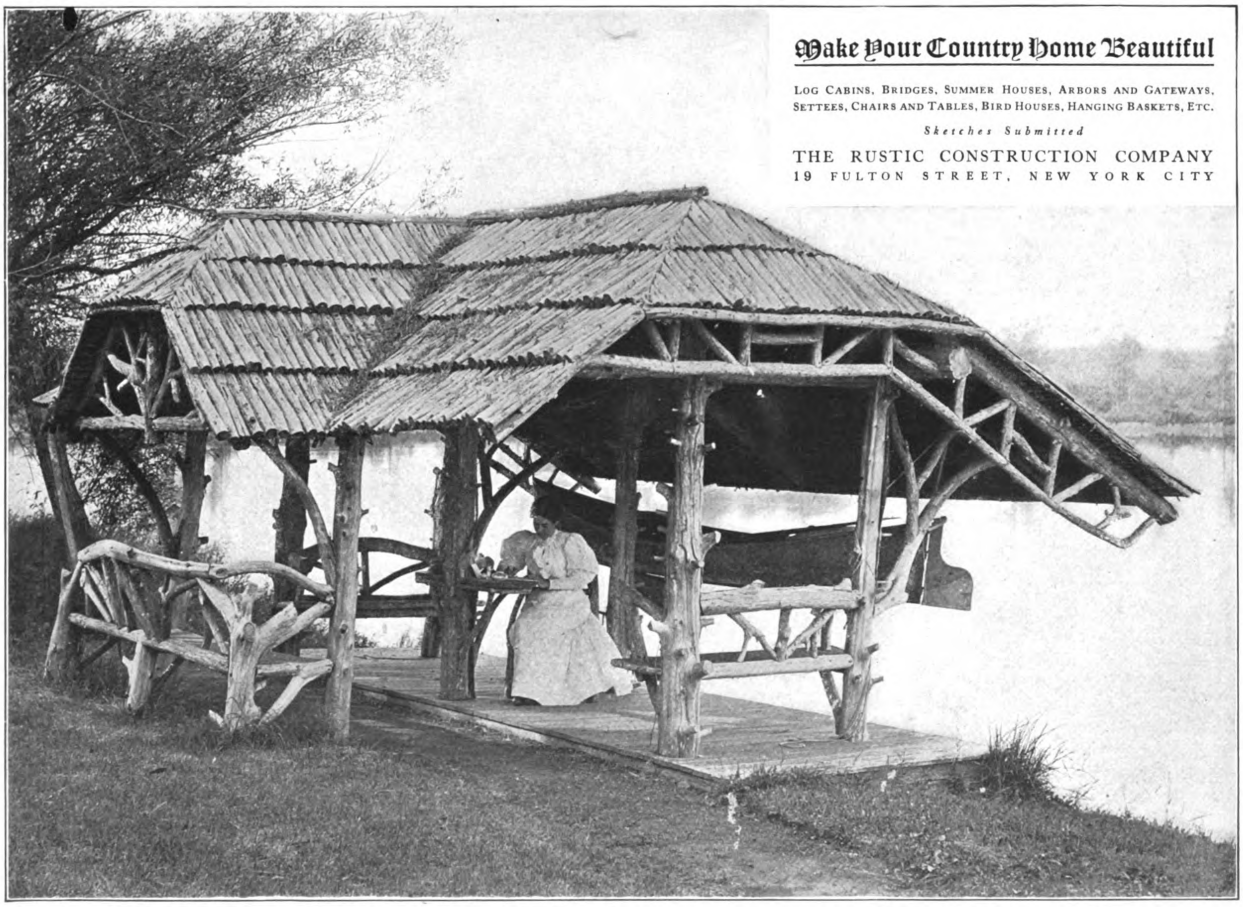

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DOINGS OF THE DAY xl

The Tibbitts photographs are by courtesy of the Southern Pacific Railroad Co.

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Photograph by J. O. Tucker

"Orchards rolling their windrows up to the foothills." Scene in the Santa Clara Valley

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COUNTRY LIFE IN AMERICA

VOLUME I—NUMBER 3
OLD SERIES: VOL. 6—No. 7

January, 1902

PRICE, 25 CENTS
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Photograph by W. H. Hill

"Across orange groves one looks away to snow-clad mountains." View from Smiley Heights over Redlands

CALIFORNIA

LAND of the setting sun!

One is in a new world when he enters California. From hundreds of miles of desert or from profitless mountains, he comes almost suddenly into a land overflowing with bounty and brim-full of vital and progressive energy. Its very isolation marks it as a promised land. It is a country apart. Bounded on the east by chain upon chain of mountains, it is set off from the older civilizations, and its problems have been new. Lying on the rim of the continent, the outlook is to the illimitable expanse of the ocean, and imagination runs free course to the islands of the sea.

So unlike our eastern country is California that the easterner has no basis of comparison. It appeals to him as a wonderland. If he is wise, he will make no comparison of the country itself with that from which he came. He will accept it as it is and for itself. California is its own measure.

The wonder lies in the strangeness and immenseness of it. One may not know why, but instinctively he feels

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that here great new problems have been attacked and solved, that a mighty empire will come, that some great forward impetus will be given to the progress of the race. There is expansiveness in the very contrast and sweep of the landscape from the Sierras to the ocean.

Measured by distances, it is a mighty country,—some seven hundred miles from north to south. All New England is much less than half its area. This great expanse, lying its whole length on the ocean, is thrown into endless variety of elevation and surface. Its main geographic features are two parallel series of mountains, with the Great Valley between, the narrow coast line beyond, the broken country of Southern California lying beyond the union of the ranges in the Tehachapis. The Great Valley—known as the Sacramento Valley in its northern half, and the San Joaquin in the southern half—is the principal theater of the great stock ranges and grain ranches. In the smaller local valleys of the Coast Range and the western slopes of the Sierras, and in the seaward part of southern California—with Los Angeles as its center—are many of the fruit-growing and other horticultural regions. These valleys are as numerous as the folds of the mountains. Few of them are yet known by reputation to persons in other states. With all the fame of its resources, California is yet far short of its possibilities. Its progress has been phenomenal, and yet it has really only begun. One feels that there are boundless opportunities. Probably no agricultural country has ever developed so rapidly as California, and yet none has greater promise of things still to come.

Photograph by H. C. Tibbitts

"The majestic Washingtonia palm, with shaggy mane and massive trunk"

More quickly than other countries, California passed through the pastoral stage and entered the era of special industries. All farming businesses have foothold in California, but it is the fruit-growing that has made the state most famous. Contradicting all preconceived notions about the necessity of the proximity of the market, it has first grown the fruit and has then found the markets or has made them. Every city in the east knows California fruit. Last summer in the Vaca Valley I saw the packing of plums which would be sold in London in seventeen days. The long dry summers render the fruits firm for shipping, and they can be packed when dry and free from rot. The very immensity of the fruit-growing industry forces an outlet. If there are immense areas still capable of being developed in fruit-growing and other special industries, the eastern farmer wonders whether California will drive him from the market. No!

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Even California cannot excel in everything. Population is increasing. This population constantly demands greater variety of agricultural products. People are living better. The trade in special products grown near at home is increasing and is profitable when well handled. Parts of the West may supply the world's markets in some of the staples, but the eastern farmer can find a special and personal customer. The California fruit creates a demand for other fruit. I am impressed that farming, for the capital and energy employed, may be as profitable in New England and New York as it is elsewhere, and that the small farmer often has special opportunities in the East. Everywhere the poor farmer is a poor farmer, and the good farmer is a good farmer. Much of the western agriculture is characterized by tremendous energy. Within a generation the California fruit-growing has become the wonder of the world.

We easterners hear much of the California climate. This description is mostly a contrast with eastern winters. There is no California climate. The climate is as variegated as a mosaic. A few miles apart are climates as unlike as those of distinct latitudes. One can find good climate and bad. There are winters as severe as those of New England and as mild as those of southern Florida. What is usually regarded as the superiority of the California climate is founded on the assumption that the eastern winter is necessarily a season of unhealthfulness and unhappiness. But there are those who would not exchange a snug and snowy winter for even the flowers of spring time or the fruits of summer. I have never known a region that does not have some advantage in its climate; but of these advantages California has a most remarkable share.

Photograph by H. C. Tibbitts

"Beside these monsters the trees of ordinary forests are as pygmies." Grizzly Giant, in the Mariposa grove

The social structure rests upon a Latin foundation, for a Spanish-speaking people once held much of the land in great estates, and missions of the Roman Catholic faith spread their influence far and wide amongst the Indians and settlers. These missions were scattered along the coast region even to the north of San Francisco. They were the forerunners of the frontier, and brought in a civilization from the southward. Before the American Revolution had ceased, holy fathers had pushed their way up the rugged coast, enduring privation and hardship, and founding a civilization of which our eastern country had no knowledge. There, with fortitude and with marvelous skill and enterprise, they gathered the wild natives and they erected buildings whose ruins are to this day the admiration and wonder alike of the Californian and the traveler. They are landmarks of a civilization that was founded on religious faith. They are records of one great stage of a social and economic evolution, and the largest effort of the kind that was ever made within the limits of what is now the United States. In all American history there is no epoch upon which the imagination loves more to dwell. Upon this Latin foundation the Anglo-Saxon is now building a civilization resting upon political ideals. Within the region are also distinct influences of southern Europe, whence have come so many of the agricultural crops and practices. In the horticulture there are also marked effects of

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Australian influence in the trees and other plants. Added to all this is the introduction of oriental elements in the Chinese and Japanese people.

These varied elements are not yet completely blended. This fact is well illustrated in the architecture and the gardening. In a country of dry, brown summers, one sees the imitation of eastern ideals in greensward, often maintained by much labor of watering. With this lawn idea goes the English conception of landscape gardening, with its border plantings and the eastern types of trees and shrubs. These ideals are as beautifully exemplified in California as elsewhere in the world. One has only to visit such places as the Flood estate at Menlo Park and Golden Gate Park, at San Francisco, to see how completely the western European and eastern American ideals can be transplanted to a warm-temperate and dry country. Yet one cannot avoid the feeling that another type of landscape treatment will some day be developed in this beautiful country, particularly in its southern regions, one which shall be a part of the nature of the country itself, conforming to its seasons and its moods. This will be suggested by Spanish ideals, deriving its inspiration, perhaps, from the mission and the hacienda. A pleasant feature of California rural life is the awakening interest in the Spanish-American architecture, so well illustrated in Stanford University and in the noble hacienda of Mrs. Hearst, in one of the valleys of the Coast Range.

There is much that is strange in California. There are animals and plants of most striking character that are unknown to other parts of the world. Some of them are survivors of an old geologic time. Remnants of a once populous race are the Sequoias, now reduced to two Titanic species,—the redwoods of the Coast Range and the big trees of the Sierras. Beside these monsters the trees of the ordinary forest are as pygmies. In some of the southern cañons still grows the majestic Washingtonia palm, with shaggy mane and massive trunk,—all in all, barely a few hundred in their native wilds. The cypresses of Monterey, unknown elsewhere in a wild state, hold the very forefront of the ocean shore, gnarled and twisted by the tempests that roll in from Hawaii and Japan. When these promontories shall have worn away, the last of their race will have perished. One wonders how many other kinds of living things may have gone down in the onslaught of the sea before man discovered these outlying lands. Once these cypresses must have had a wider distribution, for they take kindly to many soils and conditions. In cultivation they make comely trees, with no hint of the wild picturesqueness of the storm-swept remnants on the headlands at Monterey.

Photograph by L. H. Bailey

"Here and there a river sinks into the sand." Where the Mojave river ends in the dry season

Great areas of California are desert. Touched with water, many of these wildernesses support a luxury of vegetation. The line between the irrigated field and the native waste is instant and sharp-cut. The Colorado desert in the extreme south, and the Mojàve in the southeast, are great wildernesses of rock and sand, supporting a sparse covering of weird and grotesque plant forms. Yet there is fascination in the deserts. Their loneliness and desolation are supreme. They are elemental. The very framework of the earth rolls before you, bare and strong and rugged. Across these shimmering wastes there are no pathways, save here and there a river that sinks into the sand. A thousand ways one might go. Beyond and far away are the delectable mountains, sometimes with mocking caps of

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snow, that carry the wonder out to the infinite. One cares nothing for words. He stands amidst the eternal silences.

California lies out of doors. It is the ideal country for the Bohemian and the rover. For months and weeks ahead one can count on the weather, and can plan to pitch his tent under the stars. The long, easy summers breed the charm of poetry and romance. He can find a northern fauna and flora lying among rippling brooks and sweet, cool hills; or he may have the animals and plants of deserts, with brazen sands and a sun burning in a pitiless sky. There are wide-stretching ranges of grain, with far-scattered farmhouses; there are orchards rolling their windrows up to the foothills, with close-snuggled homes. Across orange groves one looks away to snow-clad mountains. Extremes and intermediates are blended. California is a microcosm.

Land of action and of dreams!

"The white glory of Mount Shasta" Photograph by R. J. Waters

THE HEROES OF THE FIRING LINE

By JOAQUIN MILLER

"In those days there were giants in the land
. . . men who were of power and renown"

Not Roberts, he of Candahar,
Not Cronje with his scar-seamed men,
Not any man of noisy war,
Nor noisome man with praiseful pen:—
No, no, the hero of the strife
Is he who deals not death but life:—
I count this man the coming man,
The rounding glory of God's plan.

The heroes of the firing line?
They housed with God upon the height,
Companioned with the peak, the pine;
They read His open Book by night;
They drank His star-distilled perfume
Walled round by room and room and room;
By day they faced the trackless West
And chased the yellow sun to rest.

Such sad, mad marches to the sea!
Such silent sacrifice, such trust!
Three thousand miles of misery,
Three thousand miles of heroes' dust!
But then such stout thews of the few
Who knew the Promised Land, who knew
The cleansing fire and then laid hold
To hammer out God's house of gold!

Hear, hear, their thousand cannon roar
Against the knock-kneed mountain gnome,
Where never man set foot before,
Where monsters only have made home!
Hear, hear, the treasure house is free,
A stream of gold flows to the sea,
And where a foolish king would rear
A castle, lo, a college here!

Their cities zone the sundown seas,
Their white tents top the mountain crest.
The coward? He trenched not with these.
The weakling? He is laid to rest.
Each man's a man, such dauntless man
As God wrought not since time began.
His sons are as the sons of Saul
With David's daring, soul of Paul.

Each man a hero, lion each!
Behold what length of limb, what length
Of life, of love, what daring reach
To deep-hived honeycomb! what strength!
Clean outdoor Adams, virile, clean
As nature in her vernal green;
He hears, hears as a prophet hears
The morning music of the spheres.

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Photograph by O. V. Lange

Matilija Poppy (Romneya Coulteri), "queen of California wild flowers." About half natural size

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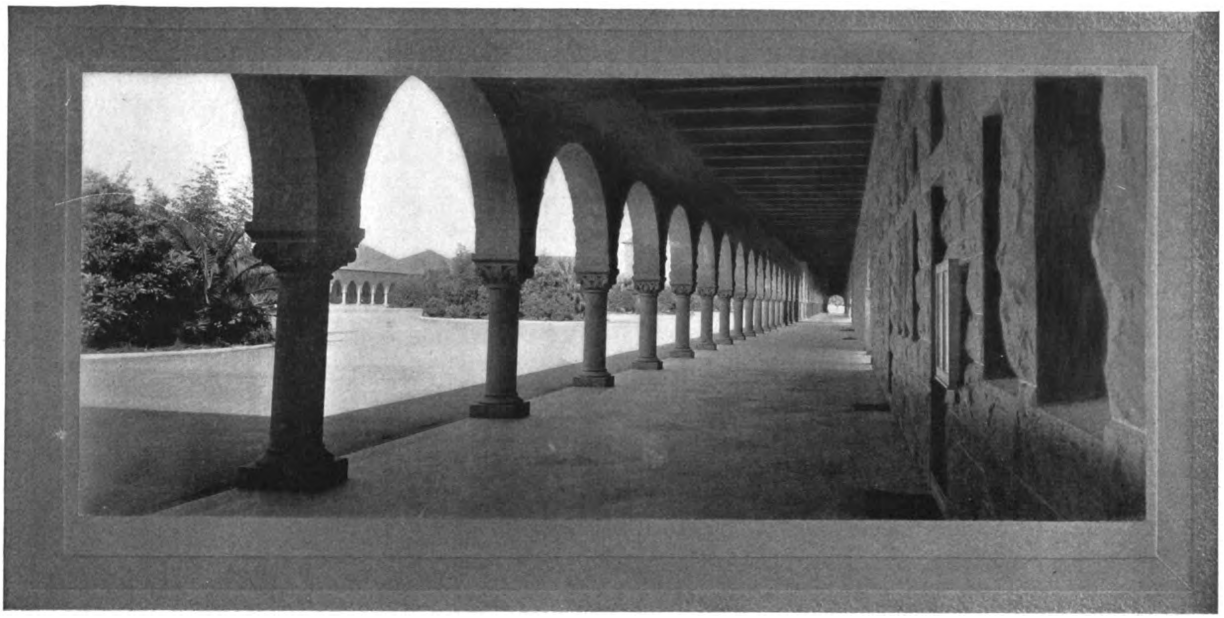
"The Spanish-American architecture, so well illustrated in Stanford University"



THE COUNTRY LIFE OF CALIFORNIA

THE TREND AND MEANING OF THE DEVELOPMENT OF THE PACIFIC COAST

By A. J. WELLS

THE rural life of this most lovable state has its roots deep in the poetry of the past. Behind the activity and vast productiveness of the present lies a pastoral age of which Homer might have sung. That age includes at once the Mission era, and the era of great stock ranches which followed. Both together constitute "the dreamy Spanish time," a period of about seventy years of almost idyllic life, unmatched in the annals of the world.

The padres themselves were our first farmers, and the mission lands were made to solve the problem of self-support. That period of our ranch life, with the stamp of religion upon it, and the sound of the Angelus ringing through it, has been called the "most remarkable idyl of civilization." When secularization broke up the mission system, there grew up the great private *ranchos* of the Spanish-Indian period. Their vast tracts, gifts of the Mexican Government, were chiefly stock ranges, and life upon them was the easiest and most indolent imaginable. The little work required was done by the Indians; the raising of cattle for hides and tallow largely took care of itself. The skies knew no winter; no hay was to be made, no barns builded, no stock housed and fed, no markets looked after. The proud, courteous, soft-spoken, hospitable owners of these princely estates lived mostly on horseback, and the low, gray, wide-roofed, unshaded adobe ranch-houses, warm in the time of the rain and cool in the days of the sun, were seen from afar, dozing under the California sunshine. On the wide table-lands the "filaree" and the burr clover made a riot of nutritious life, and by the first of February the starlike flower of the "filaree" was seen from meadow to hill-top, a shadowy veil of bluish pink; and later a thousand flower-forms made all the landscape a blaze of color. By the last of June the grasses were a brown mat of hay, cured as they grew, unspoiled by dew or rain, and full of oily seeds upon which the sheep fed; salt grass and mallows kept the lowlands green, while the dead mustard, the wild oats and the foxtail lay bleaching on the rounded hill-tops. When the rains came, the miracle of life repeated itself, and ran like a green wave over the outspread landscape.

In such a setting as this lay the ranch life of the Spanish era. Here were the homes of peace, and the outside world was far off and intangible. Here was a land in which it "seemed always afternoon." The soft sunlight, the cooling and unfailing trade-winds, the sea with a shimmer upon its placid surface, the mountains wrapped in the summer haze, the low of cattle in the valleys, the liquid note of the meadow-lark on the wide *mésa* over which you rode at a hard gallop, unhindered by ditch or fence,— such was the atmosphere through which you saw the California of the mid-century.

Into the tranquillity of this period burst the stormy excitement of "the days of '49," and almost in a decade the old had gone and a new civilization was founded. Gradually new owners came into possession of the old *ranchos*. As the mining interests declined, the Americans spread over the land, and the end of the Hispano-Indian occupation came swiftly. The easy-going descendants of the Spanish pioneers slipped back into narrow valleys and cañons, and were lost sight of as factors in the industrial life of the state.

The brief period which followed the new ownership of the old ranches was one of speculation. "Sheep-men" came in; wheat-farming broke out on a large scale. You could travel all day and see only the sheep-herder and his flock, or great herds of cattle in a few localities; the infrequent ranch-house still asleep in the sun, and elsewhere the monotony of billowy miles of grain or the

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hapless yellow of the stubble fields. At nightfall, on the plains, in the autumn the eye saw everywhere pillars of cloud and fire—the burning of the straw and stubble to make way for the gang-plow. Small farms began to fill in the wide intervals between great holdings but slowly. The great ranch does not "settle up" the country, does not cultivate family life, nor establish communities, and tends to limit its own existence by over-production.

The next period of our rural life was one of speculation in orchards and their products. The low price of wheat and the growing unprofitableness of sheep and cattle were behind the movement. Agriculture was slow—a sober business—a patient, careful, frugal vocation; but horticulture—the speculative instincts of Californians saw has come to stay. It has passed the stage of experiment and become one of the abiding industries of a great commonwealth.

This is the "destiny" of California. It was the destiny hinted at by the opulent orchards of the old friars, whose example waited long unregarded. But to-day we look out over a smiling and prosperous land, and note that fruit-growing is only one of many interests. This is the day of the "small farm." The old California showed the land in possession of the few: this makes it the home of the many. A few great ranches remain, but they are breaking up. They are "on the market" in small tracts. Prices are down and the man of limited means can get a foothold.

Photograph by J. O. Tucker

"Overflowing with bounty." Pears of central California

"millions in it"—and fruit-growing began with a rush. The whole land broke out in orchards as a boy does with the measles. It became spotted all over. Everything went. Dry table-lands, and barren foot-hills, and worthless sheep pastures turned green and golden with oranges, apricots, figs,—the whole catalogue. The placid monotony of the old days was gone. It was the hour of "the fool fruit-grower." He planted in haste and dug up at his leisure. Stockmen became horticulturists, orange growers, vineyardists, with a vast fund of inexperience to draw from. Everybody talked "fruit" and "land" and "water." That hour is past. It was a kind of "economic epilepsy." It has left the state richer for the folly. We profit to-day by the mistakes of yesterday. What began as an epidemic remains as vigorous health. Fruit-farming

Back of this break-up of great estates, and back of the small farm, is the irrigating ditch. The old time was dry; the new is wet. The "dry and thirsty land" of the Spanish Dons hears to-day the gurgle of water. Irrigation is the great issue of the country-side to-day, and here will shortly be found the most intensive agriculture in the world. Two-thirds of the farming land of the state will not support a dense population without water, but water will make it a garden. Here the miracle of the Nile will be repeated. Here will be seen again the plains of Lombardy criss-crossed with plant-life, every foot growing some food for man or beast. The most valuable material in the world may be mud. Lombardy is nothing without mud, nor was Egypt. Even in Illinois it is shown that the products of a given area can be trebled by irrigation,

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and water in Utah and Idaho has made small farms possible. In Utah the average is twenty-seven acres; in Idaho the ideal colony is said to be based on "the twenty-acre limit." In this climate, where summers are long and winter is but a name, twenty acres, with water and brains, makes an ideal home.

Will it be thought mere "California brag" if we say that the very conditions of country life here tend to increase capacity? The new climate, the new soil, the new industry, the complex questions of water in its relation to soil and product, and the preparation of that product for market, tend to develop men of exceptional ability. The small farmer represents individuality in the state. "Irrigation," Professor Elwood Mead says, "is much more than an affair of ditches and acres. It not only makes civilization possible where men could not live without it, but it shapes that civilization after its own peculiar design. Its underlying influence is that which makes for democracy and individual independence." The state needs the small farmer for the sake of "the self-reliant manhood" which he digs out of the ground, and which cannot be found quite in the form we need it anywhere else.

Then, the multiplication of small farms increases the social opportunity, and this tends to broaden culture. Thoreau, at Walden Pond, thought he had royal company, "especially in the morning, when nobody called," but solitude is not the best school. It is the isolation of farm life which tends to make congested cities. The society of birds and animals and plants may do for Thoreau, they tell him "stories of old time and new eternity;" but the average man wants to be able to speak to his fellow. The small farm increases fellowship. It reproduces Riverside and Redlands. These are ideal country places — towns — cities, if you please,—of oranges and lemons. City lots become acres, and the walk from the church shades off imperceptibly into the silence of larger groves, or the isolation of the farm loses itself unconsciously in city life, with the independence of the one and the polish of the other. The history of these cultured places is being repeated in many localities, and country life is being fenced in with the conventional but indispensable barriers that good taste erects, while keeping in its traditional individuality the flavor of the soil and the aroma of trees and flowers.

Photograph by L. H. Bailey

"Within a generation the California fruit-growing has come to be the wonder of the world." Prunes in Santa Clara Valley

Another point of contrast with the past is the diversified farm-life of to-day. The range of production is perhaps wider than that of any other country in the world. It is directly the outgrowth of a great diversity of thermal conditions. We see a large district of country sometimes through a very small window. Here is a cornfield in "Gospel Swamp" in southern California, and yonder is a date-palm in the Sacramento valley, five hundred and sixty miles north. This shows how plant-life here laughs at lines of latitude. The Agricultural Department of the government says that there "are no extensive regions in the world, outside of California, north of 35°, where dates can be grown successfully." All

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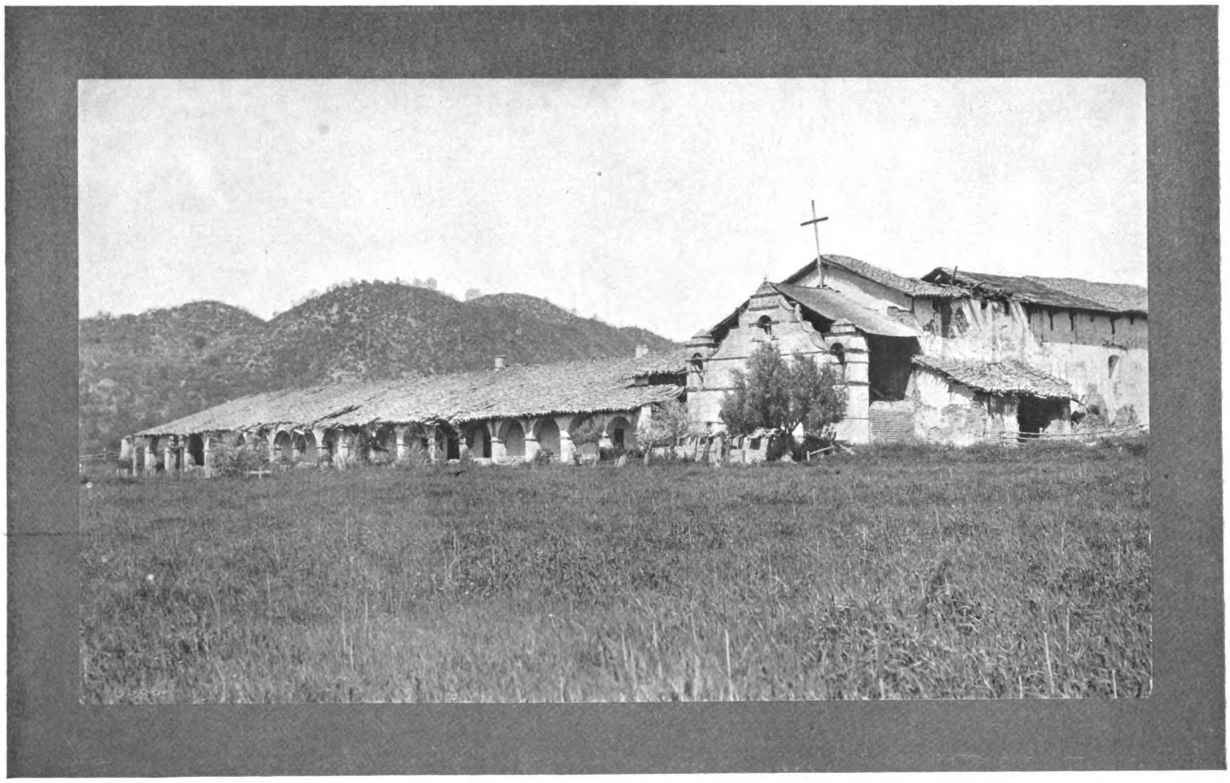
the products meet here as at nature's agricultural fair. This adds interest to country life. It adds value to interest. So many industries to choose from; so many "baskets" to put your "eggs" in; so many products of soil and climate offering themselves to the varying tastes and capacities of men as a means of livelihood gives to country life an added element of interest, with the advantage of affinity between the man and his work.

Let us glance finally at the landscape of this countryside. We live not only in a world of thought, but in a world of sight, not only where we must make a living, but where we ought to find something for the higher side of life. What beauty environs the home, greets us day by day and helps to educate us, is of consequence. Life is not made ideal by its circumstances, but poetry is important as well as bread: we want beauty as well as beefsteak. A man might even be content with a small income if he could have with it glorious scenery. The setting of the California farm is generally fine. Nature has done much. There is hardly a mile anywhere that is not attractive. The foot-hills have a varied charm, and a climate as lovely as their own far-seen ripples of brown or gold. The smaller valleys are beautiful enough to perplex the man who has the whole land to choose from. Even the Great Interior valley, flat as a floor, is rimmed by attractive and often magnificent mountains. You are not on wide plains, as in Australia, where you must ride for days to escape monotony in the hills. Valleys are made by mountains, and here they are in reach of the eye. The people in the upper Sacramento cannot miss the white glory of Mount Shasta; nor those lower down in the great sea valley be unconscious, unless wilfully, of the majesty of the Sierras, their serrated skyline, white from November to May and in summer veiled with pearly haze or amethystine splendors—a vision fair enough to lend a kind of halo to the days of the humblest worker. In the Coast Range there are charming nooks and corners where farms nestle; little valleys and sea slopes, and fine cañons, and oak-clad hills, and openings in the vast redwood forests enclosing houses and neighborhoods, all in "a misty camp of mountains pitched tumultuously," and full of quiet beauty, often a fine mingling of wildness and repose, with illimitable distances and a rich and glowing sky.

In the South the dweller looks up the heights of the Sierra Madre and the San Bernardino mountains, and the green and gold of orange groves has, near at hand, often a background of snow.

Over half the state grow the California oaks. They are to the landscape what the palm is to the tropics, the forms by which it is most vividly remembered. Standing alone, or loosely grouped, low, wide-spreading, picturesque, they suggest that Nature everywhere has been planning parks. Along the watercourses are sycamores, cottonwoods, willows, elders; around farm buildings, here and there, lines of straight, tall Lombardy poplars or the evergreen Eucalyptus.

A delightful strangeness is on every side. So much is new, so much of the old is missing! We miss as we travel by the country roads, the bits of forest that shut out the sun, the carefully-kept "wood-lots" of New England, or the old maple or white oak by the fence. We rarely find a river road with arching branches and dark shady places whose beauty and seclusion led Thackeray to wonder how anybody in the country could remain unmarried. You miss, too, the cloud-forms which sail over the fields, bringing grateful shadows. For long months there are no sailing squadrons of the air, no "thunder heads," no lightning "tangled in tremulous skeins of rain," no pomp of preparation for the rain when it does come.



"Buildings whose ruins are to this day the admiration and wonder alike of the Californian and the traveler." Mission, San Antonio de Padua

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There is no turf. This is not

> "A land of sunny turf and laughing rills,
> A land of endless summer sweet with dew,"

for the grass dies, root and blade, and the new growth is a rebirth from the seed each year.

Spring comes with the autumn rains, and overruns the land with a mist of greenness at a time when the eastern farmer is burying his cabbage, and banking up his house, and making his cellar frost-proof. The country is all emerald; the cows are cropping the new grass; the farmer is afield with plow and harrow from November to January; the orchardist with his coat off is pruning his trees or picking and shipping his oranges; roses are blooming, and wild flowers springing, all plant-life putting forth vigorous growth, and a wave of verdure is transforming the land that yesterday was brown and dry.

The light of summer is fierce and white. The sky is not soft and silky as in the east. There is not moisture enough in the air to hold the colors of the light, and the heat of summer for the same reason is not oppressive. The color of the fields from June to November, is brown or yellow — a landscape of burnt umber. At noon the splash of light falls hot on the pavement, but is shredded into luminous splendor by the feathery fronds of the palm whose shadow falls over your path, and wherever the trees stand thickly, you walk out of the glare of the sun into coolness and grateful twilight.

It is a land for the lover of nature. Nowhere has the country such varied and constant charm. There is a kind of "climatic peace" over all the land, and a constant summons to be out of doors. By the time August has come the whole creation seems to rest. It reminds one of Millet's "Noon," where the large-limbed peasant woman lies asleep in the field, her head pillowed on her arms, and every muscle relaxed. So the country has the appearance of fatigue in midsummer and sleeps under its mantle of dust, to awake to best vigor at the first rush of the rain. But this long warm stormless summer is not languorous; its days are never sultry; there is a fascinating repose, a sense of rest, of accomplishment, as if nature had reached her goal for the season; growth and life in her mysterious chambers have culminated, and she waits now for the great change which shall come with the clouds and the rain.

It was this charm of climate which beguiled the native to his undoing. For generations, in Spain, he had loved the sun, and here, with the broad land before him, the competitions of life gone, and the air balmy and seductive, the *mañana* spirit grew upon him and now he looks out wistfully, pathetically, upon the astonishing prosperity of the vast sunny realm which he owned and lost.

How they harvest the grain on Rancho Chico

THE STORY OF A GREAT CALIFORNIA ESTATE

RANCHO DEL ARROYO CHICO, THE HOME OF THE LATE GENERAL JOHN BIDWELL

By CHARLES HOWARD SHINN

NOTHING in the social and economic history of California is more interesting than the rise and fall of the Spanish land-grant system under which, a hundred years ago, nearly all the soil thought worth having was given in vast tracts to prominent families. Musical place-names often remain, but one after another the unfenced cattle-ranges of the ancient ranches have been changed to highly cultivated fields, orchards and gardens. Close-knit modern horticultural communities, and even in some cases populous cities, occupy most of these fertile ranchlands of the days before the American conquest. Out of the hundreds of old Spanish ranches, not one at the present time retains its dignity and historic importance under modern conditions. Some indeed, like beautiful Camulos made classic by "Ramona," can never be forgotten, but Camulos lives only because of the genius of Helen Hunt Jackson, and not as a great and world-famous estate.

The feudal idea of little principalities ruled by aristocratic families failed with the Spaniards, and, as the Americans came in, the system failed with them also. General Sutter's one hundred square miles of superb soil surrounding his famous fort, General Frémont's lovely Mariposa grant with its mines and forests, Major Reading's broad leagues among the swift rivers of Shasta, failed and faded

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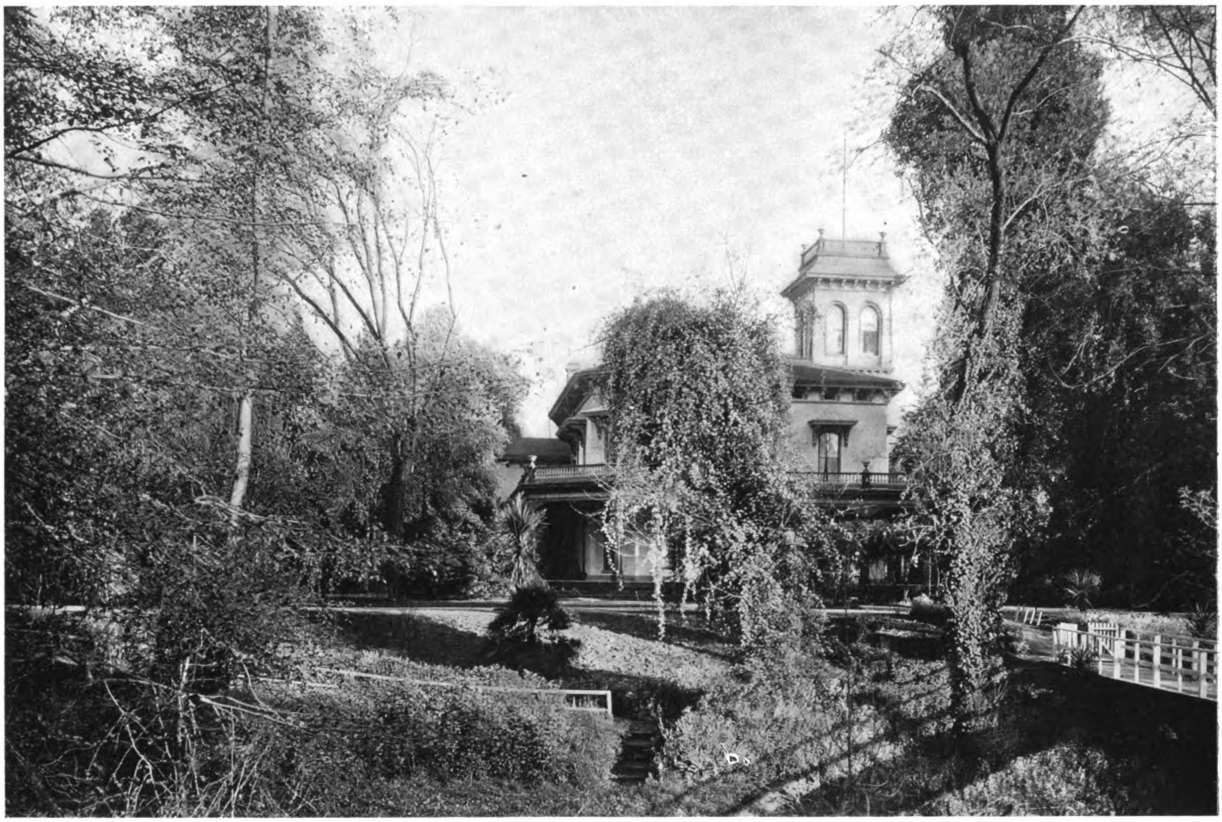
long ago, as did many other pioneer schemes to have and to hold great territories after the Spanish ranch fashion. Strangely enough, it was reserved for a tall, sedate, simple-minded young man fresh from the "Middle West," who came to California in 1841, to found in the Butte district, in the heart of the Sacramento valley, the most memorable and historic of all the great California ranches. Living there as a gentleman farmer for more than half a century, he rounded out and completed a most useful and indeed a stately career.

Not here, in this brief account of the greatest of California farms, can the charming story of the life of General Bidwell be fitly told, and yet it is a human document of surpassing interest. He was born in 1819 in Chautauqua county, New York, and his parents soon joined the westward-moving currents. In 1839 young Bidwell, then in his twentieth year, went to Iowa Territory, starting on foot from his home in Ohio, "with $75 in cash and a knapsack." He passed on through Iowa, turned down into Missouri nearly to Fort Leavenworth, taught school, and almost immediately secured a land claim. I have heard him exclaim, "Such a beautiful place it was, rolling land, springs, trees!" But as it turned out, he could not legally hold the claim, an outsider "jumped" it, and a French trader who had been to California happening along with his picturesque tales, young Bidwell and others organized an association and began to plan for a journey across the continent. In the spring of 1841 they started, sixty-nine men, women and children, the first emigrant train to California, and though many of the party afterwards turned off on the Oregon trail, thirty-two, after six months of danger and hardship, reached Sutter's Fort in the Sacramento valley. Thus before Frémont, the "Pathfinder," had even planned his first exploring expedition to California, this little group of Americans had made their trail across the Rockies and the Sierras.

Young Bidwell, coming thus to California in 1841, when there were only about a hundred Europeans and Americans in the entire province, became General Sutter's secretary. He met the leading Spanish families, learned their language and manners, recognized their virtues and won their confidence. When the Russians gave up their colony at Fort Ross on the Sonoma coast, selling to General Sutter, Bidwell took charge of the property. He sustained the provincial government in the petty wars of 1844 and 1845, and took a prominent part in the American conquest and reorganization of California.



The historic Bidwell mansion at Rancho Chico

During these years this man of little schooling, but of close observation and keen thought, kept his journals, and these, together with his various contributions to magazines and books, form as a whole a most exact and truthful account of early California as he saw it. So rare and so fine a simplicity abides in his historical writings that some day they will be gathered up to become one of our Pacific coast classics.

Through the great gold excitement of 1848–53, General Bidwell was almost the only man on the Pacific coast who steadily held to the doctrine that the region really needed homes and farms far more than mines and camps. In fact he was studying horticulture as best he might, under great difficulties, chiefly at the old Spanish Missions. Colonel Royce tells me that the first fruit trees planted by General Bidwell at Chico in the early fifties, were obtained by him at San Luis Rey, in San Diego county, which involved a horseback ride of about twelve hundred miles. General

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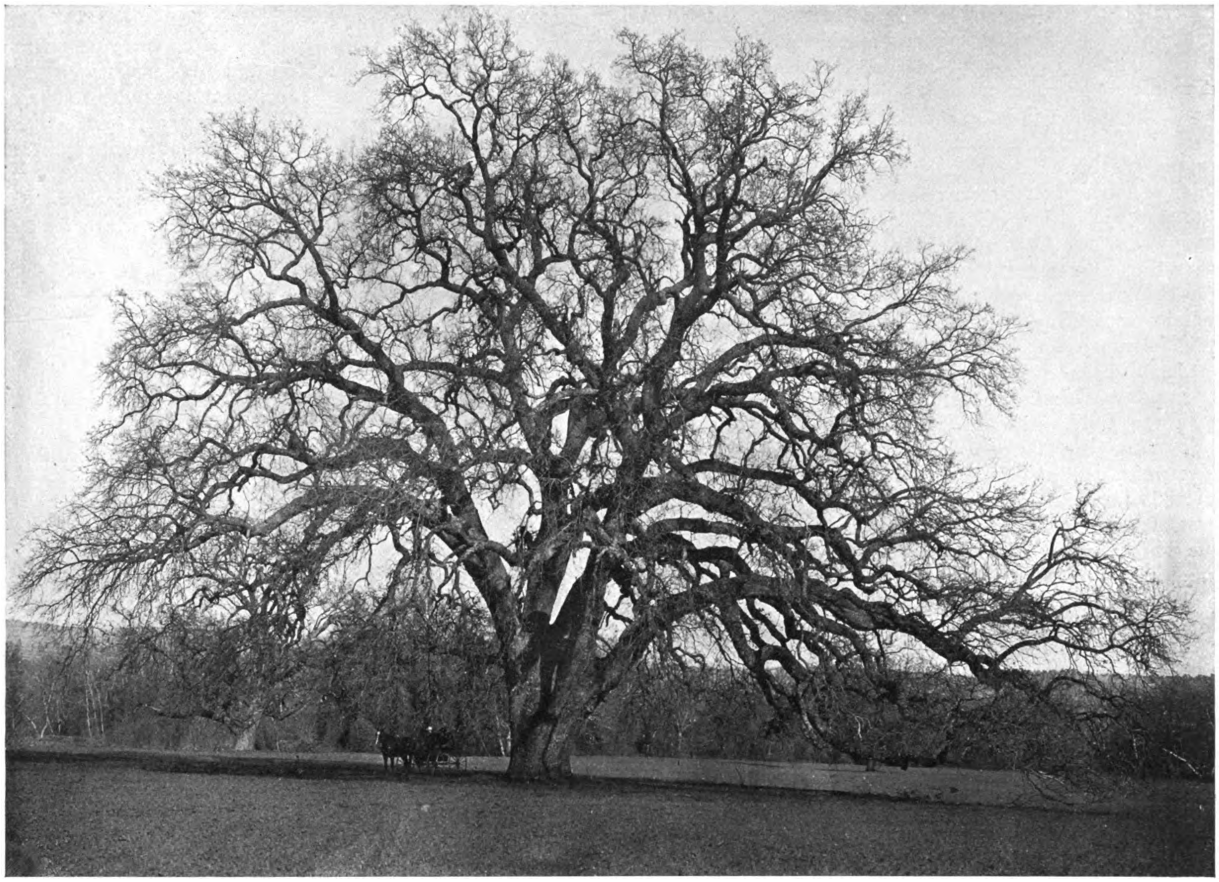
Bidwell has told me many details of his early visits to the Missions of San José and Santa Clara, to find out all he could about figs, olives, oranges, grapes and other fruits and to obtain seeds, roots and cions.

While thousands of men in feverish '49 were prospecting here, there and everywhere, and tearing down the ancient mountains, Bidwell was for the most part visiting the gold camps and other parts of California, incidentally making valuable observations on soil, climate and productions, and, after a brief experience of his own in mining at the famous Bidwell Bar where stands the first planted orange tree of northern California, he settled down on his own ranch, a tract of land which for beauty and quality has no superior in the entire state—an hour-glass-shaped delta in the midst of the Butte country, between two fair streams that flow into the Sacramento. This was that Rancho Chico where C. C. Parry, John Muir, Asa Gray, Sir Joseph Hooker and nearly all of the nature students of the past fifty-five years have been welcome guests. At first it was used only as a stock range, but by 1858 he had four hundred and fifty acres under the plow, twenty-seven of which were in garden and nursery, and thirty in orchard. The richness of the soil was marvelous; one field of ten and one-tenth acres produced 738½ bushels of Sonora wheat. He started a store, laid out a town, sent produce to the mines, established all sorts of new industries; but found time, nevertheless, to move many native trees and shrubs from the Sierras to his arboretum.

Before me, as I write, is the final deed from the United States Government to John Bidwell. It is written with great care on many pages of parchment—fit for centuries of duration. It sets forth in legal form the history of the grant—that on November 18, 1844, William Dickey had obtained this land from Governor Micheltorena. Dickey had been Bidwell's partner, and Bidwell secured the grant and surveyed it; then Dickey wanted to go to the mines, and sold his interest. Therefore, pursuant to the congressional act relating to land claims, Bidwell filed his petition in 1852; the decree of confirmation issued in 1853 was affirmed by the United States District Court in 1855, was signed by President James Buchanan April 4, 1860, and went on final record in Butte county in October. It consisted of five leagues of land, or more than 22,000 acres, and subsequent purchases brought it up to nearly 26,000 acres.



The Sir Joseph Hooker oak at Rancho Chico. Quercus lobata

During his life, General Bidwell gave a tract of land worth $10,000 for a forestry station, now under charge of the University of California. He also gave the site of the State Normal School at Chico, worth $15,000; his other gifts, public and private, were numberless and continuous. It is simple truth to say that his superb estate was held by him merely as a trust for the community in which he lived. Forced from time to time into public life, he was a state senator, congressman from his district, non-partisan candidate for governor, delegate to national conventions, and Prohibition candidate for President. He also served long, and with singular ability, as a Normal School trustee.

One of the best things done by General Bidwell and his wife (who has coöperated with him in all his undertakings) was their care of the Indians whose ancestral

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home was on the ranch. They accepted, as did no other land-owners in California, the full responsibilities of the situation. By unwearying kindness and patience, by encouraging sobriety and thrift, by protecting these poor Indians against lawless aggression, and by constant personal efforts to teach and Christianize them, the ancient village of Mechoopka is now peopled by faithful, honest, industrious men, women and children living in their own homes, helping to support school and church, and becoming with each generation better able to "hold their own with white folk." To them the Bidwell house is ever "The Mansion," and Mrs. Bidwell their "white sister;" though they have a chief, she is the real head of their community. The General died April 4, 1900, and at his funeral dark Indian children from Mechoopka scattered wild flowers on his grave, while the white children of Chico strewed garden blossoms; Indian girls sang a hymn; Indian men bade a most striking farewell to their feudal head, the founder of Rancho Chico.

Mrs. Bidwell, the present owner of this most beautiful estate, was Miss Annie K. Kennedy, of the city of Washington, a daughter of an old and prominent family, and she was married to General Bidwell in 1868. It was a happy day for California when this earnest, high-souled, charming woman came here to give herself, as she has, to the community in which she lives, and to all manner of good causes throughout the state.

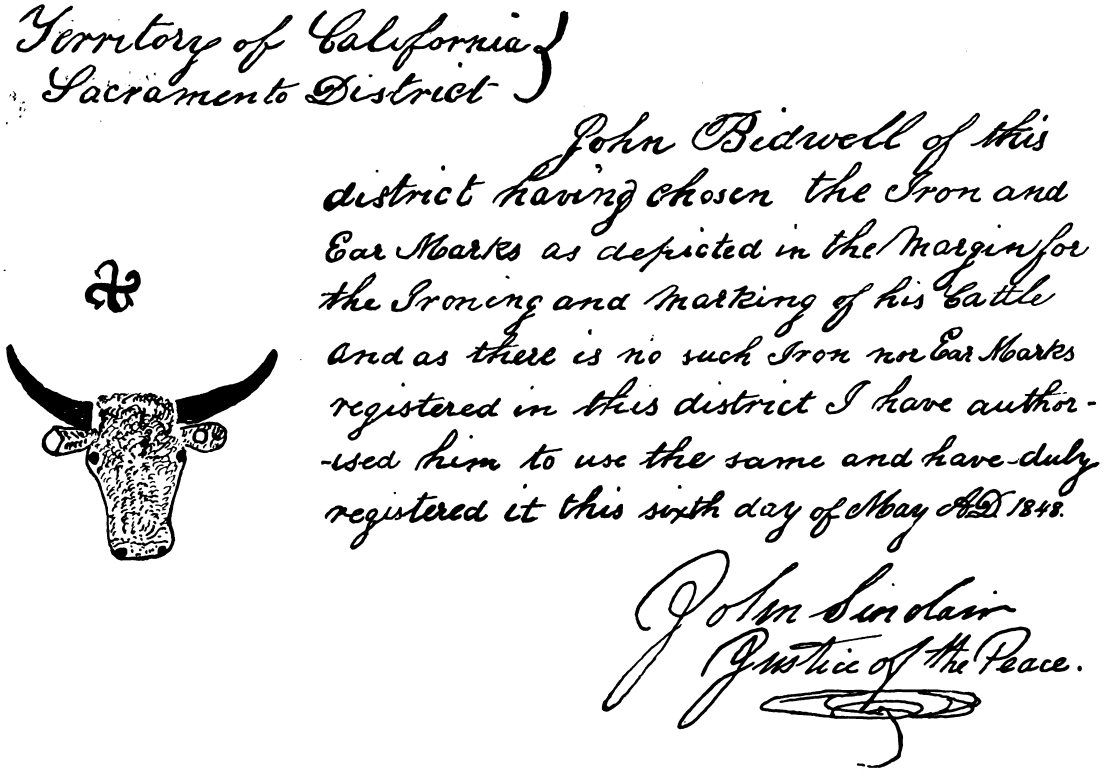
The ranch has been especially fortunate in its active manager, Colonel C. C. Royce, of Ohio, an officer in the war of the Rebellion, and from 1866 to 1885 connected with the Indian Bureau and the Bureau of Ethnology. His monographs upon Indian history, lands, etc., have given him deserved high rank as a tireless investigator. In 1888 he assumed charge of Rancho Chico, gradually systematizing its various departments, taking cares from the shoulders of General Bidwell, introducing modern methods and harmonizing conflicting local interests, until he has become an indispensable factor in the evolution of the estate. Cautiously progressive, full of executive talent, loyal to the ranch (which somehow creates and develops loyalty in all those who share its fortunes), Colonel Royce has naturally become one of the best known men in his district. It is to his notes that I am indebted for many of the statistics of the Rancho Chico.

The whole estate is famous for its superb single trees, native and exotic, so that a striking monograph could be written upon the "Trees of Rancho Chico." But the most notable specimen and the finest oak tree in California is the Sir Joseph Hooker oak, which stands in the center of a large glade about a mile from the forestry station. It is a *Quercus lobata*, or California white oak, and its measurements are as follows: Height, 110 feet; spread of limbs, 150 feet; circumference of trunk 6 feet from ground, 24 feet; circumference of largest branch, 15½ feet.

Rancho Chico has always been an experiment station on a large scale. Its orchards and gardens have tested everything sent them by private persons or by the government. Hundreds of varieties of fruits, vegetables, cereals, etc., have been shown by General Bidwell at successive state and county fairs. In every department of horticulture generous sums of money have been spent to obtain the best. In 1888 the statistics of the ranch as given by Dr. Parry were as follows:

Area devoted to field crops, principally grain and hay, 7,000 acres.
Area devoted to field, orchards and vineyards, 688 acres.
Area devoted to field, open pasturage and forest, 14,000 acres.
Average yield of wheat in fair seasons, 100,000 bushels.
Average yield of barley in fair seasons, 50,000 bushels.
Average yield of hay (chiefly used on the ranch), 1,000 tons.
Stock: 1,000 cattle, 150 milch cows, 300 horses and mules, 500 hogs.

Much of this old orchard of 1888 has been "grubbed out" and new plantations made. At present there are 1,630 acres of bearing orchard. In addition to orchard, there are annually about 8,000 acres sown to wheat, barley, corn, hay and alfalfa, and there are some 12,000 acres profitably used for stock range. The greater part of Rancho Chico will long remain a superb estate, illustrating the finer possibilities for good inherent in individual ownership.



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Photograph by H. C. Tibbitts

PLANT-GROWING AND HUMAN CULTURE

WHAT THE SEMITROPICAL GARDEN HAS DONE FOR CIVILIZATION—SUGGESTIONS FOR OUR NEW DEPENDENCIES

By E. J. WICKSON

IN the semitropical garden of the present day the human race renews its youth. The earliest records of civilization were made amid the splendid vegetation which sprung naturally from the rich soil in the valleys of the Euphrates and the Nile, supplemented probably by the acquisitions of fruits and flowers made by barbaric tribes returning from their excursions into distant parts of Asia. Before the pyramids uprose, before the most ancient Chaldean records were inscribed, mankind had learned to love plants and flowers, and history dawns upon people skilled in horticultural arts and moved by horticultural sentiment. All the wonderful, erudite researches of the last half century, which have brought to light so much about ancient peoples, have disclosed nothing more capable of demonstration, nor more lofty in significance, than the simple declaration of Genesis, "and the Lord planted a garden eastward in Eden and there he put the man whom he had formed." But however men may argue, pro and con, about the reasonableness of the conception that the Creator put man at the beginning into a garden of the grandest plant collections and culture, with mind to understand and heart to love them, there can be no question that God put the garden into the heart of man at the very beginning and there it has remained ever since as an inspiration, an incitement and a sublime comfort. Horticulture has existed as a moving force in poetry, in philosophy, in ethics and in religion. It has taught duty to God and duty to man to all people in all ages.

But why should it be asserted that the semitropical garden is entitled to special consideration in this connection? Is it not true of any honest gardening, or at least of any true following of what is called "the natural" in gardening art? Undoubtedly it is true of any embodiment, however rude, of plant love and care. It is one proof, perhaps, that the gift is from a beneficent Creator that its truth does not admit of degree — that a single plant in the window of a tenement may fill a heart to its full capacity for elevation, joy and generosity, and what more can the grandest gardening do? But while all true gardening merits and has always received the homage of mankind, the semitropical garden is entitled to a certain eminence from several points of view:

Traditionally, the semitropical is the pioneer garden. Of half a dozen sites of Edens for which theologians have contended, all were in semitropical situations.

Historically, the greatest gardens of the world have been made in semitropical regions.

Naturally, the grandest results in acclimation and the widest diversity of beautiful forms of plant, flower and fruit are to be found in that favored belt of the earth's surface to which both the temperate and tropical zones have given many of their best plant treasures and where

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these refugees from killing frosts or burning heat assume, in some respects, at least, a perfection of form and fruitage which they do not attain in the regions of extremes whence they came. It would appear, then, that when man or nature, or both together, would achieve the highest results of gardening art, they have chosen a location "having characteristics intermediate between, or common to, both the temperate and tropical zones,"—which are the words the Standard Dictionary gives us as a definition of subtropical or semitropical; for these two terms seem to be practically interchangeable.

Again, the semitropical garden can claim eminence for the gifts it has made to gardening in the temperate zone. The migrations of the Aryan nations from western Asia towards Europe, which began about 2500 B.C., for protecting these semitropical wanderers from the inclemency of northern climates. They have erected walls to ward off arctic blasts and to concentrate upon them the heat and light from the southern sun. They have spread over them thousands of acres of glass and have caused them to grow in an artificial summer-heat born of stoves and furnaces. Thus the indulgent northmen have cherished their tender visitants from semitropical lands; thus have they learned their nature and their needs, and their reward has been rich and ample. In their hearts they recognize the influence of these rare forms of beauty, and their lives testify that they have accepted both the precept and the illustration which came to them from the Holy Land, for they delight to "consider the lilies, how they grow." The agencies

Photograph by O. V. Lange

"These ideals are as beautifully exemplified in California as elsewhere in the world." Flood estate, Menlo Park

carried into the more northerly regions of the temperate zone the plants, fruits and grains which had been gathered in the East-Mediterranean countries from all other semitropical regions of Asia, by tribal conquest or interchange, during more remote times. From as far east as China and as far south as India the choicest plants had been collected to enrich the gardens of Phœnicia and Egypt. These passed on the arms of conquest into barbaric Europe, and upon these fruits and grains was established European civilization. What we have come to look upon now as the natural products of the upper regions of the north temperate zone originally came from the south and were the achievements of ages of prehistoric semitropical gardening. Very creditable is it to the enterprise of the more northerly latitudes that they have done so well with these legacies from an extinct Asiatic civilization, for they have ennobled them by centuries of selection and have added to them the grand developments made from their own indigenous plants. They have accomplished wonders also in devices toward elevation and refinement which the Aryans carried northward from Asia were tokens of the greater gift which two millenniums later the same region bestowed upon all mankind.

The horticultural wealth which flowed out from the semitropical regions adjacent to the Mediterranean was carried ere long by European discoverers to the New World. In return therefor America and Australia have made rich donations to European horticulture from their own indigenous flora. The arts of peace, such as commerce, scientific exploration and missionary enterprise, have, during the last few centuries, made all the world akin and brought the plants of all the world to the hands of those who will properly care for them. The result is that semitropical gardening at the present day belts the globe and delights all nations. Though our later day has no instances of sumptuous gardening, such as Asiatic potentates secured at fabulous cost of gold and slave labor, we have something inexpressibly better in the wider dissemination of taste, refinement and enno-

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bling recreation. The hanging gardens of Babylon were the logical culmination of horticultural effort under the half-lights of the ancient pagan order. They gave embodiment to ambition, artifice, oppression. The full light of Christian civilization fills our horticulture with humility, truth, humanity. The central idea in the old garden was the palace; in the garden of to-day it is the home.

One of the most striking marks of semitropical gardening is the contrast which it presents to gardening in northern latitudes in the attainable variety of form and hue in stem, foliage and bloom. This hardly needs elaboration or definition. The fact is so well known that it is a feature of northern landscape architecture to set apart suitable areas for semitropical plants which are brought out from cellars or greenhouses each spring to display their beauties during the summer months. It is a commendable proceeding when well done. But, of course, the achievement, even when secured with good taste and with ample means, is but a faint exponent of the charms of the real semitropical garden. It must lack the luxuriance, the diversity and the splendid size of plants which full years of open-air growth produce for southern gardeners. These limitations are strikingly apparent to those who know from observation both the true semitropical garden and its northern effigy.

If you take all the foliage, flowering and fruiting plants which are grown in ordinary greenhouse temperatures at the North, all the plants of the window garden and nine-tenths of the plants which thrive in the open air in the northern garden and orchard, and weave them into an open-air scene, you can obtain some conception of the resources of the semitropical gardener.

Semitropical gardening in the United States is just at the beginning of its popularity and development. The splendid plants in the old gardens at the South and the legacies left by the *padres* in the Old Missions of California are but suggestions of the future. Naturally, commercial horticulture has first laid hold upon the semitropical resources of the country and has demonstrated that American energy and acumen are not dulled by escape from the touch of frost. Ornamental horticulture here, as everywhere, will follow with garlands for the industrial victors. As it is a new art for any English-speaking people, one of its greatest needs at the present time is aid and guidance in knowledge of semitropical plants and what to do with them. Gardening treatises in the English language treat of northern practices—even the semitropical plants are discoursed upon in the terms of protection and artificial temperatures. How to grow tender plants in the open air and how to grow the hardy plants of the North amid the new environment of the semitropical situations, are questions which writers experienced in these undertakings should demonstrate. Vastly more and better work would follow fuller information in such matters.

In this matter of adequately developing the semitropical element in English horticultural literature, California has both an opportunity and a duty. Every individual should do his and her full part either in writing with clearness as to cultural details, with honesty and truth as to limitations and with due appreciation of the spirit of the effort. Our poets and artists may be trusted to seize their opportunities; it is the more labored and yet not less significant prose of scientific inquiry and practical operation which should be encouraged and promoted because it will aid others to an understanding of the materials, agencies and methods involved in the highest type

Photograph by L. H. Bailey

Through the woods at Menlo Park. An example of good planting

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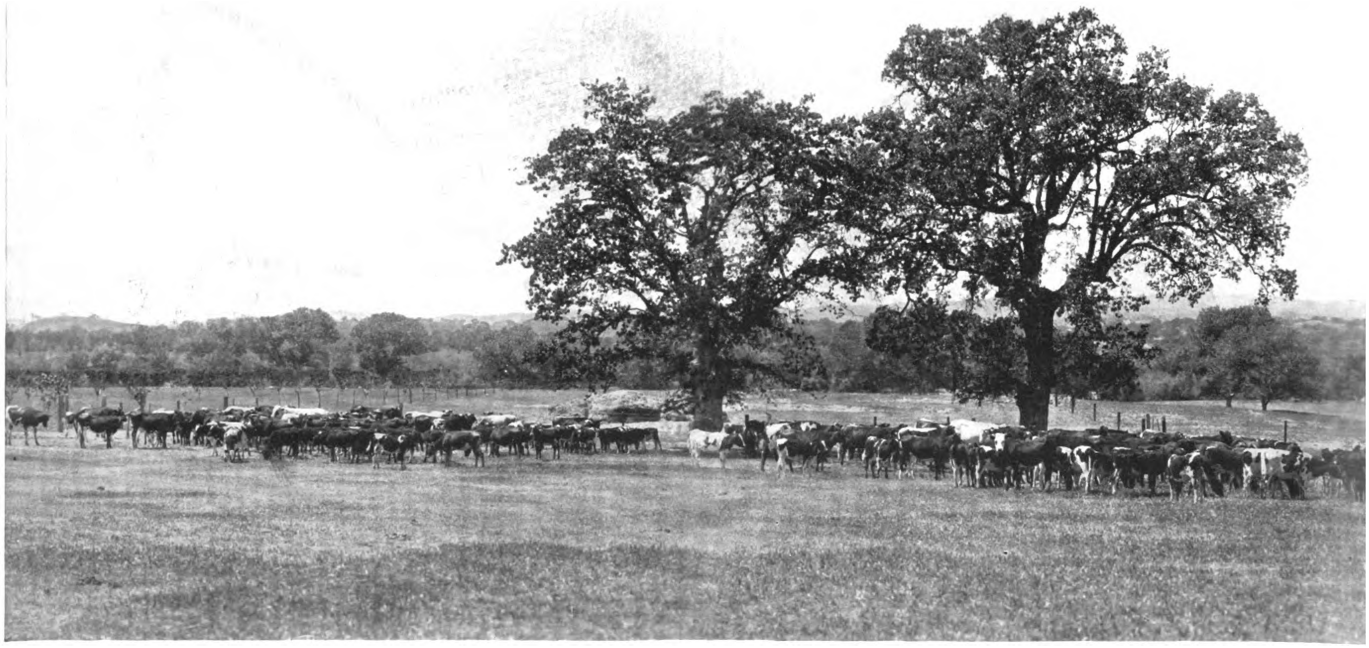
THE BOUNTY OF CALIFORNIA. Carrots in bloom, on the famous



THE BOUNTY OF CALIFORNIA. Cattle range in

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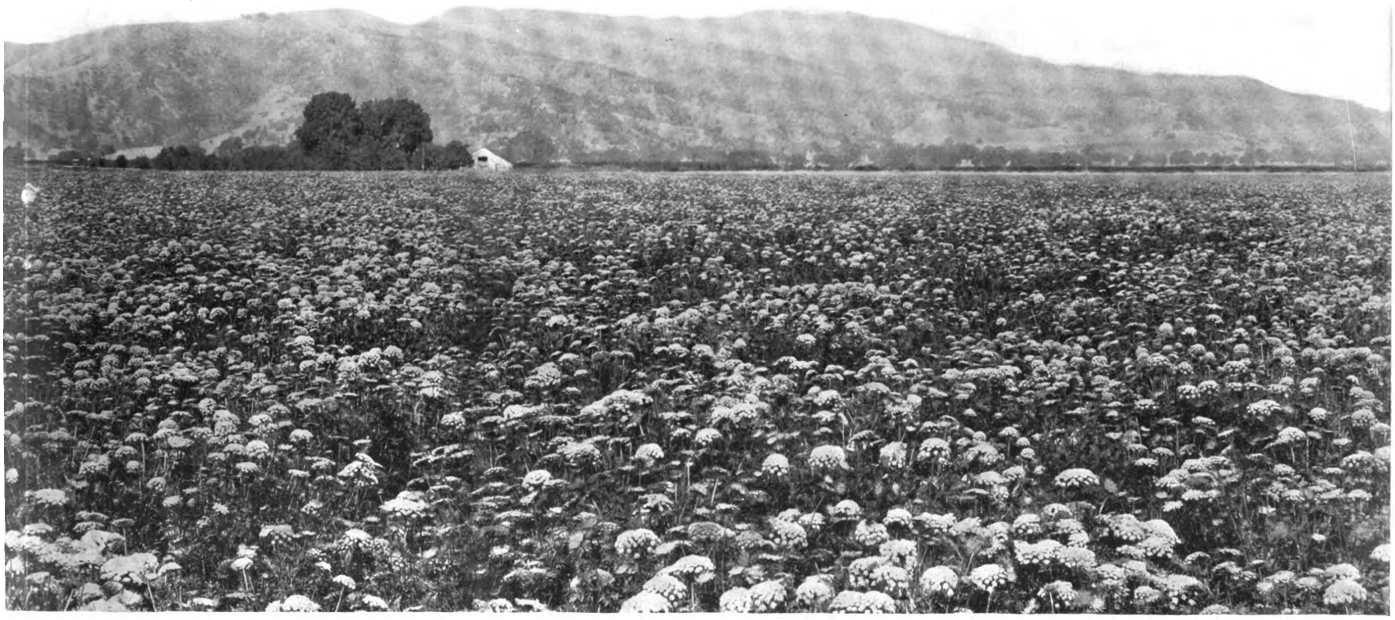
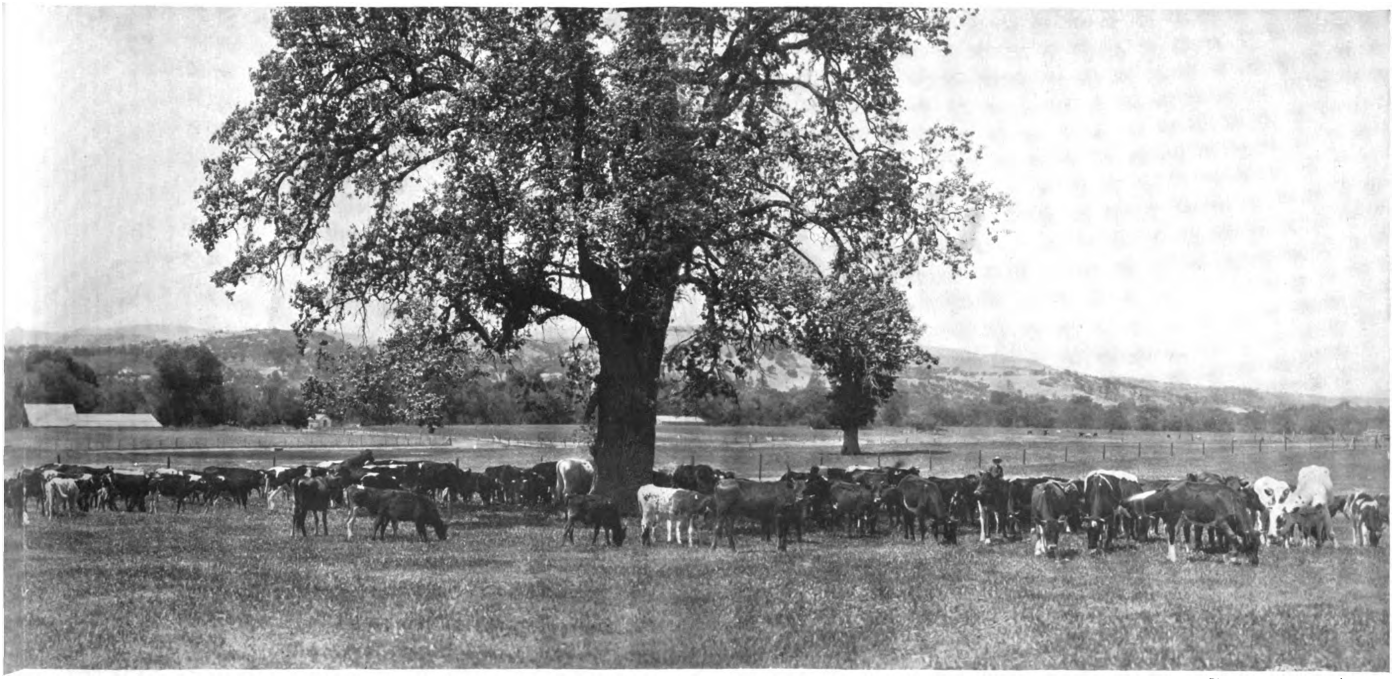


Photograph by J. O. Tucker

ous seed farms of the Santa Clara valley. The Coast Range is in the distance



Photograph by H. C. Tibbitts

e in San Luis Obispo County, at Santa Ysabel Hot Springs

"Be even as clover with its crown of blossoms,
Even as blossoms ere the bloom is shed,
Kiss'd by kine and the brown sweet bee—
For these have the sun and moon and air
And never a bit of the burthen of care."—JOAQUIN MILLER.

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Photograph by H. C. Tibbitts

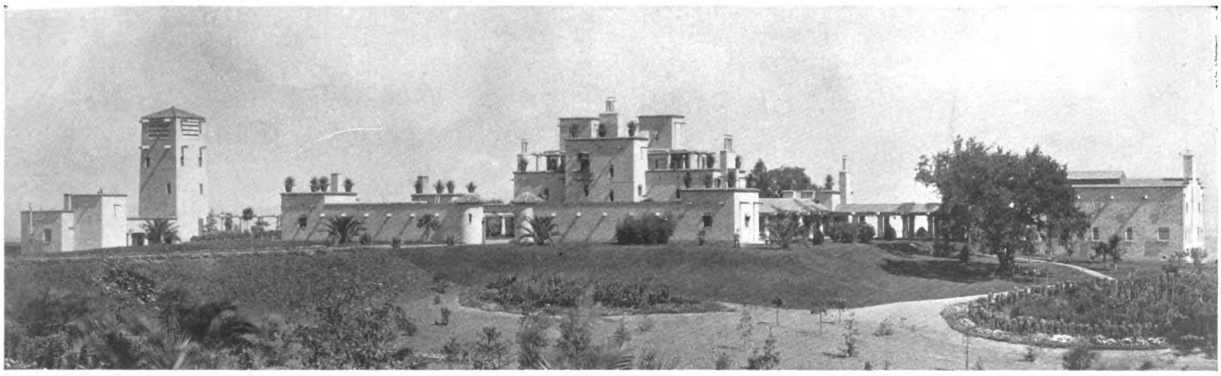
"Gnarled and twisted by the tempests that roll in from Hawaii and Japan." Famous old cypresses at Monterey

of gardening which our climate favors. To this end it is desirable that floral societies should be organized and that their members should put forth untiring effort in garden culture and experiment, in essay and discussion, and in exhibition of their best achievements.

California is finely equipped to make a splendid contribution to subtropical gardening, and is thus prepared to discharge in some measure the debt which the present owes to earlier civilizations. We have received from all the world an endowment of skill in floral arts and floral sentiment. In the ranks of our varied and enlightened population we have plant lovers and culturists from the whole breadth of the Old World, from Ireland eastward to Japan. We have those who have heard flower lore in all the tongues of men. Nowhere on the earth is there such a gathering of devotees to floriculture. We have also the choicest plants from the utmost confines of the planet. To these legacies we add American aptness, skill and ingenuity; beneath them all our soil, above them all our sky. Where in the world should the art of floriculture attain higher development or produce grander masterpieces?

Among our wonderful achievements we are too apt to forget the heart-work, which is the greatest of the humanities. Many agencies minister to the awakening of purer, truer sentiment. Not the least of them is that branch of nature-study which we, as flower growers and flower lovers, enjoy. Let us not cease, then, to urge its delights and its benefits upon the attention of our friends and associates, and upon all to whom our influence can extend.

A grand opportunity has recently opened to American horticultural enterprise and effort. The new lands which have recently fallen to our care and guidance are naturally endowed with every phase of tropical and semitropical conditions. They have largely lacked hitherto the motive and incentive to higher civilization. With the other noble efforts which Americans shall make for the uplifting of these benighted peoples, the popularization of tropical



Photograph by G. E. Gould

"The noble Hacienda of Mrs. Hearst, in one of the valleys of the Coast Range"

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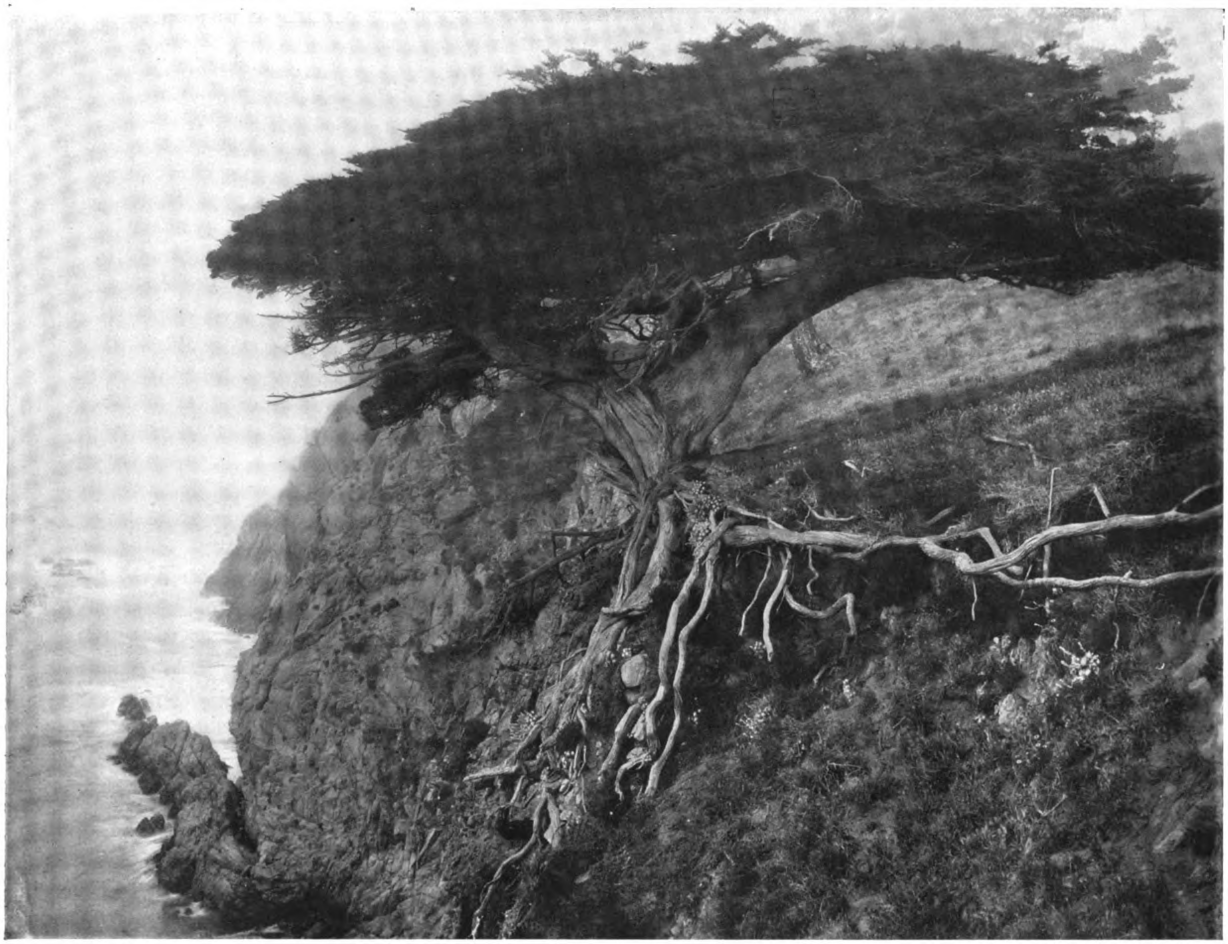
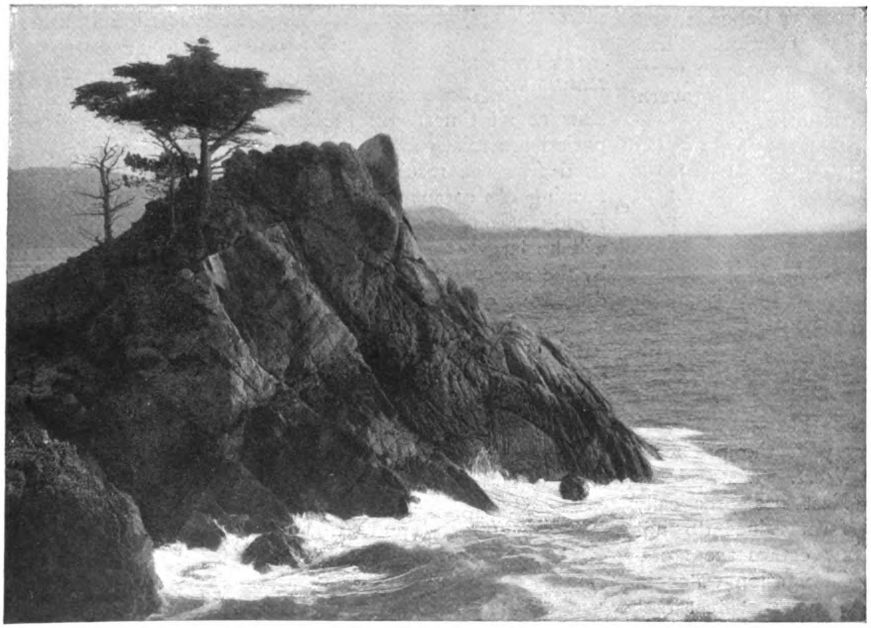


"When these promontories shall have worn away, the last of their race will have perished" *Photograph by H. C. Tibbitts*

and semitropical horticulture and the appreciation of its spirit and its influence in the advancement of civilization, should be earnestly promoted both by individual and governmental effort. It is the duty of all who understand the humanizing and civilizing power of enlightening horticulture to insist that Americans shall invoke this power as one of the agencies in the solution of the difficult problems which now impend.



"The cypresses of Monterey hold the forefront of the ocean shore." Midway Point, near Monterey

THE CYPRESSES OF MONTEREY

By ANNA BOTSFORD COMSTOCK

Staunch derelicts adrift on Time's wide sea,
Undaunted exiles from an age pristine!
Your loneliness in tortured limb we see;
Your courage, in your crown of living green;
Your strength unyielding, in your grappling knee;
Your patience, in the calmness of your mien.
Enrapt, you stand in mighty reverie,
While centuries come and go, unheard, unseen.

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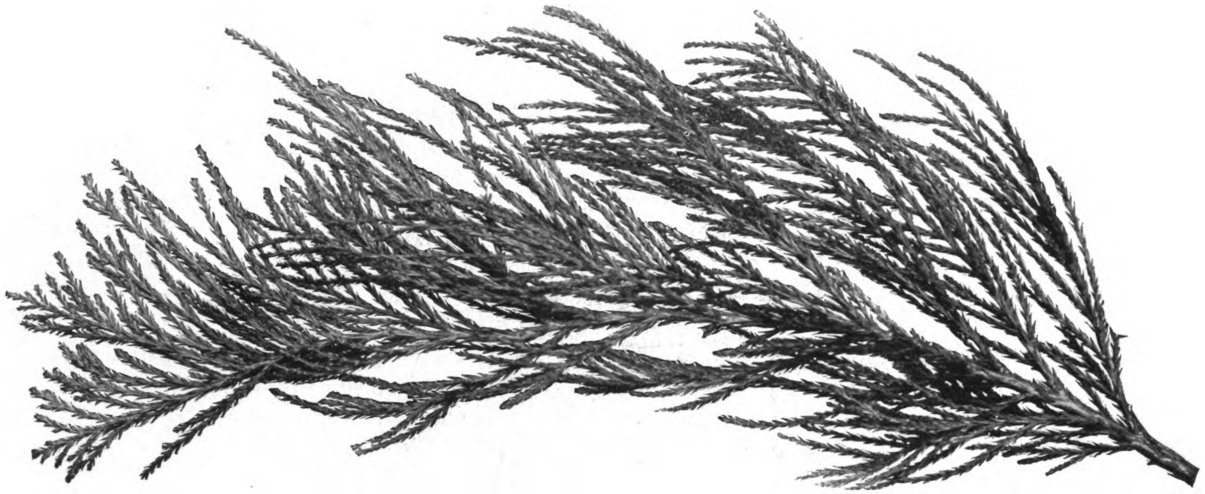

THE PROBLEM OF THE WEST

THE most important problems of the farther West and the Pacific coast are concerned with the utilization of land for agricultural purposes. The most imminent of these questions is the supply of water.

AS SEEN IN THE WEST

When one crosses the great plains, with his face to the westward, he feels that he is entering a region of a different kind from the old-settled East. It has new problems. For more than a thousand miles he sees a country for the most part as new and virgin as if the hand of man had never touched it. Here and there have been wonderful developments of material wealth and marvelous quickening of the vital energy of a young and powerful civilization; yet he is impressed with the undeveloped spaces and with the wonderment of the power that is to come. The human settlements are like oases. The remainder waits chiefly for water. The land-tenure laws and traditions are those of the humid East. The right to the use of water is a question of continual unrest. The element that distils from the heavens for the good of all and upon which the development of the country depends, may become a subject of controversy and speculation. There is a growing sentiment in the West that irrigation water should be controlled by the state or federal government. We believe that the West is right.

AS SEEN IN THE EAST

Little more than a generation ago, the middle West was opened. Government lands of inexhaustible richness could be had for little more than the asking. The Civil War had upset the economic and social equilibrium. Returning soldiers sought new homes. Persons living under stress in the East went westward. With surprising rapidity the lands were settled. A vast new country came into being, throbbing with the unrest and enthusiasm of a settling population. The rural East suffered. Values declined. Labor became scarce. Soon the competition of the West still further increased the burden. The country paid the price for the rapid opening of the middle West. Matters are now readjusting themselves. The East has practically recuperated, even though the old farm values do not and perhaps never will return. Now comes the agitation for the governmental control of irrigation water in the farther West. Many persons in the East fear that if great areas again are opened wholesale, the economic conditions again will be upset. We believe that the East is right.

IT SHOULD BE NATURAL

West or East, we are one people. We believe in the utmost development of every part of our country. The opportunity to make the most of one's condition is free and inalienable. Ultimately every region must stand on its own merits. Any movement or legislation that would put limits on the development of any region is merely artificial, and its effects are temporary; and it is likely to work injury in the end. If the East cannot compete with the middle West in wheat, it should cease growing wheat. The East is not in danger thereby; it has resources enough. Farming in the East is as prosperous as it is in the West. The competition is likely to force each region to economize effort and to raise the things that it can raise best. We would not stay the growth of the farther West merely for fear of its competition with the older states. There cannot be another upheaval of the economic status. Such disturbance, were it possible, would harm the West as much as the East. The development should not outrun the demands of the increase of population. It should be gradual and natural.

THE DANGER IS IMAGINARY

The development of the arid regions requires so long time in preparation, is so slow at all times, and the areas concerned at any one period are relatively so small, that neither East nor West need fear the result. Few of the crops of irrigation-farming can compete seriously with those of dry-farming. Food-stuffs that may be grown on the reclaimed lands will be largely absorbed by the growing West itself, and by the new trade with the Orient. The apprehension of disastrous competition may be due in many instances to the over-sanguine expectations of some advocates of irrigation policies. Only a part of the arid lands is adapted to agriculture, even if there were sufficient water. The small supply of water also places limits on the development. There can be no stampede to these areas as there has been to other regions. The opening of the arid lands cannot be forced. Land will not be given away.

THE REASON FOR GOVERNMENTAL CONTROL

The rain belongs to no man. Only that which falls on his land can a man be said to own. We do not necessarily believe in the public ownership of all public utilities; but there are some things that belong to the people.

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Those things that are the common heritage, upon which life and the public welfare depend—as the sunshine, the air, the rainfall—appeal to us as not proper subjects for private control. Who owns the rivers?

ANOTHER REASON The storing and distributing of irrigation water, as distinct from land, by means of private ownership opens the way to exploitation and to discord, and thereby may work hardship on those who are obliged to use the water in order to live. Abuses and wastes are likely to arise. Litigation follows. It would be unfortunate indeed if the control of the agriculture of any great region were to be dictated by promoters with the desire of profit. Water is as necessary to the land as its chemical constitution is. The government ownership of irrigation works would tend to permanency and stability of agricultural conditions. The right to use water should inhere in the land itself. Title to land should also mean title to water.

A THIRD REASON In immense areas of the West irrigation is not a mere local problem. It is concerned with the flow of rivers, the melting of the snows on the mountains, the supply of subterranean waters, the forest covers, the development of manufactures. Local and detached irrigation schemes tend to still further confusion of the perplexed legal status. Permanent relief to the West can come only from some degree of uniformity and continuity of plan. We do not urge governmental control merely that more land may be brought into cultivation: we believe that such control is necessary to the handling of a subject of such immense importance, upon which the future welfare of nearly half our country must depend, and to develop a wise, efficient and far-reaching policy

STATE AND NATION The cost of adequate irrigation may be too burdensome for states, in many instances. The states in which irrigation is needed are mostly new and relatively undeveloped. Many great problems confront them. These problems must be worked out by experience. Many questions concerned with the building of reservoirs and the utilization of streams lie beyond the jurisdiction of single states. Five hundred million acres of land belong exclusively to the nation. These great areas that belong to the people should be developed by and for the people. We believe that the federal government should appropriate funds to start or aid the work, applying it first to those areas most in want, or to those untried regions which appear to be most needed for settlement. On the other hand, the states own land. They control the headwaters of various streams. These state rights must be respected. The state must control the appropriation and distribution of its non-navigable waters. There should be federal aid, but state autonomy

WILL IT PAY? How shall the government recoup itself for this outlay? By building the nation. There are economic and social gains. Population must increase. New enterprises must be opened, or the nation becomes stagnant. Only the arid lands remain. The country must be settled. No power can stop its settlement. It is our duty to see that it is settled in the permanent way, which is the right way. The government recoups itself for the river and harbor appropriations and for the expenditures of the navy and the army by augmenting the public safety and weal. These are questions of self-preservation. To the same category will belong some day the appropriations for the development of the arid but fertile West. The West, no doubt, has native wealth enough to pay the national debt, to build the Isthmian canal, and to return principal and interest on expenditures for irrigation. However, the government should reimburse itself by selling the reclaimed lands. The farther West is discussing all these questions with great seriousness; and the West will be heard.

WE NEED A POLICY All the foregoing remarks are meant to apply to the inauguration of a general policy of governmental aid and control of irrigation. They cannot apply everywhere, because there are vested rights. We must not forget that the development of the arid West thus far has been made possible by private enterprise and capital. This enterprise has been commendable. In California the greater part of the land fit for agriculture, outside the present actual deserts, is owned privately. This is true in the Great Valley, in the Coast Region and in much of Southern California. Similar conditions obtain in other regions. Here, and under like circumstances, the irrigation necessities may well be developed by private or community interests, but be subject to oversight by the state. In general there should be continuity of effort. There should be harmony in water laws. Many persons in the East do not realize the immenseness and the imminent importance of the irrigation question. There are, of course, many sides to the question, and the farther West itself is not united in opinion. It is a question that demands the wisest constructive statesmanship.

THE PRESIDENT'S MESSAGE Since the foregoing opinions were put in type, the President's message has been sent to Congress. The message devotes much space to irrigation. The President is personally familiar with conditions East and West. The irrigation question will undoubtedly be prominent in the discussions of the present Congress. The message advises national aid in the reclamation of arid lands, local control of the distribution of the waters in conformity with state laws, the reservation of the reclaimed lands for actual settlers, the recognition of all vested rights, the reformation of water laws. The message appeals to us as a just and forceful exposition of a problem which the people are now bound to consider. Following are selected sentences:

There remain, however, vast areas of public land which can be made available for homestead settlement, but only by reservoirs and main-line canals impracticable for private enterprise. These irrigation works should be built by the national government. The lands reclaimed by them should be reserved by the government for actual settlers, and the cost of construction should so far as possible be repaid by the land reclaimed. The doctrine of private ownership of water apart from land cannot prevail without causing enduring wrong. Granting perpetual water-rights to others than users, without compensation to the public, is open to all the objections which apply to giving away perpetual franchises to the public utilities of cities. The storing of the floods in reservoirs at the headwaters of our rivers is but an enlargement of our present policy of river control, under which levees are built on the lower reaches of the same streams. . . .

The security and value of the homes created depend largely on the stability of titles to water; but the majority of these rest on the uncertain foundation of court decisions rendered in ordinary suits at law. . . .

The government should construct and maintain these reservoirs as it does other public works. . . .

The object of the government is to dispose of the land to settlers who will build homes upon it.

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Photograph by Conaway

THE GIANT YUCCAS OF THE MOJÀVE DESERT

By ANNA BOTSFORD COMSTOCK

Hot and listless breaks the day o'er barren hills of drifted sand
Stretching in meaningless array to the horizon's brazen band,
Haunted by forms that gaunt and gray with outstretched arms bewildered stand,
And seem despairingly to pray: "Which way go we, which weary way?
O God! we do not understand these pathless wastes wherein we stray!"

"Wildernesses of rock and sand." The beginning of a home on the desert

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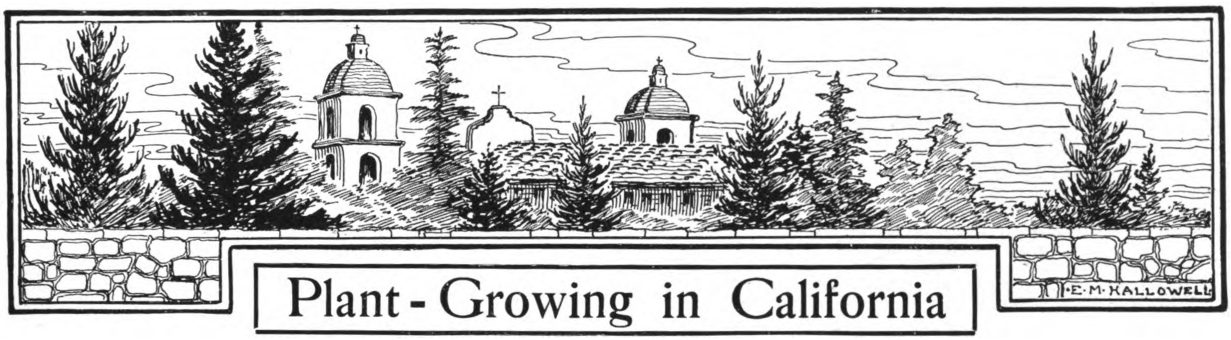


Plant-Growing in California

THE CALIFORNIA HOME GARDEN, AND HOW TO MAKE IT

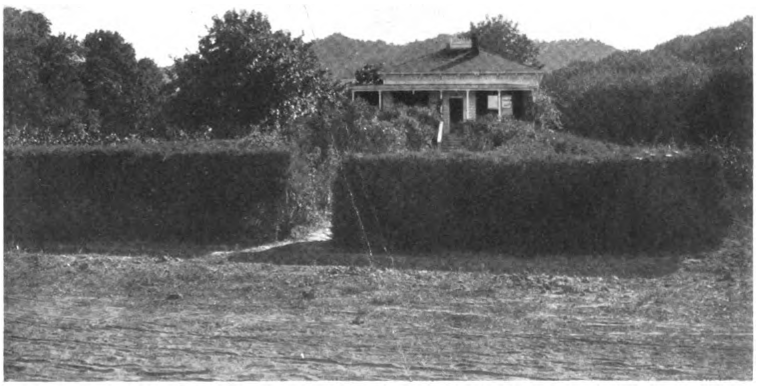
THE WESTERN IDEALS ARE UNLIKE THOSE OF THE EAST—FLOWER-COLOR IS A PROMINENT FEATURE

NO home in California is considered to be complete without its flower-garden. To be sure, many of the adjuncts bearing the name "garden" are but sorry attempts in the garden art; but their presence is noteworthy and exhibits a taste for flowers on the part of people of the highest, as well as the lowest, classes. It is no uncommon occurrence to hear the merits of the latest rose or the newest chrysanthemum discussed among city salesmen and mechanics. One cannot walk through even the thickly-settled poorer districts of San Francisco without being impressed with this fact. Almost without exception every foot of exposed soil is occupied by flowering plants of some kind. I have seen many creditable displays of roses, carnations, geraniums, violets, mignonette, lobelia, and chrysanthemums in some of these 8 x 10 city garden spots. In the smaller cities and country towns neglected or uncultivated home-yards are the exception, and the housekeeper takes fully as much pride in a well-kept yard as she does in a tidy house, for often—too often, perhaps,—the flower-garden is the result of her efforts. On country places one still finds the prevalence of this taste, though naturally hampered on account of the difficulty of securing a plentiful supply of water. Without plenty of water it is impossible to grow any but the hardier varieties of flowering plants; without water no garden worthy the name is possible.

The California home-gardener has for his ideal the production of flowers—the largest, the handsomest, and in the greatest quantity. He cares not so much for arrangement, or for combinations, or for the placing of shrubbery. He wants flowers—plenty of them—and is just as likely as not to mix his plants in the greatest confusion in order to fill every nook and cranny with a flowering plant of some kind. To many this may seem to be a poor ideal from a landscape-gardening point of view, and indicating a lack of knowledge of the principles of this art in embellishing home grounds. There is, however, another and, I think, more important reason for this: The maintenance of a flower garden through the long, dry summers involves eternal care and labor. Watering must be kept up, the soil cultivated, and the plants watched and carefully tended in order to keep them within bounds. Consequently, the average man needs encouragement to maintain it. The production of fine, large, handsome flowers seems more like success and therefore offers more incentive to continued effort. No wonder, then, that the production and maintenance of some ideal picture, with each plant as a component of this picture, is lost sight of. Then, too, the maintenance of any considerable area of greensward is too expensive for the average man in California. The water question is a serious one. Open planting and, consequently, more or less mixed planting, has in most cases become a necessity. Far be it from my purpose to advocate or to encourage this style of gardening, even upon the small home grounds. The two ideals and conceptions—the maintenance of picturesque arrangement and the production of flowers—are reconcilable. We need only to start with some definite plan and keep ever working towards the perfection of it in order to bring about this reconciliation.

60. An orchard home in the Santa Clara valley, built beside the spreading oak tree

Usually, the California home garden is thought to be incomplete without a lawn. The term "lawn" is here used in its broadest sense. Any grass-plot, be it only a few square yards in extent, is called a lawn. And just why the average garden should include a grass patch—in many instances extremely out of place—is a much discussed question. The difficulties and labor of maintaining grass through the summer are known and appreciated. The inappropriateness in many cases has been pointed out; but the lawns remain nevertheless. The lawn should never be more than an adjunct to the garden, and should always be so placed that it does not seem to intrude upon the general effect of the whole by having the appearance of being stuck in merely for the sake of its presence. Do not make a grass-bed of it standing alone in all its barren verdure amidst a few helter-skelter flower beds. Often the space between the front of the house and the street or at the side of the house can be advantageously used as a lawn, leaving, of course, a border next to the dwelling for ornamental planting. The fuchsia and even the



61. Home of a California fruit-farmer, with square-roofed one-story house, and the garden-yard enclosed by hedge of Monterey Cypress

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heliotrope are very effective for such border planting against the house.

In establishing a home-yard we will begin, say, with unimproved grounds surrounding a town house. The first thing, then, to be done is to make a plan of the grounds, showing location of the house and indicating any projecting porches, bay-windows, or the like, so that all nooks and corners may be noted. There is nothing like a ground plan to show the relations of things about a place. Sketch in the position of the walks. For a small city lot anything but a straight walk from the door to the street is impracticable. After the walks are in, the plan will show areas possible for lawns, and the arrangement of permanent shrubs and beds to conform somewhat to the requirements of artistic landscape work can be noted and seen at a glance. On a small town lot the formal style of gardening may be adopted if one has the time to keep it in trim. A mixing of the formal amid the natural style of planting must always be avoided.

After the walks are laid, we are ready to begin the preparation of the ground. I like to do this in September, just after the usual "September shower." Go over the entire place, spading as deeply as possible and taking care to turn in and cover any growth of grass or weeds. Any low places can now be filled and a good dressing of well-rotted stable manure put on. It is well, however, to wait for good indications of rain, so that the manure will not dry out. If one is in a hurry, the manure can be forked in at once if it is well rotted. This latter practice is often pursued, for there are many plants and seeds which can be successfully started in the early fall months. Violets, sweet peas, pansies, mignonettes and forget-me-nots do very well when planted at this time of the year.

The early fall is also an excellent time to start a lawn in California, especially if the seed is gotten in before the heavy rains come. Lawns started at this time will grow all winter and will be in excellent condition by the next season. If, however, one is dealing with a new place, he will do well to let his lawn ground lie over winter and thus give the weed seeds a chance to germinate. It is well, then, to spade them under several times whenever the weather permits during the winter, which will be between showers. Freezing of the ground is practically unknown, except in the high mountain districts. The lawn seed can then be sown any time from the middle of February to the latter part of April. The middle of March is, perhaps, the best time, as then heavy, beating rains are over and the ground has begun to be well warmed. In making a lawn in California, many make the mistake of rolling down the seed. It is best to roll before sowing the seed, then rake finely, sow the seed, rake in and tramp gently. Over this sprinkle a coating of well-rotted and pulverized manure to the depth of about one-half inch. Blue-grass seems to be unsuited for lawns in California. It does not stand the summers well and needs constant attention to keep it growing. Australian rye-grass and white clover are very much better. A pure clover lawn is very satisfactory; it requires less water, and, were it not for the fondness of gophers for the roots, would be, on the whole, ideal for lawn purposes in California.

All gardening operations are governed more perhaps by the advent of the seasons of moisture and dryness than by the usual seasons of temperature. In California the summer drought is expected, and all gardening efforts must be directed accordingly. To be sure, there are winters, but usually so mild that the eastern newcomer doubts the applicability of the term to them. There are, therefore, garden duties to perform throughout the year—weeds to hoe, violet beds to look after, roses to prune—all odd jobs for the winter months.

February is, on the whole, the best time for setting out shrubs, both deciduous and evergreen. From this time on hardy annuals can be sown in the open border. An excellent practice is to start seeds and plants in January under cold-frames, transplant them into flats, and thus have them well rooted and ready for early transplanting. Geranium, rose and even carnation cuttings require no other treatment than bedding in sand in late fall. I have kept them thus over winter and rooted them easily in February by placing in sand boxes kept in the warmth of a south window. By the middle of April all seeds should be sown and all plants set. Later than May 1 is too late for satisfactory, successful summer growth. It is only within late years that eastern seedsmen and nurserymen have come to realize the necessity of having their stocks ready early for the California trade. The plants should be ready for delivery and planting from six weeks to two months earlier than for the eastern climate.

As has been remarked before, no really successful gardening can be carried on without water. In towns where the water rates are governed by a meter this has been to some a very expensive and serious drawback to extensive operations. It is possible, however, to water carefully and thoroughly, always following with thorough stirring of the soil, and thus make, as it were, every drop count. In other words, real thorough irrigation two or three times during the month will accomplish much more than daily sprinkling. It is conducive to deep-rooting, and thus brings the roots into more uniform conditions of moisture supply. The same principle applies to the watering of lawns. When daily sprinkling is practiced, the roots reach no deeper than the shallow layer thus wetted, and consequently the lawn is dependent entirely upon the daily watering. I have found that a thorough watering given twice weekly is very much more satisfactory and effective and in the end requires much less water.

In the California flower garden the rose is preëminently queen, especially in the coast climate. Geraniums are so hardy and easily grown that they have become common and are thus "looked down upon" by many. The pelargonium (of the "show" or "Lady Washington" type), is still in favor and reaches great perfection. The carnations, too, are perfectly hardy here, and no garden is considered to be complete without them. Verbenas, petunias, pansies and myosotis are common. For the tall border, the calla, the cosmos, the marguerite, and even the fancier chrysanthemums are used with effect.

It would be useless to attempt to refer to the numerous occupants of the California home-yard. Practically anything except the humid-loving plants can be successfully grown. The range of possibilities is so great that one rarely finds native plants in these gardens. It is only lately that the magnificent calochortuses and other highly prized native bulbs have begun to be appreciated as home plants, perhaps owing most to the interest and development by our eastern brethren. When some years ago I first succeeded in establishing a bed of eschscholzias in my home garden, they were the wonder and curiosity of the community, many expressing their surprise that wild flowers would grow in a garden! We have passed that stage now, however, and interest and appreciation in our native flowers as garden possibilities are daily increasing. ARNOLD V. STUBENRAUCH.

62. The tulip poppy, allied to the famous eschscholzia, now attracting attention in California. It is Mexican.

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WOMEN WHO WIN THEIR LIVING FROM THE LAND

AN ORGANIZATION THAT DESIRES TO AID THOSE WOMEN WHO WOULD TILL THE SOIL IN CALIFORNIA

THE industrial work of women in the state of California has been largely due to those accidents of fortune which have thrown them upon their own resources in the maintenance of homes already established. In putting their shoulders to the wheel and in many instances, literally, their hands to the hoe, love of home and efforts to hold it have been their incentive. They have met with such ready response from a climate and soil at once genial and bounteous, that no estimate of the economic values of our state can ignore their contribution to its fame.

A call for the representation of women's work upon these lines of agriculture and horticulture was made in 1899 by the International Council of Women held in London. This led to efforts to register the names and to gather concrete statements of the work of women throughout California. As a result the records of forty women were taken to London and presented with those of ten different countries through the delegates of their National Councils. Out of this representation and at the suggestion of the California delegate, a Women's International Agricultural and Horticultural Union was agreed upon, each country pledging itself to its own registration and union within its own borders as the basis of economic representation in the world's work and influence: first, for the benefit of each separate country and its workers; second, to circulate useful information and to compare methods of different districts and countries; third, to encourage and stimulate (*a*) farming, dairying, stock-breeding, bee-keeping, poultry-raising, etc.; (*b*) fruit- and flower-growing for profit; (*c*) landscape gardening, arboriculture, forestry, the management of estates as employers and employed; (*d*) the encouragement of working amateurs.

The great area of the state of California and its remarkable conditions of soil and climate combine to make it the epitome of the whole United States. Its dual chains of mountains enclosing wide-reaching valleys from western sea to eastern Sierra, and the beneficent tempering of the heat by the breath of the trade winds through their broken gateways, give every degree and variety of soil and temperature requisite for a varied range of semitropical products, and make it the great fruit-producing country of the world.

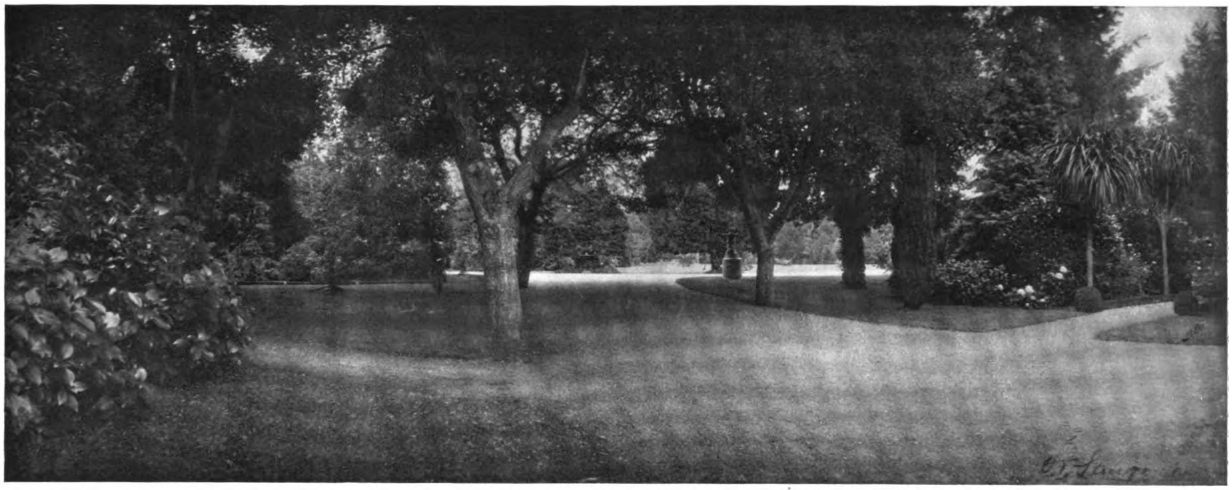
In the history of California it is recorded that in 1878, Miss Austin, a retired school teacher of San Francisco, conceived the idea that she could make the then barren plains of Fresno blossom as the rose, and in her effort prove that horticulture might become a business for women as well as men. With her friend, Miss Hatch, she began to improve a vineyard already planted and she gradually extended it to one hundred acres. By a series of ventures and experiments she improved upon many operations in the vineyard and in the packing-house, the details and results of which are on record. In her work she opened special opportunities for women in packing raisins in attractive forms for commercial purposes. Her courage and intelligence became widely known, and not only those whom she stimulated to like effort but the state at large owe her a debt of gratitude. The steady increase of home settlements and their broadened significance have been most important factors in the upbuilding of the state.

Another pioneer beginning in an industry which has grown and prospered was the planting of two orange trees, originally from Brazil, beside the cottage home of Mrs. Tibbetts, in Riverside. From these is said to have sprung the Washington Navel orange industry of California; and the domestic impulse thus given has multiplied the homes of our state and carried its fame far and wide.

From these and other early beginnings, many women have since tested and experimented with vine and olive, various fruits, raisins, dates, nuts, seeds, berries, to the full measure of their opportunities, throughout the fifty-six counties of the state. For the most part their efforts have been personal and limited, but none the less valuable.

There being no registration, and no representation of the economic value of women's work, it is a difficult task to gather the names and records. There are two women members of the State Board of Trade, Mrs. E. Shields and Mrs. A. L. Bancroft. The former has two hundred and fifty acres of land in the Sacramento valley, skirting the banks of the American river. A drive through the heavily-laden orchard at sunset lent a glamour to the running story of hard beginnings twenty years before, when a large family of children, and no capital beside, tested and developed the native-born business sense, patience and endurance of my hostess. Discouragements, such as those brought by the spring-tide overflowing and destroying the work of her hand at one season; the rewards of another in increased fertility and abundance—so the story went on under the starlight while the long stretches of field and orchard broadened the personal into the human story. The annual state fairs literally overflow with fine specimens of her grapes, peaches, pears, nectarines, apricots, nuts and berries. Fruits are shown in their ripe state and in dried and packed forms; also, in the shape of preserves, jams and jellies. She has, also, many fine varieties of grain, hops, tobacco and other products.

In one of the beautiful sub-valleys made by the broken contours of the Coast Range, lies the fruit and grain farm of Mrs. E. P. Buckingham. Long lines of orchard trees, heavy with fruitage, radiate in every direction from the homestead. The house itself was built in New England, and brought around the Horn (a common Yankee enterprise of those early days). It replaced the old adobe dwelling of the Spanish owner, and is a fitting illustration of the sturdier civilization which was to upbuild California and bring it into the Union of States. Even the stone-walled cellar is reminiscent of primitive days before the subtle fragrance of the dairy, as evoked by the fair hands of its chatelaine, was lost to the world at large. These one thousand home acres, lying near Vacaville, have been planted and developed by Mrs. Buckingham within the past sixteen years. Unlike the flat stretches of the Sacramento and San Joaquin valleys, those nearer the coast, like that of Vaca, are more broken and picturesque in their hill-slope settings, fast covering with verdure of vine and olive and giving an Old World look to the new acres.



63. View under the trees in a noted garden. The Flood estate, at Menlo Park

Here again, amid surroundings of culture and refinement, the story of struggle and stress was told. The hand that had rocked the cradle had reached forth to lend itself to every emergency as it arose—and conquered. The season of gathering was coming, and tent villages were being set up for the fruit pickers, who assemble upon these farms, year by year, to spend vacation in work and play. Among these came a woman from the Bahamas, wishing to take active part in this object lesson of picking and packing, that she might return to her own acres and profit by the experience.

In the hospitable home of Mrs. Sherman, at her model farm five miles from Fresno, the inspiration of necessity to meet the duty at hand, to hold fast to the home instinct and to keep its fires burning, has been the key-note to success. From small beginnings as a dairy and vineyard, the high quality and standard of its product came as a result of her determination to do everything well. She has kept record and statistics which are valuable contributions to the state archives. Success with dairy stock has led to the breeding of horses with equal success. She has branched

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64. A drying yard in California. Here peaches, apricots, almonds and other fruits are cured under the clear and rainless sky

out as a fruit-grower, and by the steady application of economical methods of fertilizing and cultivating has brought about remarkable results. The picturesque effect of the silos, dotted here and there, is akin to that of the Dutch windmills in the older world, which lend so much to the domestic aspect of a country equally flat and monotonous.

In visiting the thirteen-hundred acre home of Mrs. Harriet Strong, of Los Angeles county, one realizes not only the productive capacity of her land, but the workings of such knowledge and methods as relate business to capital. Her land lies in the beautiful San Gabriel valley, sloping toward the sea. Back of the hills, fourteen miles away, rises the Sierra Madre range, 14,000 feet high. Winter and summer are in strange contrast as we look through the green of the leafage and the gold of the orange harvest to the background of snowclad mountain slopes in the far distance. Mrs. Strong knows well that the demand and requirements of her profession are the same for women as for men, but she testifies that there is an exceptional combination of circumstances in our state that not only invites the special attention of women, but gives promise of sure reward to those who faithfully and intelligently pursue this calling. The pampas plume industry, discovered by a California woman, was chosen by Mrs. Strong as a quick return for investment, while waiting for the growth of one hundred and fifty acres of walnuts. Beginning with two hundred and twenty acres she has one hundred and fifty in alfalfa, upon which she has drilled seven artesian wells. She writes: "One who is just to himself and his opportunities will impound the wealth of water that falls in its season, will convert grain fields into orchards, will draw from the reservoirs in the mountains just when the water is needed, and thereby convert the product of the grain into food, and raise humanity in the scale of existence, and render possible a population of millions of industrious people where now there are not even hundreds.

From far-away Southern California there came a statement, to be read at the Council, from Mrs. Theodosia Shepherd: "Hybridizing is my delight. Nature is always ready to work. Flowers suggest their possibilities and desires; and one who loves them and wishes to help in their evolution sees and understands their language. We have only to follow it to evolve the perfect being." Her patient work for ten years with the cosmos has brought it to a flower five and a half inches in diameter, and of innumerable shades of color and forms of flowers. The eschscholzia, or California poppy, has been brought to an intensity of orange which almost dazzles the eye, and to five and a half inches in diameter. One sees in her grounds rows upon rows of graceful pepper trees, laden with brilliant scarlet berries; immense varieties of geraniums, in hedges of perennial bloom; cosmos, cannas, cacti, agaves, orchids, etc.

Mrs. T. Gould, of Ventura, writes: "My method of hybridizing differs from others, perhaps, only in individuality. As in any other business undertaking, so in hybridizing. Success crowns labor which is accurate, painstaking, patient, and continuous." She has brought into existence one of the great flower novelties of the time—the immense frilled double petunia. Her seed is produced by hand-pollination and is handled from seven to twelve times.

There is no doubt that seed and bulb raising for export is to become more and more an industry for women in connection with rural home life. It is interesting to note that a new branch of scientific industry has been established on this Pacific coast by Miss Alice F. Crane, an advanced student in the Agricultural Department of the University of California. It consists in the scientific testing of seeds.

Scattered throughout the state there are many young women left to make the most out of their small holdings. For instance, two sisters living near the Bay of San Francisco, with no practical knowledge of horticulture, began with a bag of poppy seed. Within five years they have developed a business in rose and bulb culture which taxes the capacity of ten greenhouses. Like many others, they find a market for all they can produce among the florists of San Francisco. They write: "We are about to put in a gasoline engine for pumping, to build a propagating house and to heat the whole plant with steam. We have regained our health, and are happy to have triumphed over some of the many difficulties that beset the path of the amateur rose gardener."

Nestled among the foothills of Contra Costa county, lies the picturesque town of Haywards, near which is the garden spot of that region known as the "Daffodil Farm." From the music and romance and poetry of life its chatelaine turned to the study and specialization of these bulbs. As her reward, the sloping hillsides in January and February are a veritable "field of the cloth of gold." Sorting and shipping to eastern markets, as well as the filling of daily orders for the local markets in time of bloom, make the life of Mrs. Ivy Kersey a strenuous one, for here, as in everything else, success depends upon continuous care and labor. The Spanish Iris, amaryllis, hyacinths, and tulips are now dividing honors with the daffodils.

There are women who make a specialty of gathering the wild flowers in their season. One writes: "We began to support ourselves on nothing a year. We began with the self-sown wild flowers. We knew where the baby blue-eyes, the nemophila, grew, where the golden eschscholzia or Capa d'Oro, flourished in glory, where the buttercups welcomed the sun, and the shy, wild violets hid from his caress."

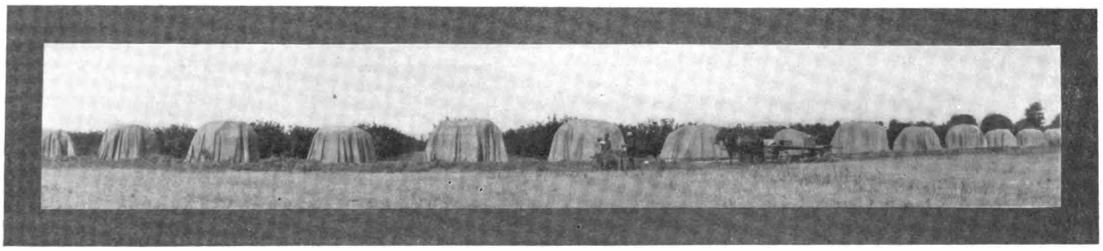
The "Women's Silk Culture Organization of California" was formed in 1880. A number of patriotic and intelligent women foresaw that the culture of silk might be made a great industry. Their efforts, with those of others, have demonstrated that the production of silk in the form of the cocoon is an exceedingly simple thing; that in our regular dry summers, without rain, storm or electricity, silk culture is reduced to a minimum of expense, and that it may inure largely to the benefit of women and children.

No more unique and characteristic feature of California rural life is found than that of the nomadic home wagon in which the family life goes on from month to month, here to-day and there to-morrow, in hop field, vineyard or orchard, as the season's harvest invites to work for young and old. The household Lares and Penates, with its contingent of domestic pets, the song and jest about the evening campfire by the side of running stream and tented sycamore,—such is the picture of a home in nature's setting in the hills and valleys of California.

In one of the cañons of the beautiful Los Gatos foothills at the western end of the Santa Clara valley, the home-acre of Mrs. Reed has been held by proceeds from the "stuffed prune industry," which she has developed. Chicago and New York markets demand all that she can supply. Her success is due largely to her dainty and artistic manner of packing for export. This suggests a great field of artistic possibilities for women in all matters relating to fruit, dairy and other products.

It is in the hope that a knowledge of the economic work of women throughout the state and comparison and exchange of basic facts and principles thus collected would lead to reciprocal relations between city and country homes, between producer and consumer, that the "Women's Agricultural and Horticultural Union" is formed. The first practical result of this "Union" might well be to widen the vision of the present club woman as to the possibilities and scientific methods of service, and the economic use of her means and time. The second practical result might be to broaden the definitions of home and society.

EMMA SHAFTER HOWARD.



65. Fumigation in a lemon grove near San Diego

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ALMOND CULTURE IN CALIFORNIA

SKETCH OF ONE OF THE SECONDARY INDUSTRIES, THAT MAY BE TAKEN AS A TYPE OF MANY—ILLUSTRATIONS OF INTERESTING CALIFORNIAN METHODS

IN the old Roman days, nuts were not only part of every dessert, but they served also as playthings for children. From this latter use, a curious custom was evolved in the Roman marriage ceremony. The bridegroom, as he led his bride to their future home, threw nuts to the gaping crowd, to symbolize that he thus cast aside all his boyish sports. From these Romans has descended to us the thought that nuts signify pleasure; and most of us to-day still consider them the trifles that give an excuse for remaining at the table when wit takes its airiest flights. As a people, we spend a large sum annually for nuts as mere delicacies, either in their original form or as disguised by the confectioner's skill.

On the other hand, an increasingly large number of our citizens is adopting the nut as a substantial portion of the meal, as a substitute, in part or in whole, for flesh foods. The adherents of the Edenic diet, which consists of nuts and uncooked fruit, probably will not win many proselytes while a savory cuisine still tempts the palate; but among our dyspeptic brain-workers, and their number is legion, the new "health foods" are finding favor as a temperate addition to their bill of fare. Among the "health foods," the nut preparations are the most appetizing to one accustomed to the ordinary diet of civilization, and of these, the ones made from the almond are the most delicate.

With the increased consumption of nuts, attention has been turned to their production. The almond, alien that it is, has been experimented with in various parts of the Union. It used to be asserted that the almond would thrive wherever the peach did, so, nearly fifty years ago, the Commissioner of Patents obtained a quantity of almond seedlings and buds from abroad and distributed them throughout the southern and middle states. The trees grew and bloomed profusely but did not fruit. The experiment was repeated in California, with almost an equal failure, and it was beginning to be accepted as a fact that almonds could not be raised in the United States.

Then Mr. A. T. Hatch, who owned a ranch near Suisun, California, threw his energy into the industry. He found that seedlings produced in California matured fruits when the imported ones failed; and that not only did the nuts differ from the foreign almond, but they varied according to the locality in which the seedling was raised. From among one hundred and ninety-two varieties that he created, four were chosen to be developed further as staple products. By forming partnerships with a number of farmers, who furnished the ground while he supplied the trees, he was able to test the effect of different climatic conditions. It was learned that almonds mature in a warm climate, dry in summer. The more moisture they can have in growing time the plumper the nut, but they require dryness when ripening. These requirements exclude from almond culture parts of California where the trees were first started. The nuts will not mature in the southern coast region, where the fog pours in each summer's day, nor in the colder northern belt. Orchardists who have experimented in these districts are regrafting their almond trees with other fruit. The southern Sacramento valley and the northern San Joaquin are the localities in which the almond is proving most successful, and here many growers are making it their principal crop.

67. Almond harvest. "The nuts are beaten from the trees with poles, and fall upon sheets spread under the tree"

A visit to the almond district, near Davisville, in the southern Sacramento valley, gives a clear conception of the different stages of the culture.

If the grower wishes only a few hundred trees, he probably will purchase them from a nurseryman, as the average price is only from about seven cents a tree wholesale to fifteen cents retail; but if he desires several thousand, he generally will start them from the nuts himself.

In November or December, a piece of burlap is covered with an inch or two of moist sand. In this layer the almonds are imbedded and then it is covered with a second burlap. The hardshells only are used for seedlings and the bitter varieties are considered best for this purpose. As the nuts sprout, they are placed in nursery rows in a loose, light, warm soil, and are separated into two classes, the June buds and the dormant buds.

The June bud is pushed by irrigation and in June is budded with the variety the grower wishes to propagate. All other buds are kept pruned off, and the little tree is so stimulated by continual irrigation that in December, when one year old, it is from three to five feet high. Then in January, or preferably in February, the young trees are set out in the orchard from twenty to twenty-five feet apart.

The dormant bud is not irrigated persistently, but is allowed its own time to grow. It is budded in the fall, and then it is transplanted in the nursery, or sometimes is put into a dark shed to retard its development. By the second December it will attain a height of from six to eight feet; and in the following month it is placed in the orchard. These two-year-old trees require more labor in preparing them for their permanent position than do the June buds, and they are of no greater value to the producer who raises his own seedlings. If one purchases stock from the nurseryman, the two-year-olds insure a harvest a season earlier, but they do not always bear the transplanting so well as their younger sisters.

66. Almond trees in bloom. "The orchard is a mass of purest cloud or of snow softly tinted with the pink of early dawn"

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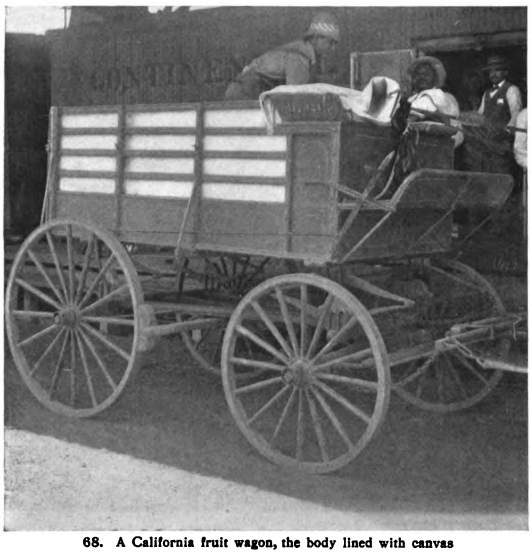

68. A California fruit wagon, the body lined with canvas

Once in the orchard, the almond trees are pruned only for shapeliness, as they bear most fruit on their long and slender outer branches.

The ground is well cultivated, both to destroy the weeds and to retain the moisture. In California, during the dry season, all land not cultivated bakes into a hard crust, which soon splits into yawning cracks. The subterranean moisture is drawn through these crevices by capillary attraction and evaporates at the surface. With the soil well broken into small particles, no such broad avenues of escape are provided and most of the moisture furnishes nourishment for the tree roots.

The ubiquitous weeds are used as fertilizer. In the springtime they are allowed to grow a few inches above the ground. Then they are turned under by an improved cultivator and their substance goes to enrich the earth upon which they thought to flourish. Yet with each repeated cultivation, there seems an army of intruders to subjugate.

Some growers irrigate their almond orchards once in the spring. They think that this puts the trees into a better condition for the whole season. This is practicable when the grower has irrigation facilities for other purposes, as for alfalfa; but it is supposed that the increase of the almond crop will not justify the expenditure for an engine for irrigating almonds alone.

At four years, the tree is bearing; and the next year, if the season be a good one, the fruit pays for the harvesting. Then with each year, its crop multiplies, if it be kept in good condition. It is supposed that an almond tree is in its prime when fifteen years old; but trees planted by Mr. Hatch in 1860 are still bearing fine crops.

The principal disease feared by the growers is the "root-knot." While they do not know its cause, they have learned from experience that it means death to the part attacked. The "root-knot" is an excrescent growth that encircles a root and chokes off its supply of nutriment. If it attacks a secondary root, the tree continues to live; but when it fastens to the main root, the sustenance is cut off from the whole plant and the tree soon withers away.

Another disease, called the "shot-hole fungus," attacks the leaves. It first appears as a yellowish brown spot. Soon this spot falls out of the leaf, leaving a round hole which gives the disease its name, and shortly afterwards, the leaf itself drops to the ground. An ammoniacal solution of copper carbonate is used as a remedy.

Besides these diseases, the almond-grower has another foe, one which, while it does not destroy the life of the tree, materially injures the crop. This is a tiny red spider. For its size, it is a marvel of rapacity and rapidity. It will suddenly appear on one tree and within a month every leaf in a one-hundred-acre orchard will be devoured. The almond hulls, without the protection of the leaves, shrivel up into "stick-tights." The meat of these is perfect, but it is impossible to extract it without breaking the hull.

When first the red spider immigrated to the almond orchards, the growers greeted him with sulfur spraying and other salubrious washes; but these were only partially effectual in banishing him. In 1898, Mr. George W. Pierce, of Davisville, introduced a colony of Australian lady-birds into his orchard; and in the campaign that followed not a red spider was left to give his version of the battle. The lady-birds passed into the neighboring orchards, and in a couple of years had cleared out the pest from the vicinity and had themselves fled. Perhaps the rampant creatures sought new battle-fields afar. The year after the lady-bird's disappearance, the red spider reappeared, and fresh importations of lady-birds had to be secured. The problem is how to keep a sufficient number of lady-birds on hand as a safeguard against a siege of the spiders.

69. An apricot orchard in the Vaca Valley

The almonds are the earliest blooming fruit trees. This is why they are cultivated in Great Britain and other countries where they can never hope to mature fruit. About the first of February, the buds swell out beneath their smoke-colored coats and the orchard is bedight in softest gray blue. Within a couple of weeks the coats are burst asunder, and now the orchard is a mass of purest cloud or of snow softly tinted with the pink of early dawn (Fig. 66).

The nut enlarges rapidly. By May it is the full-grown size; but it is filled with a jelly-like substance which is not perfectly hardened until August.

From February until May the almond-grower lives in anxiety. A cold rain during the blossoming time will wash away much pollen and leave fewer fertilized seeds. If this be escaped, no matter how large a crop, no matter how healthful the trees, he dare not be too sanguine about the season's output. One night's frost will blight every nut, and nullify the labor of the season.

Some attempts have been made to ward off a threatened frost by keeping up the temperature in the orchard by smudging. This is done by setting a fire under damp sacking or anything that will raise a dense smoke. It has to be kept up the whole night through and even in the morning until the direct sunshine raises the temperature. Smudging is not feasible in a large orchard; and so the almond raiser continues to scan the thermometer, and to preface every future plan with "if there be no frost."

But if the cold rain and the frost, the diseases and the red spider have been conspicuous by their absence, then does the almond-grower reap the reward of his labors. No matter how large his crop, he is sure of a ready market, and that virtually at his own figure. A ton to the acre is estimated a good crop, but a half-ton pays a fair interest on the capital invested.

At harvesting, the crop has to be handled within two or three weeks, and such laborers have to be taken as are found wandering around the country. Naturally many of them are both unskilled and averse to much exertion.

The nuts are beaten from the trees with poles, and fall upon sheets spread under the tree (Fig. 67). Then they are taken to the warehouse, where they are thrown into a special machine, called an almond huller and separator. In this, they pass through a series of cylinders and screens and under a number of fans. In the cylinders the hulls are beaten off; the screens allow the hulled nuts to pass through and cast off the hulls; the fans blow out all leaves, twigs and other light rubbish. The hulled nuts fall from the separator directly on light wooden trays, three by eight feet, and are carried to the drying-ground. Although the huller does very effective work, it does not break off all the hulls, nor does the separator definitely finish its task. The nuts not hulled fall into another tray, and they are finished by hand. The hulls are used for fuel. In the separator, some nuts will be broken; and their kernels and those of the "stick-tights" are shipped at once to manufacturers of various products. The almond becomes rancid in a few days when exposed to the air without its shell.

Some growers, even extensive ones, have no huller and separator, and they have all that work done by hand.

After the almonds are hulled, they are carried

70. A peach orchard in the Santa Clara Valley

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to the drying-ground, which is simply an open field. Here they remain from one to three days, according to the condition of the nut. Usually in a warm August, a day and a half is sufficient.

When dry, they are sprinkled with water and placed in the sulfur-house for about five hours. The most convenient sulfur-house is one just admitting the three-by-eight trays and about ten feet high. It has a light wooden frame and sides of heavy dark paper. This is arranged on pulleys so that it can be raised or lowered at pleasure.

A flat car, the size of the trays, is packed high with them and rolled under the sulfur-house. Then, when the bleaching process is over, it is wheeled away again to the drying-ground without unloading. Here it stands, still loaded, for half a day, to let the wind carry away the sulfur fumes, and, at the same time, to dry the nuts. The sun is not allowed to reach the almonds, as it would again darken the shell.

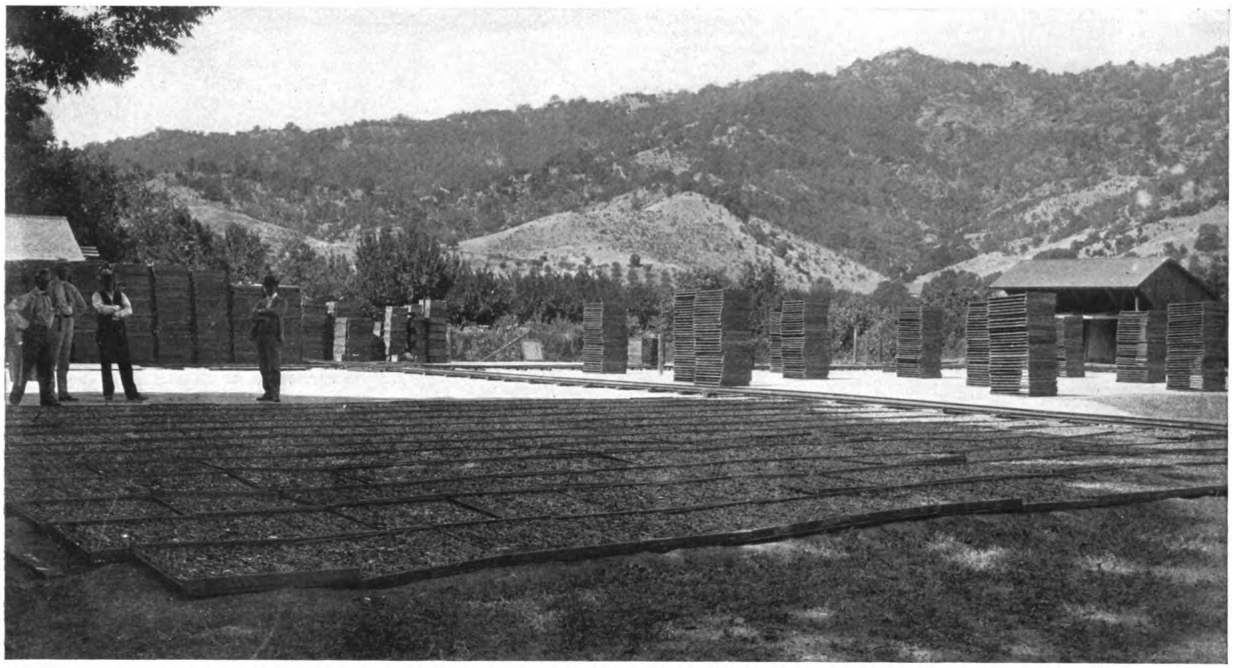
The sulfur destroys any eggs of insects that may have been deposited through the hull; and it also produces the light-colored almonds, which command a higher market price than the ones retaining their natural shade. Growers say that a slight flavor of sulfur always clings to the almond; and for their own use they set aside sacks of unbleached nuts. Certain wholesale dealers, who handle nuts in great quantities, frequently order for their families the unsulfured almonds, but they declare that they can find ready sales in the public market for the bleached article only. Sad comment on our general intelligence that we prefer a fair covering to a more palatable meat!

When freed from the odor of sulfur, the carload of trays is wheeled to an immense trough, which is built upon a platform and which has three holes at one lower side. At each of these holes is a man with a bag, and, as the almonds pour out, he sacks them. Then the sacks are loaded on a wagon and carried off to the warehouse to lie until the market demands them.

The growers in the different almond districts are forming themselves into associations. The missionary in the field was the Davisville Almond Growers' Association of Yolo County, formed in 1897. It achieved such good results and so urged other vicinities to follow its example, that by the end of the century there were three other almond growers' associations: the Esparto, also of Yolo county; the Brentwood, of eastern Contra Costa county; and the Western Contra Costa County Association. Other neighborhoods are being urged to form for their own vicinity, and hopes are entertained of soon uniting the three hundred almond-growers of California into one state association.

Previous to California's advent into the almond industry, we received our almonds from Spain, France and Italy. In the year ending June 30, 1901, our importations reached $946,129, which represented 5,140,050 pounds. For the same season, according to the reports of the Southern Pacific railroad, California shipped to the East 4,107,100 pounds. This far from covered her whole crop, for not only are almonds used extensively by Californians, but certain almond "health foods" are manufactured here, to be disposed of in the eastern market.

The Jordan, which, by the way, is the Anglo-Saxon corruption of *Jardin*, the Spanish for garden, is the highest priced almond. It comes from Malaga, and is the long, narrow, plump nut used by confectioners. It is never found in the general market and is always imported shelled. The Tarragona, also a Spanish variety, is the best imported almond the public can purchase. It has a broad kernel with a flavor less sweet than some of the California varieties. Its shell is thick but rather soft, while the Jordan is said to have a dense, thick, hard shell.



71. A fruit drying scene, with foothills of the Coast Range in the background, looking westward. In the farther corner is seen the sulfuring house

The paper-shell almonds are all Californian developments, originated by Mr. Hatch. The highest priced ones, and those of best flavor, are the Nonpareil, the I X L, the Ne Plus Ultra, and La Prima. The California varieties are generally long single nuts, of varying thickness and breadth.

The evolution of the paper-shells has caused the old hard-shell almond to fall in value. While it is borne more prolifically, it is appraised at only half the market price of the paper-shell, and it is used principally for nursery stock. It may be whispered that this loss of prestige has caused still further humiliation to the hard-shell; its shell is said to be now used by unscrupulous spicemen as an adulteration of cinnamon.

Although California has paid more attention to the almond than has any other state, not nearly all her available acres are devoted to it. Arizona, New Mexico and Texas, also, have localities with climate adapted to this nut, and they have entered into its culture to a small extent. The almond industry in the United States is yet in its infancy; and, if it continues to grow as it has in the past decade, we may hope not only to cease importations, but, within the first quarter of the century, to begin exportations of the almond, both in its natural state and in all the oils, "health foods" and cosmetics that art is capable of evolving from it.

KATHERINE A. CHANDLER.

72. The last orchard in the United States. Lemon growing near the Mexican boundary

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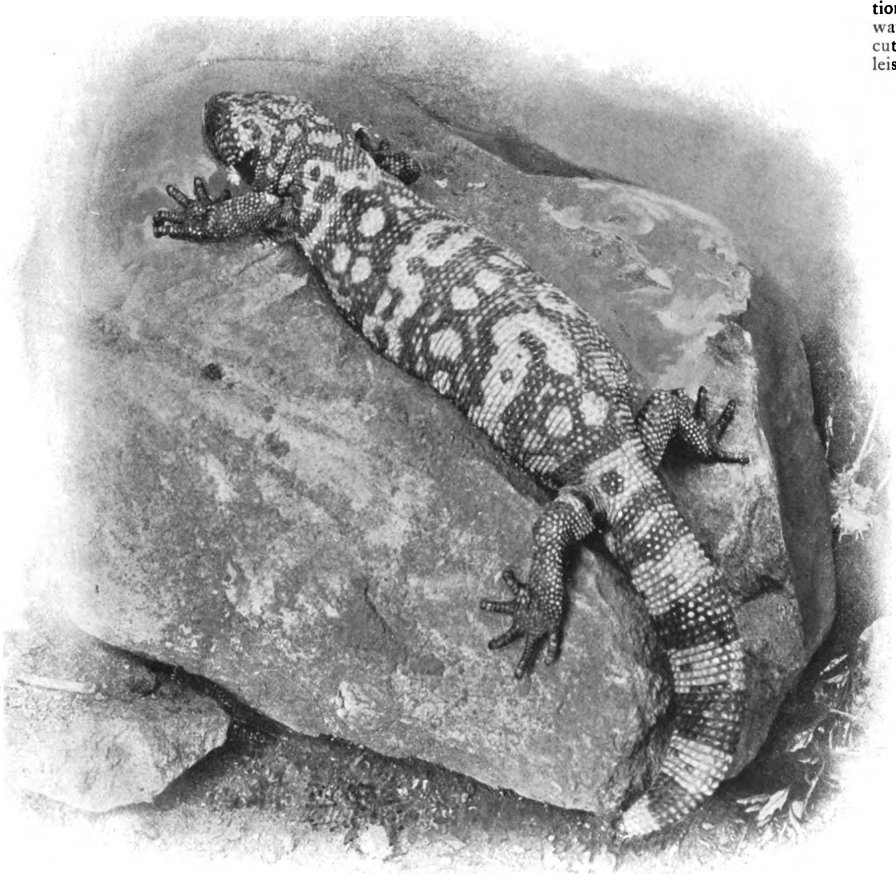
THE GILA MONSTER

FOR years wonderful stories have been published about the gila monster, but these stories have been more startling than truthful. Usually the source has been a highly embellished article published in some western paper and copied by the newspapers over the country, as well as by scientific periodicals. Sometimes when news seemed lacking a good gila monster story has been telegraphed to various papers, possibly in the effort on the part of a correspondent to earn his salary.



73. The Gila Monster of the southwestern deserts, said to be very venomous

Little is known of this curious lizard, and probably on account of the terrible stories told of the agonizing death struggles of hunters or Indians bitten by this deadly animal, a continuous war has been waged on it until now it is almost extinct. It is reported to be so fearfully poisonous that its breath even is supposed to be fatal to those inhaling it. I have read accounts of people being overcome by the fumes on entering a hut where the horrible animal had sought shelter.

As compared with the gila monster, the rattlesnake is considered almost harmless by those residing in the locality inhabited by these dreaded pests. People in a rattlesnake country seem to become accustomed to them and lose the fear borne by the ordinary individual, dispatching large rattlers with a small stick, horsewhip or any handy implement; the bolder sometimes handling the rattlers while alive. Really, it is not difficult to tame a rattler so it will recognize its master and, unless a quick movement is made to frighten it, it can be safely handled. I do not, however, advise amateurs trying the experiment.

People who seemingly handle a rattler with impunity never lose their fear of the gila monster, the Mexicans and Indians holding the most fearful and terrible superstitions regarding it.

Naturally it has been difficult to obtain positive facts regarding such a rare and dreaded reptile. A few years ago the writer found a taxidermist who had collected many specimens of the gila monster while searching for zoölogical material over the deserts or among the rocks in the country bordering the boundary between the United States and Mexico, and after handling many specimens his conclusions agree with my own, that the animal has been greatly misrepresented.

The monster (*Heloderma suspectum*) is found in the southwestern part of the United States. It seems to be most numerous in the arid region drained by the Salt, Gila and Santa Cruz rivers in Arizona, though found also in the deserts of California, Mexico and Utah, and somewhat both in Mexico and New Mexico.

In relating his first experience with the gila monster, the taxidermist said that when he came upon the first specimen he was anything but sure of his own safety, but as the monster seemed quiet, determined to make the most of the situation. For a time he remained motionless and watched, armed for an attack with a stout stick, cut for use on rattlesnakes. The monster moved leisurely about, carrying its body well up in walking and when at rest lying flat on the ground, passing from one bush to another in feeding, searching beneath the foliage, darting out its tongue to catch whatever insects it could find. Gaining courage as time passed, no ill effects being experienced and no attempt at assault made by the observed, the observer decided to test the animal's viciousness and rendered it a sharp blow upon the head with his stick. It flew into a rage instantly, frothing at the mouth, but made no effort to return the attack.

While the gila monster inhabits a dry, waterless region, when near water it makes frequent trips to obtain drink and, like the salamander, it is supposed to stand any amount of heat; this is a false idea in both cases. The heloderma is always found shaded from the direct rays of the sun, quickly succumbing if kept in direct hot sunlight. Their movements are slow and sluggish, their disposition retiring; the digestive organs so arranged that food or water is required only at long intervals. Specimens have been known to live two months without food or water. The food consists of bugs, larvæ, eggs and young birds; they are very destructive to quail, particularly relishing the eggs of this bird.

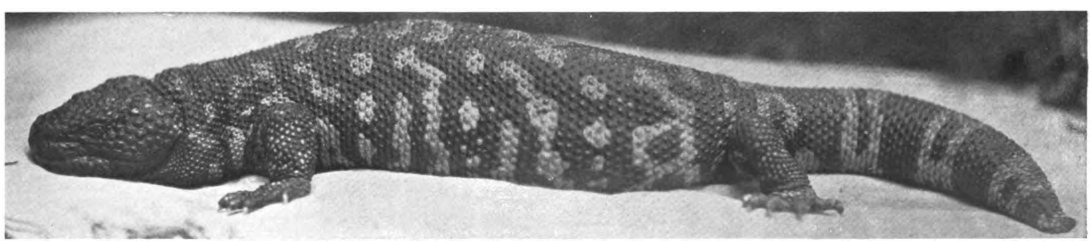
They might be called bulldog lizards, from the fact that, like a bulldog, they bite quickly and decisively, seldom missing their mark, and hold on to the victim with a death-like grip for a long time. The teeth are about one-third of an inch in length, curving backward in the long jaws and, contrary to general belief, there are no cavities in the teeth nor poison glands. Frogs bitten by this reptile have shown no ill effect, and a man severely bitten by an extremely angry specimen, aside from severe pain, experienced no more serious results. I have frequently handled specimens, finding them quiet and docile in captivity, transferring them from one cage to another by hand.

The size of the animal has been variously represented up to three feet long, but of numerous specimens the largest I have seen did not exceed two feet. The illustrations (Figs. 73, 74) are from photographs made from specimens in Arizona before their capture.

The Indians will have nothing to do with the animal, and no offer of gold, firewater or trinkets, however tempting, will induce them even to be made a party to the capture of a gila monster.

This superstition dates back to the ancient tribes that inhabited this part of the country, as shown by carvings on stones still in existence, representing the figures of men fleeing from the wrath of a gila monster.

E. C. VICK.



74. The Gila Monster (Heloderma)

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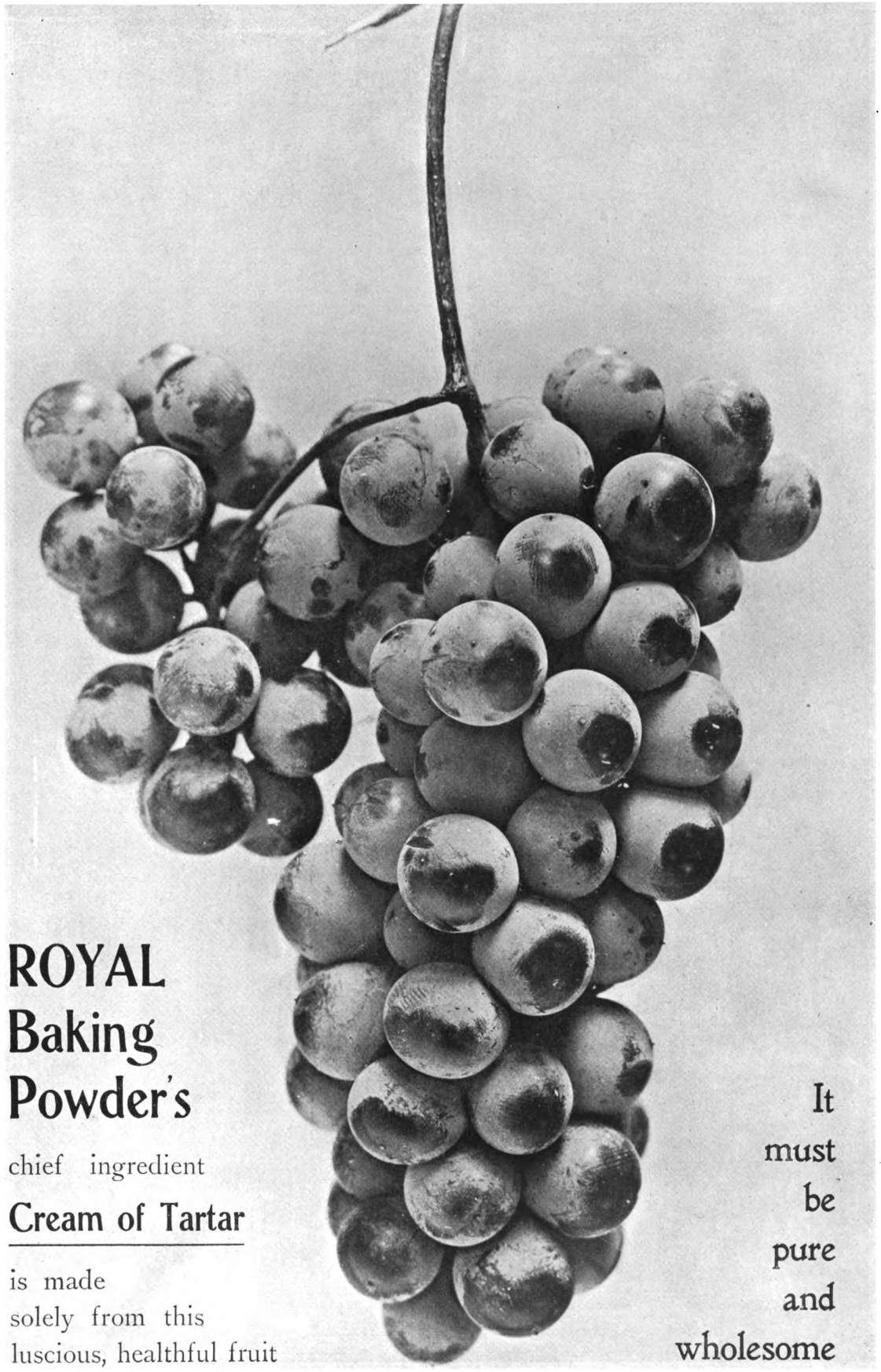

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Correspondence invited

Saving the Wild Flowers

A fund for the preservation of wild flowers has been placed in the care of the New York Botanical Garden. Three thousand two hundred dollars have been given jointly by Miss Olivia E. Phelps Stokes and Miss Caroline Phelps Stokes. The interest on three thousand dollars is to be used. Mrs. E. G. Britton in the August number of "Torreya" shows that certain teachers who have failed to catch the true spirit of the nature study movement are largely responsible for the devastation of some suburban localities.

Efforts for Better Agriculture Fairs

The Province of Ontario is spending nearly $400,000 per year in the promotion of agricultural associations. Most of this money is spent in holding annual exhibitions. These county and township shows have degenerated very much during the last twenty years, but particularly within the last ten years. The authorities are carefully considering steps by which they can be made to fill a more useful niche than heretofore. As an experiment, this year a number of these shows were held one immediately after the other, and expert judges were sent to do the judging in the cattle, sheep, swine, and horse departments. After it was done, each judge gave his reasons for awarding the prize as he did. The plan of sending these expert judges to the county and township fairs has proved an unbounded success.

In the Province of Ontario some years ago prizes were offered by the Provincial authorities for the best managed farm in certain districts. At that time this work was in the hands of the Board of Agriculture and Arts. The Provincial Live Stock Association is now allowed to do the work previously done by this body, with the exception of the Prize Farm competition, which was discontinued entirely. In the Province of Quebec there had been a system of prize farm competitions for a number of years which is giving fairly good satisfaction.

We should like to hear whether similar efforts have been made in other places, and what the results have been.

Rose Conference

The Conference on Roses to be held in London next June promises to be one of the great events in the horticultural world during 1902. Announcements have lately been distributed, but the dates June 25 and 26 are provisional ones, subject to the date to be fixed for King Edward's coronation. Dean Hole is expected to preside. The Conference is to be held at Holland House, Kensington, under the auspices of the Royal Horticultural Society of England. The Society gives the names of thirty-two rosarians who have been invited to be present. Among them are J. G. Baker, retired Kew botanist, author of a monograph of Rosa; Alexander Dickson, George and Wm. Paul, Frank and C. E. Cant, all nurserymen celebrated as specialists in rose culture; Maurice de Vilmorin, of Paris; M. Viviand-Morel, of Lyons; several authors of books on the rose and hybridizers noted for the production of new varieties. Three Americans are on the list, Professor Sargent, director of the Arnold Arboretum; Prof. L. H. Bailey, of Cornell University, and Miss Anne Dorrance.

There will also be a rose show, for which $150 in prizes are offered, with three gold medals, more than twenty-five other medals and five cups. Exhibits will be made in twenty-five classes. The papers and discussions will be fully reported in the journal of the Royal Horticultural Society. Members of the American Rose Society who wish announcements of the Conference, the "Code of Rules for Judging" or copies of the "Journal," may address the R. H. S. Office, 117 Victoria Street, London, S. W.

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An Equestrian Autumn Glory—Coaching

Far beyond the Indian summer, beyond Thanksgiving Day and far into December the coach horn has been ringing far and clear under a sky of more than Italian blue. It is the end of such a coaching season as has never before been seen; and all this tooling of four-in-hands, to and fro and round about, not as of old time, a burdensome necessity, but a luxurious pleasure; a part of the exhilaration of our new country life.

Time seems utterly unable to eradicate two things from the Anglo-Saxon, the tang of the sea and the love of the horse. No time nor surroundings, nor distance, nor the inventions of science can provide a substitute. The locomotive seemed for a passing moment to threaten the extinction of the road horse's usefulness; the electric car has recently become its apparent supplanter, and its latest competitor has come in the thundering and wondrous automobile. But none of these have the slightest chance of deposing the horse from his high station in the heart and sentiment.

The reason is palpable, for every one of us to-day is the direct result of the period of the stage coach in all its glory, and whatever befall in social conditions or scientific results, you cannot breed the love of the roadside and of the country out of the American's bones. Circumstances may entwine him and render it difficult for him to indulge his inherited predilection, but even then, as the thousands of illustrations in the print shops alone attest, he will read of the road, and enjoy in sentiment the pleasures forbidden him in fact.

Nor is this, as some may suppose, a trait imported from England. America was, in its early days, far more of a coaching country than Great Britain. It had better roads a hundred years and more ago than England; indeed it loaned that country the man McAdam, whose name has become familiar the world over. It had better road vehicles, too, for did not the British government a century since send over a royal commission to enquire into the reason why? It had inns equal, and far superior to any the wide world over, and it had God's own country lying all around, interlaced with all these attributes.

Is there any wonder, therefore, that with the spread of means and the opportunity of leisure the American is yearly, in larger numbers and over wider areas, yielding to the inherited instinct, and taking his pleasure behind a four-in-hand? He might by some other means reach his destination quicker, but he would reach it only as part of the machinery by which the progress had been effected; whereas, an he took his team, he has lived every mile and minute of his journey a sentient, absorbent and delighted participant. To him has come the rapture of the rising sun, the song of the migrant bird, the sweetness of the arbutus in the spring, the whistle of the curlew and of the plow-boy, the ring of the woodman's ax, and seed time and harvest and all the round of the agriculture of the passing year; the scent of the new mown hay, the never-to-be-forgotten odor of beans in flower when a shower has shaken the pollen, the rosy sunset and the glorious sheen of the hunter's moon, to say nothing of the flow of soul and the thousand subjects of conversation which every mile passed through suggests, nay, compels one to give attention to. How prolific they are, and how easily they fit into the frame of mind which a coaching trip incites.

Is there any wonder, then, that with early spring the post-horn of the guard wakes the echoes of our big cities and appeals, and not in vain, to us to shake off the city limitations and speed away to nature's heart, even though it be but for a day at a time? As summer makes available roads further afield, the highways and byways of all our fashionable resorts resound to the merry rattle of the four-wheeler, whilst every horse show within the metes and bounds of possibility hears the jingle of the coach horse, the click of the luncheon basket and the merry laugh over victory or defeat in the glorious out-of-doors in which, happily, our summer shows are possible. The barest enumeration of those who are disciples of the cult contains names as familiar as household words, the Belmonts and Vanderbilts, Col. Delancy Kane, T. Saffern Tailer, Albert Bostwick, Fred Gebhard, Reggy Rives, Prescott Lawrence, Hon. W. C. Whitney, John Jacob Astor, Robert L. Gerry, George R. Read

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Spring and summer have their place and function in the coachman's year book, but it is the autumn that most tempts the horse lover to tool his favorites through the glorified woods, for then the weather is kind to the horse, the roads perfect for the rider, the scenery beyond comparison beautiful, and the heart of man made glad. Who can resist the call, even if it be but for a day on the Boulevard which overlooks the Hudson on its northern loop and the broad marsh stretches of the Hackensack on its southern loop from Weehawken to Bergen Point, and ends with such a sunset as is not to be seen otherwheres on this side of the Sierras? Or it may be possible to take a tour of Long Island's splendid roads and sand dunes, or a fortnight in the Berkshire, where the Indian summer spreads its glamour over hill and dale and there is the breath of life in every inspiration.

Great are the marvels of science, and grateful its ministrations, but it palls in these autumn days before the alchemy of the hills and the inspiring spirit of a four-in-hand's reins between the fingers of the hand nearest the heart. Long may it be so, for our health's sake and the nation's!

CHARLES QUINCY TURNER.

BRIEF NOTES ON VARIOUS TOPICS

At St. Louis

The agricultural building at St. Louis in 1903 is to cover 32½ acres, and it is reported that it will be the largest of all the buildings.

Nature-Study in Nevada

Bulletin 47 of the Nevada Experiment Station is devoted to "Some Ways of Seed Distribution." It contains ten pages and fifteen figures. This is the third of the series.

Oiled Roads

These are discussed in the latest Bulletin of the Southern California Academy of Science. (Bulletin No. 10, 11 pages.) The process is described in detail, and good and bad points of oiled roads are stated.

Orchid Collection

The largest orchid collection on the Pacific coast is said to be that of John C. Siegfried, of Alameda. It has recently been thrown open to the public. It contains 2,700 plants in 170 varieties and is valued at $70,500. F. O. Vincent, the gardener, was formerly at Golden Gate Park, San Francisco, for six years.

Chemical Fertilizer in 1772

Among the earliest records, if not the first, of the use of chemical fertilizers in horticulture is that mentioned by Revue de l'Horticulture Belge et Etrangère, Oct. 1, 1901, p. 227, as found in the Bon Jardinier for 1772. It was recommended that plants to be forced during the winter should be watered with rain water in which a little saltpeter and sal-ammoniac had been dissolved.

Good and Bad Mushrooms

"Mushrooms or Toadstools" is the title of a 37-page bulletin of the Idaho Experiment Station, written by Prof. L. F. Henderson. It has a dozen beautiful full-page half-tone pictures of the common kinds and a line-engraving of the deadly *Amanita phalloides*. The bulletin is readable, sensible and reliable. It includes four pages of recipes for cooking mushrooms.

Dates in Arizona

Date culture in Arizona continues to look like a promising new industry, although it is probable that every individual bunch of dates will have to be covered with light cloth to protect it from birds. The experience of the last season seems to indicate that dates tend to bear only in alternate years, especially the heavily fruiting ones. See the twelfth annual report of the Arizona Experiment Station.

Abandoned Farms

Speaking of abandoned farms, Milton Whitney says "there is no evidence to show that the New England soils have any less plant-food than when first cultivated." This statement is found in "Exhaustion and Abandonment of

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Soils," being report No. 70 of the United States Department of Agriculture, containing the testimony of Milton Whitney, Chief of the Division of Soils, before the Industrial Commission.

Flora of Southern California

An annotated catalogue of the fernworts and seed-bearing plants of Los Angeles, San Bernardino, Riverside, Orange and San Diego counties has been prepared by Samuel B. Parish and is to be issued under the auspices of the Southern California Academy of Sciences. The work will be issued in a limited number of copies and furnished to subscribers only. A prospectus may be had of B. R. Baumgart, Secy., Los Angeles, Calif.

Cutworms

The state of Washington suffered last summer from armies of cutworms which ruined many young orchards and devoured every green thing they encountered in the fields and gardens of the western part of the state. The latest bulletin of the state experiment station tells how to destroy the worms and how to prevent future outbreaks. The species which did the damage is the common variegated cutworm, known to entomologists as *Peridroma saucia.*

Saltbush Seeds

Seeds of commercial saltbushes are pictured and described in Bulletin 27 of the Division of Botany of the United States Department of Agriculture. The bulletin will be of great value to seedsmen and to ranchmen in the alkaline and arid regions of the West. These forage plants have made it possible to utilize tracts of desert in recent years. The most important kinds belong to the genus Atriplex. Eight beautiful heliotypes from photographs illustrate characteristic variations in twenty-three species. Typical species of thirteen kinds are also shown. The bulletin is written by G. N. Collins and contains about twenty-eight pages.

California Floriculturist

This is the name of the second magazine devoted exclusively to floriculture in California. The first number appeared in November. It is edited at Los Angeles, by Ernest Braunton, formerly head gardener at Singleton Court. It is a monthly paper of 24 pages, costing $1 a year, and the size of the page is 5⅜ x 8¼ inches. The first number contains seven illustrations, mostly half-tones. The editor has cultivated a wide range of plants and has made a number of important contributions to the "Cyclopedia of American Horticulture." We wish the new magazine all possible success. Its predecessor was "The California Florist," May, 1888–April, 1889.

Analyzing Soils

Soil Analysis as a Guide to the Use of Fertilizers is discussed in a recent Press Bulletin issued by the Ohio Agricultural Experiment Station. This is a question of much practical importance, for it is a prevailing notion that the chemist can, by analyzing a soil, tell something of its needs in the way of a fertilizer. A soil analysis is very expensive, and when made would usually have very little value as a guide to the use of fertilizers, for the reason that the chemist has as yet discovered no reagent which possesses the same capacity for extracting plant-food from the soil as that of the living tissues of the plant. The only practical way of learning the needs of a particular soil is to make experiments on that soil, and learn which combination of fertilizing materials will produce the greatest effect.

A New Vegetable

The chayote is a promising tropical vegetable known to botanists as *Sechium edule.* Although of American origin and long confined to the American tropics, the chayote has recently attained popularity in Australia and Algeria. From Algeria hundreds of tons of it are shipped every year to Paris and London. In Porto Rico the chayote is produced in large quantities for domestic use, and no reason is apparent why it may not be exported for winter use in the United States. It is also worth trial for cultivation in California and the Gulf states, as well as Hawaii and the Philippines. Bulletin 28 of the Division of Botany, United States Department of Agri-

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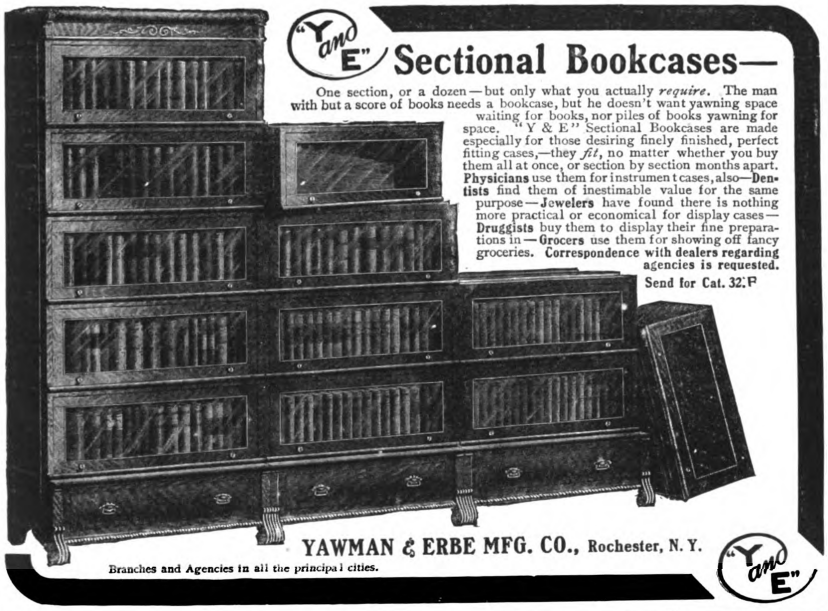

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culture, by O. F. Cook, is said to be the first adequate and comprehensive account of the chayote. It is illustrated by eight handsome plates and contains thirty-one pages.

A Yellow Primrose

To the white, rose and purple Chinese primroses M. B. Chabaud, of Toulon, has added a yellow. This he expects to be the starting point of a new race in which yellow will predominate, while retaining the vigorous characteristics of other varieties of the Chinese primrose. It was the result of a definite ideal in breeding. A clear yellow first appeared in 1899, but the corolla was not over 2 centimeters (.78 inches) in diameter. Further pollination resulted, in 1900, in flowers of 4½ centimeters (1.77 inches). The corollas were ordinarily five-lobed, but showed six in some instances, indicating a tendency to doubling. They are of a decided yellow plainly bordered with white. Revue Horticole, vol. 73, No. 18, for September 16, gives a colored plate of this novelty accompanied by a short note, supplementing an earlier description, from Ed. André.

Pecans

Pecan culture is a subject of great and growing interest in the South. Most of the people who have rushed into it blindly have planted nuts or seedling trees instead of nursery grown stock of improved varieties. The folly of such practice is now apparent. In visiting many of the Florida pecan groves Mr. H. Harold Hume was forcibly struck by the fact that large numbers of small, inferior nuts are produced. Nothing remains but to top-work the old seedling trees with cions of the best varieties. The grafting of nut-trees is more difficult than that of fruit trees and requires special knowledge and methods. Mr. Hume's "Top-working Pecans," Bulletin 57 of the Florida Experiment Station, is important for southern nut cultivators at the present time. It contains about 24 pages of explicit directions with numerous excellent illustrations.

Fruit Exhibits

In many European countries the greater intimacy between the plant and the man is very noticeable. In fruit-growing this is apparent, e. g., in the intimate knowledge of varieties so very common even among non-professional growers. This pomological interest and knowledge results in a greater representation of the small home producer at fruit exhibitions than is seen in America. To still further increase this knowledge and present the subject of pomology more systematically, the famous nursery of L. Späth, near Berlin, had its exhibit at the late Potsdam exhibition divided into Russian, Danish, American varieties, novelties, annual producers, show fruits, varieties for commercial purposes and others for the home. This arrangement is commended in "Der Praktische Ratgeber im Obst—und Gartenbau," for Oct. 13, 1901, and contains a hint for American exhibits of like character.

Potatoes

"Potato Culture" and recent results secured upon the experimental grounds at Cornell University, is the subject of Bulletin 196 of the Cornell Experiment Station. These experiments have been continued now for seven years, and the results obtained are of value, because it is shown what can be accomplished by better methods of tillage than are ordinarily practiced. It is found, however, that intensive tillage alone is not enough to secure good crops, but there must at the same time be practiced a judicious rotation of crops, and manures and cover-crops should be used that the humus of the soil may be maintained. Intensive tillage tends to rapid oxidation of the soil humus, and the ultimate results may be disastrous. During an extreme drought it is possible to overtill. Only so much tillage need be given as shall keep the surface soil loose and dry. The potato situation is summed up as follows: "There is no royal road to success with potatoes. Methods of procedure which are applicable during one season must be changed to meet the requirements of another season; treatment of one soil might be radically wrong when applied to another soil. Success will only be attained by thorough familiarity with the plant and its habits of growth, and then conditions must be made to meet as completely as possible the requirements of the plant."

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Mangoes

Fresh mangoes, for the first time, have been exported in large numbers from Bombay to London during the present season. They have arrived in fairly good condition and have brought fancy prices, being superior to the mangoes from the West Indies.

In Consular Reports vol. 67, No. 6253, Wm. Thos. Fee, our consul at Bombay, gives some interesting notes on mangoes. This fruit reaches perfection in India. The largest varieties weigh two pounds, but the average mango is about the size of a goose-egg. The mango season in Bombay begins in May and June, when the finest fruits bring $1.30 per dozen. Later the price drops one-half. The Alfoos or Alphonso is said to be the best variety. Mr. Fee has lately sent twelve mango grafts of nine varieties to a horticulturist at West Palm Beach, Florida. The favorite method of grafting mangoes near Bombay is inarching. The preserved mangoes from the West Indies are much esteemed as sweetmeats, but the characteristic mango flavor is largely, if not wholly, lost. The green fruit, pickled and highly spiced, has for some years been sent from the East Indies to England.

Dairy Methods

Methods of Dairy Feeding is the subject of a timely bulletin by the Pennsylvania Experiment Station. During the winter months anything which has to do with improved dairy methods is especially valuable. The bulletin is made especially valuable because it has a brief and comprehensive summary, without which any bulletin is incomplete. The experiments failed to show any advantage in having water constantly before the cows in the stable. The cows that were turned into the yard for water once a day made as good returns as those having constant access to water in the stable. Much more bedding was required to keep cows clean and comfortable in the pens than in the stalls. Apparently it would not be economical to keep milch cows loose in pens on farms where the supply of bedding is limited. Considerably less labor was required to care for the cows in the pens than for those in the stalls. The increase in the amount of bedding would also result in the production of a greater bulk of manure. The fewest bacteria were found in the milk of those cows which stood in the stalls, and which were, consequently, the cleanest.

To Keep Milk

Caring for milk in the home is discussed in a recent publication of the New Jersey Experiment Station. Among the topics treated are "What causes milk to sour," "How germs get into the milk," "The rapidity of the souring of milk," "How cooking affects milk," "Pasteurizing and sterilizing." It will be seen from the list of subjects treated that the scope of the bulletin is broad and that it deals with practical questions. It seems that with all the valuable literature which has recently been furnished upon the subject of milk and its production and care, some distinct advance should have been made in dairying, and we believe that the advance has come.

To keep milk sweet for a long time in the absence of ice it should be relatively pure to start with, and must be pasteurized or sterilized as soon as received, and this heating should be repeated at intervals of six to twelve hours, according to the temperature of the air in which the milk is kept. The warmer the air, the sooner should the "scalding" of the milk be repeated. By the use of a good refrigerator, only one heating is usually necessary.

Hessian Fly

This little insect seems to have caused much more than the usual amount of damage in the wheat fields during the past year. Many millions of bushels of wheat have been destroyed by its ravages. So important was the subject that the Cornell University Experiment Station issued an emergency bulletin, calling attention to certain measures which might be adopted to in part prevent a recurrence of the destruction of the next wheat crop. Certain varieties of wheat have been found to have strong resisting qualities, and while they are not free from attack by the fly, they seem to be able to nourish both the

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fly and the grain. Foremost among these varieties is Dawson Golden Chaff wheat. It is a curious fact that this variety, while the most resistant of any in New York, seems to succumb very readily in Canada. Possibly another year it may not sustain the good reputation it has won. The most important information conveyed by the bulletin above mentioned is that when wheat ground is thoroughly and properly prepared the wheat may be made so vigorous that the Hessian fly will not seriously harm it. The farmer who would grow wheat successfully must lay aside old notions and theories, and must adopt the latest scientific ideas. If any New York State farmer is a successful grower of wheat it is because he is practicing science as applied to wheat culture whether he is conscious of the fact or not.

An Irrigation Bulletin

Irrigation in humid regions is the subject of one of the best bulletins published in recent years by the U. S. Department of Agriculture. It is a great mistake to think that irrigation is important and practicable only for the arid regions. Another thing that delays progress is the notion that irrigation is impossible or unprofitable without much capital and big tracts of land. Even streams that are dry all summer can often be used to save a crop of berries if there is water below the surface of the bed of the stream. Our country has too many springy places, dismal bits of marshy ground that are useless and treacherous. These can often be reclaimed and made productive by home resources at small expense. We are ignorant about irrigation in the vegetable garden. "Small irrigation works," says Professor Wickson, "usually require neither greater skill, labor or outlay than other farm improvements which are readily undertaken. They do not require as exact engineering as underdrainage by tiling, and the whole system, both for development and storage of water, often costs much less per acre of the area irrigated than does tiling." Thousands of small but valuable water rights in the East lie undeveloped because we think too little and hardly see at all. Witness the recent case of the man who wrote to an agricultural paper about gas engines and steam pumps. He evoked a shower of answers and then suddenly discovered a spring on his own farm which would supply all the water he needed at a mere fraction of the expense he first contemplated. The title of Professor Wickson's bulletin is "Irrigation in Field and Garden." It is Farmer's Bulletin No. 138, and has 40 pages with 18 excellent pictures.

Flowers in Darkness

The development of flowers in darkness is the subject of a thesis by M. Beulaygne at the Superior School of Pharmacy, at Montpellier, France, and abstracted along certain lines by G. Chabanne in "L'Horticulture Nouvelle," No. 18, for September 25, 1901. After stating the standpoint of Sachs, Askenasy and M. Flahault, the experiments of M. Beulaygne are taken up, showing that darkness affects very unequally the different colors of flowers, but they are all affected. For the same color the mode of action varies with the species of plant, but whatever the species, the results for the different colors correspond to the different radiations of the spectrum, causing a diminution of the intensity, which is not very marked in certain cases, apparent in others, and which may sometimes go as far as complete discoloration. The latter was produced especially by violet and red, i. e., for the most refrangible and least refrangible portions of the spectrum. According to Sachs and Askenasy, the form and size of flowers grown in darkness do not suffer any reduction. M. Beulaygne has established, to the contrary, that darkness has the effect, most generally, to reduce the dimensions of all parts of the flower. Concerning the causes of this phenomena, he agrees with M. Autel that they arise from a reduction in the activity of the function of nutrition. The influence of this is seen in an absence of flowers or, more generally, tardiness in flowering, and flowers less numerous; by a darkening more or less intense, a reduction of the dimensions of the flower and the diameter of the pedicel, by a frequent lengthening of the latter; by a modification of all the tissues of the different organs of the flower; by a reduction in the number and size of the elements of these tissues, by a change in their form; by a lessening of the volume and weight of pollen and ovules.

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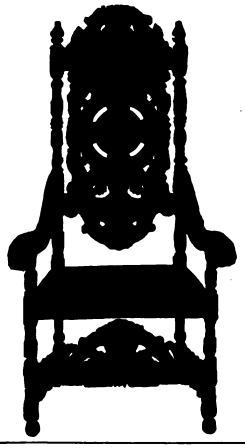

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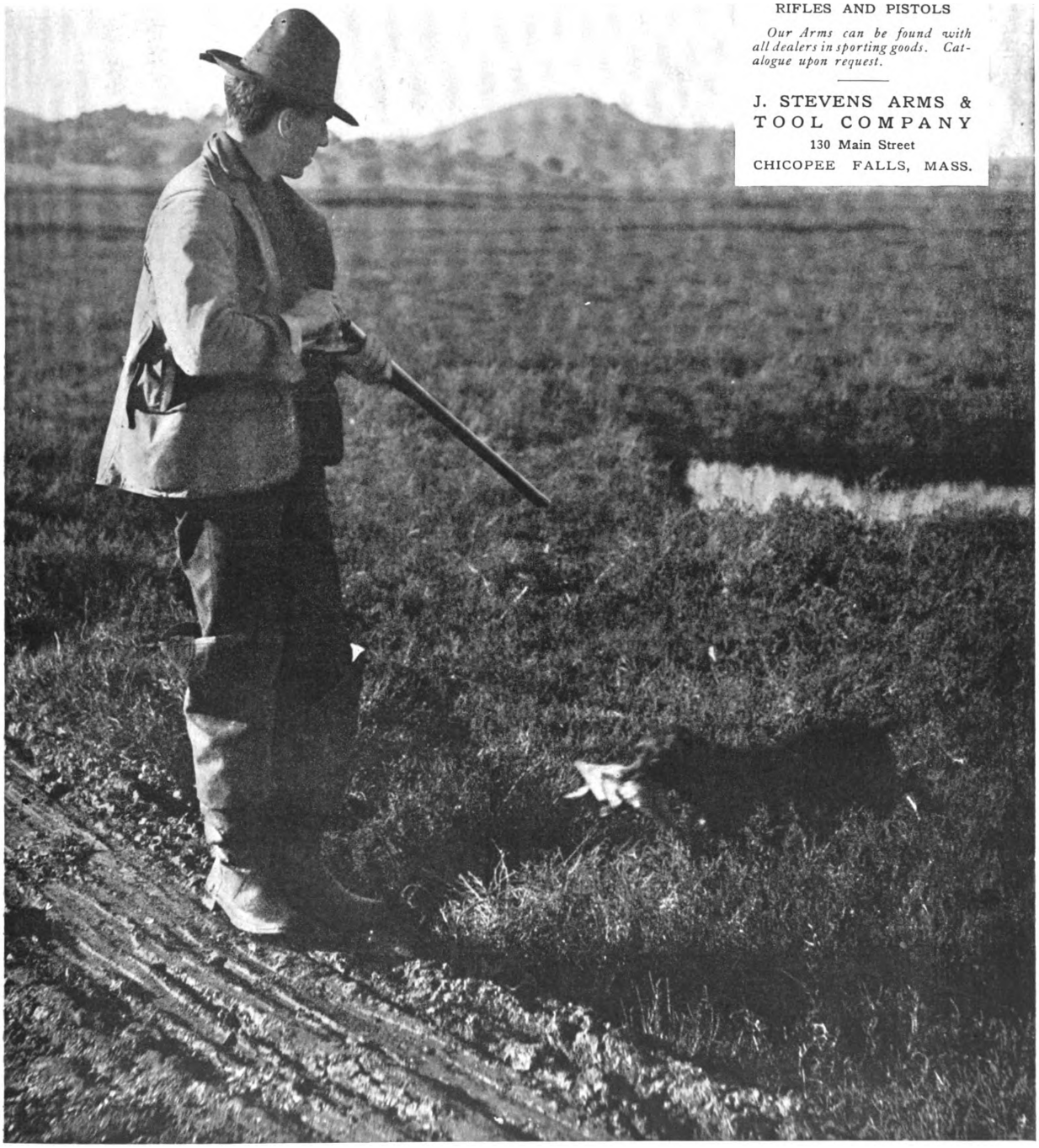

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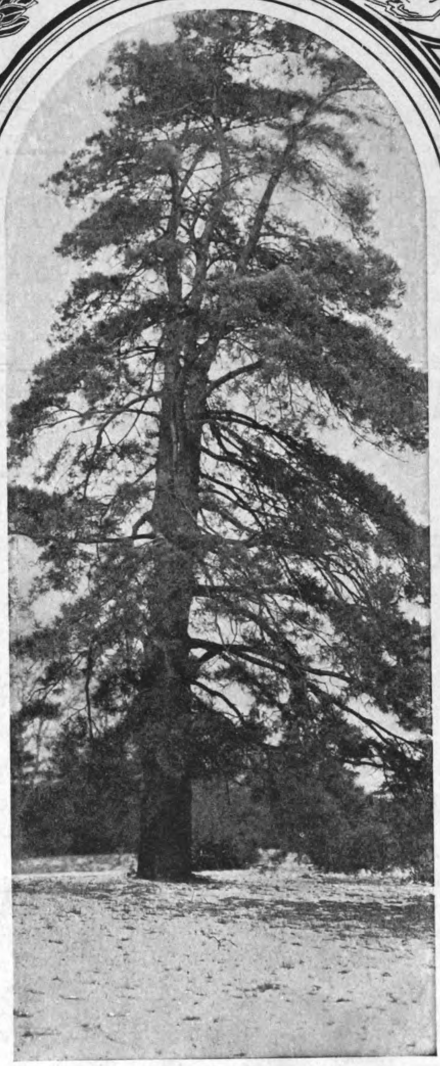

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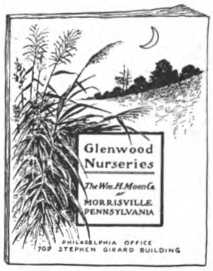

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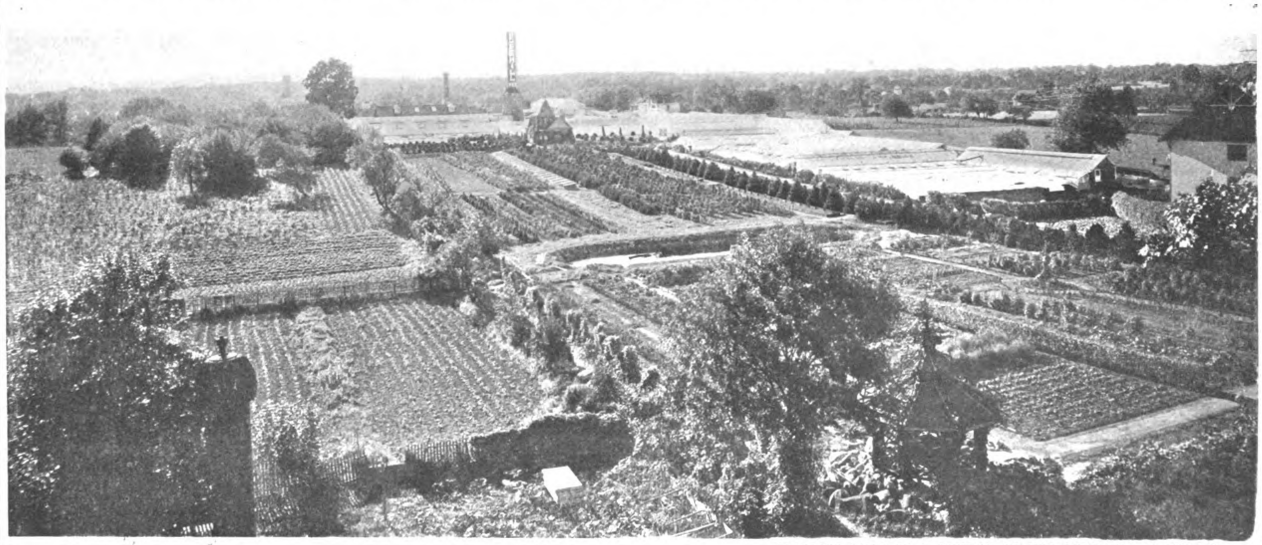

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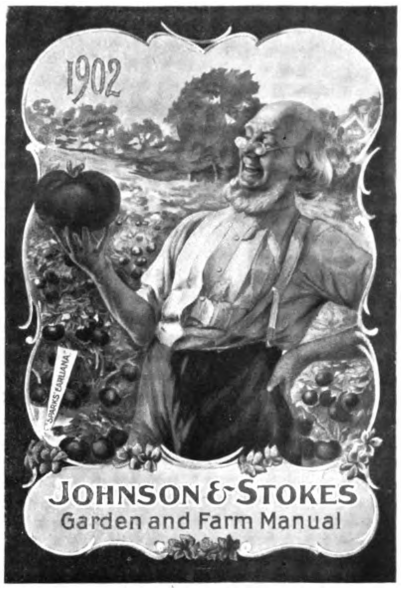

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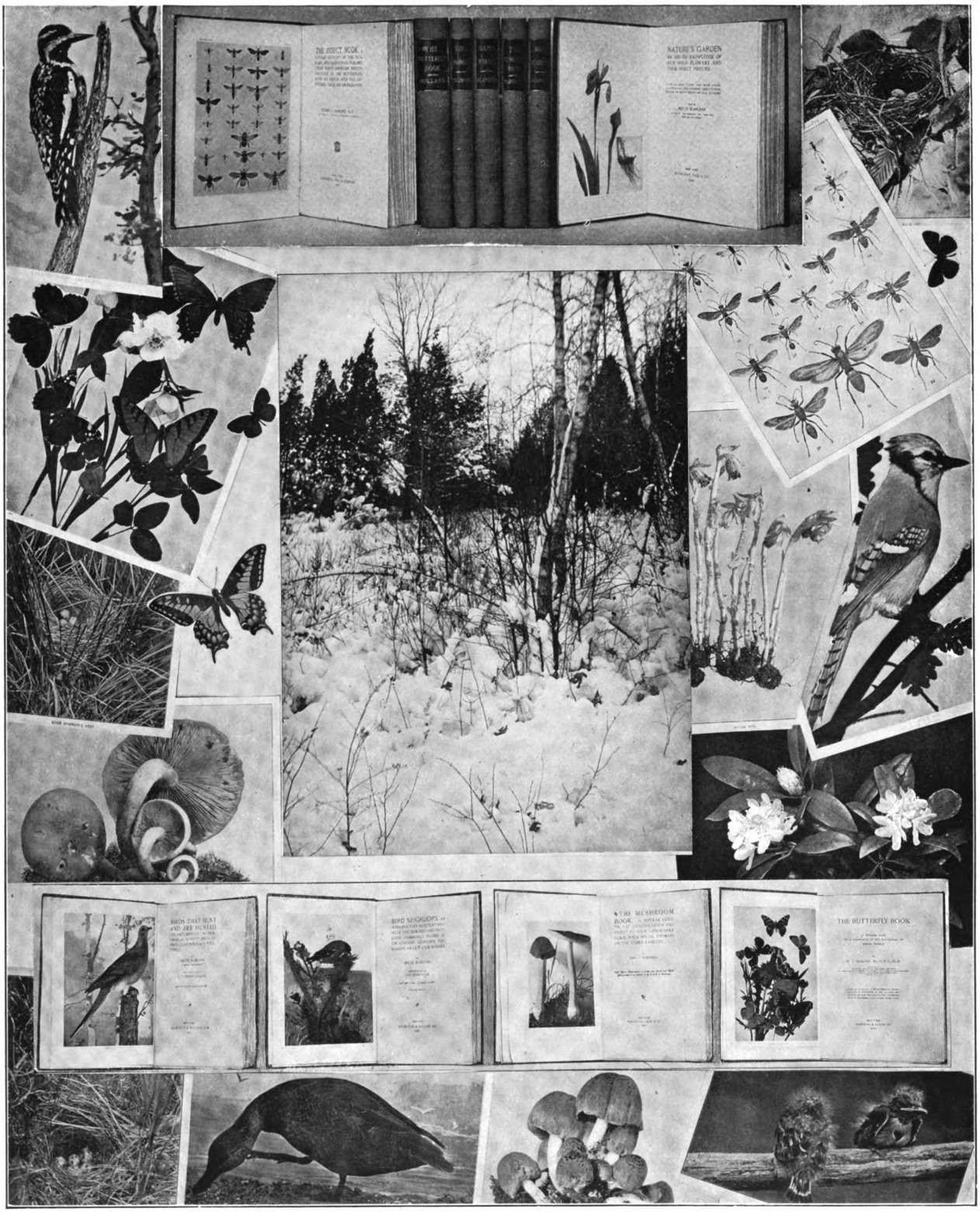

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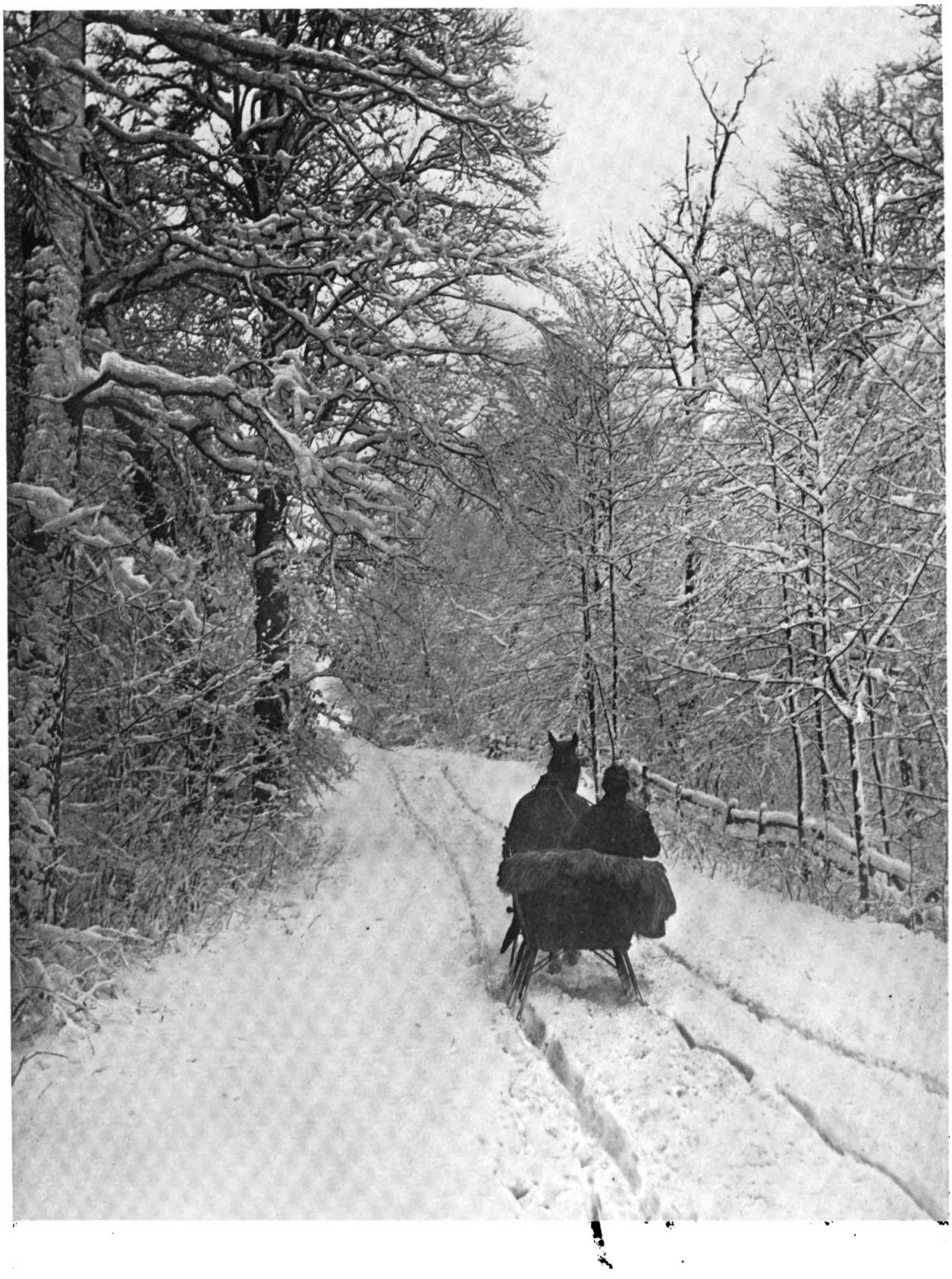

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COUNTRY LIFE IN AMERICA

VOLUME I—NUMBER 4
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February, 1902

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TREES AT LEISURE

By ANNA BOTSFORD COMSTOCK

"No winter scene is perfect without the evergreens"

IF we could know the part the trees have played in the æsthetic education of man, mayhap we should find that they began this great and silent schooling when the savage, weary of his chase in the hot sun, sought refuge in their grateful shadow; while resting there, his eyes lifted to the overhanging branches, there may well have come to him an uplift into vague consciousness of a realm of beauty as far above his ken as the branches and shifting leaves were above the reach of his hand. Eons may have passed before man gained sufficient mental stature to pay glad tribute to the tree standing in all the glory of its full leaf, shimmering in the sunlight, making its myriad bows to the vagrant winds. But it was not until ages later than this that the human eye grew keen enough and the human soul large enough to give sympathetic comprehension to the vision of bare branches laced across changing skies, which is the tree lover's full heritage.

The mortal who has never enjoyed a speaking acquaintance with some individual tree is to be pitied; for such an acquaintance once established, naturally ripens into a friendliness that brings serene comfort to the human heart, whatever the heart of the tree may or may not experience. The trees, like other friends, have their periods of reaching out for sympathetic understanding. How often this outreaching is met with repulse will never be told; for tree friends never reproach us, but wait with calm patience for us to grow into comprehension. In winter, we are prone to regard our trees as cold and bare and dreary, and we bid them wait until they are again clothed before we may accord to them comradeship. But it is during this winter resting time that the tree stands revealed to the uttermost, ready to give its most intimate confidence to those who love it. It is indeed a superficial acquaintance that depends on the clothing worn for half the year; and to those who know them the trees display even more individuality in the winter than in the summer. The summer is the tree's period of reticence, when, behind its mysterious veil of green, it is so busy with its own life that it has no time for confidences, and may only fling us now and then a friendly greeting.

The recognition of trees in the season of winter is a matter of experience and may not be learned from a book. Often the differences are too subtle to put into

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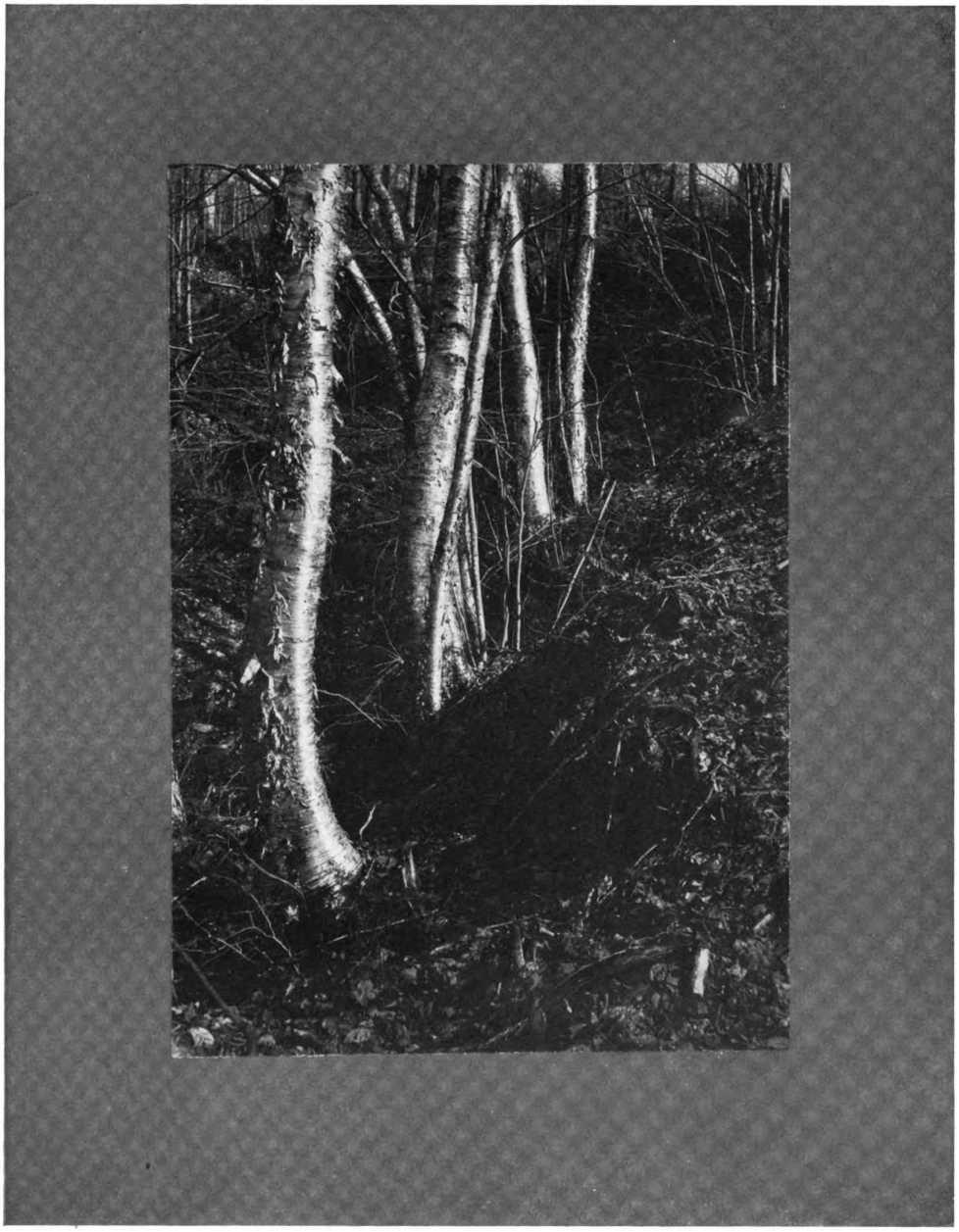

"The birch coquets with us with her untidy silken ribbons." The yellow birch in the woods of Vermont

words; but some species portray their individuality in such a graphic way that the wayfarer, though a fool, need not err therein. Such is the elm that graces our meadows and fields, where it marks the sites of fences present and past. At no other time of the year is the American elm more beautiful than when it traces its flowing lines against snow and gray skies. Whether the tree be vase- or fountain-shaped, there is in its great trunk a grace shown in the upward expansion which is continued in the uplift of the spreading branches and finds perfect expression in the final twigs that droop as if in loving memory of the summer's burden of leaves, in token of which the oriole's deserted nest is tenderly held in safe keeping.

In sharp contrast to the benignant and inviting curves of the elm are the self-centered lines of the isolated sugar maple. However, even this tree is more graceful in winter than in summer. Now it displays its many straight branches lifted skyward and ending in finely-divided but well-ordered sprays; while earlier, it was simply an elongated green period that served but to punctuate the summer landscape. Widely different in habit is the great maple of the woodland, whose noble bole rises, a living pillar, to the arches that uphold the forest canopy. We do not need to look at its high branches to know it; for its shining gray color and a certain majesty of mien proclaim at once its identity and its place as a peer in the forest realm. This tree seems to need to have its close-fisted bushiness pruned away by jealous neighbors to make it great and fine and generous in its shape and proportions. To those who think a maple is simply a maple, we would like to point out in contrast to the tree just mentioned, the graceful, smooth-barked red maple, that, true to its name, keeps its bit of winter landscape warm with its glow, each one of its bud-laden twigs a ruddy dreamer of scarlet past and crimson future.

But to return to the field, there are other tree tenants of the safe fence corners that are worth knowing: the low, broad thorn-apple with its larger more or less horizontal branches dividing and subdividing into a frenzy of twiglets, making a fitting framework for the great bridal bouquet that it will be next June; the straight-limbed bird-cherry with its bark perhaps in ragged transverse rolls; and the sumacs, like bronze candelabra, holding their dark panicles aloft, black sockets whence once blazed crimson flame.

Many of the trees planted by man for man's enjoyment give as good returns in winter as in summer: the honey locust rearing its slender height protectingly above the homestead, or above the memory of one, its great twisted branches making picturesque any scene, however

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"The oak cannot be spared from the winter landscape." Moss-hung oaks in Georgia

homely, its maze of twigs still holding the great rolled pods which some time before the winter is over will skate away over icy snowdrifts and plant themselves far from the parent tree; the black locust, less picturesque, seeming conscious that it is ragged and shabby in its nakedness and so retaining a scanty garment of its little rustling pods until spring shall again bring to it its exquisitely wrought leaf mantle; the horse chestnut, painting itself in broad style against the winter sky, its sparse, bud-tipped, clumsy twigs looking like knobbed antennæ put forth to test the safety of the neighborhood; the tall, straight, cut-leaved birch with its central column of white, and white branches ascending stark and stiff and then suddenly breaking into dark fountains of deliquescence; the Lombardy poplar, a spire of green against summer horizons, now a vague vision, a wraith, through whose transparent form we can see the sky and landscape beyond; and as picturesque as any, the old apple tree, its great, angularly twisted branches bearing a forest of aspiring shoots.

The stream valleys give us trees of strong individuality. The willow, unwilling even in summer to be mistaken for any other tree, asserts its peculiarities quite as vigorously in winter, when it displays its magnificent trunk and giant limbs upholding a mass of terminal shoots that tinge with warm ochre yellow the cold winter landscape. The sycamore loses nothing of its effectiveness when it loses its foliage. The dull yellow of the trunk and the pale gray of the great, undulating, serpent-like branches, blotched with white, show as distinctly against the snow as they did against the summer green; the very smoothness of the few large limbs makes us unprepared for the way they break up into a madness of terminal branches, to which still cling here and there a button-ball not yet whipped off its fibrous string. How different the young trees, so slender and shapely, and overfond of reflecting their graceful proportions in the still pools of the streams! It might seem that the stream guards wore a uniform of their own, since so much like the sycamore is that guardian of western rivers the cottonwood, on which, though it be ragged, unkempt and blotched, the traveler's eye lingers lovingly.

Another water-loving tree, which revels in swamps, is the pepperidge; extravagant in horizontal branches and twigs when young, it stands gaunt and bare when old, its main trunk looking like a decrepit mast with a few dilapidated yard-arms hanging to it. The tamaracks are its neighbors and flaunt their scant, jaundiced spires against the blue sky, unconscious of the pitiful picture they make in their coniferally unnatural nakedness.

In the forest depths in winter we trust more to the shape and color of the trunk and the texture of the bark than to the branches above for recognition of old acquaintances. The beech wears the crest of its nobility woven into the hues of its smooth, firm bark; its lower branches and the young trees retain all winter many of their leaves—russet now and sere, with the wind whispering lonesomely through them. The beech retains not only its leaves, but also the burrs of its nuts, which it hangs in constellations

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of three-lobed stars, quenched and black against the zenith sky. Novices often confuse the trunk of the beech with that of the birch, for the very inadequate reason that both are transversely striped with white. The beech's stripes are woven into the texture of the firm, fine-grained bark, and are as unlike those of the tatterdemalion birch as could well be imagined. The white birch coquets with us with her untidy silken ribbons from the forest depths in a manner which a self-respecting beech would scorn; and she is not the only one of her kind that wears shining ribbons, though we are less likely to notice the darker colors of the black and yellow birches. In all the woodland there is no more beautiful bark to be found than that which pencils the trunk of the ash in fine vertical lines and fades away into smoothness on the lower limbs. The ash branchlets, though of pleasing lines, are few and coarse and clumsy; those of the white ash give the effect of being warped into terminal curves. The hop-hornbeam ever tries to tie itself into a knot with its twisted slender branches; often even the grain of the wood is hard-twisted, so that the close bark shows as a loose spiral. One wonders if it is because of this vital writhing that the sap which slowly oozes from the trunk in spring soon turns red as blood.

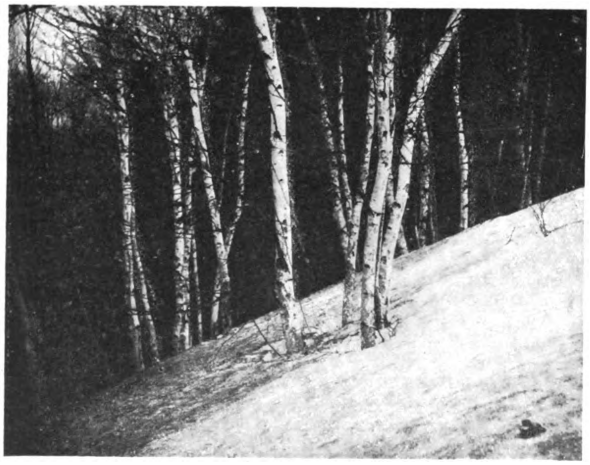
The oak cannot be spared from the winter landscape. It

"Brave tree folk are these"
Surviving redwood at Palo Alto, California

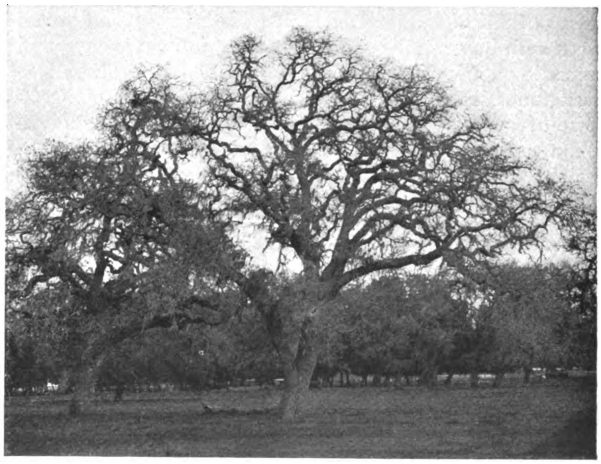
is only when the oak stands bared like a runner for a race that we realize wherein its supremacy lies; we have made it a synonym of staunchness and sturdiness, but until we see the massive trunk and the strong arms bent and gnarled for thrusting back the blasts can we understand why the oak is staunch. But there are oaks and oaks, and each one fights time and tempest in its own peculiar armor and in its own way. Witness the difference between the conservative, respectable white oak of the East and the live oak of Florida or California — "picturesqueness gone mad," as an artist has said of the latter. The hickory is the oak made slender and refined — its horizontal limbs are short in comparison, and grace is gained where strength is lost.

No winter scene is perfect without the evergreens; although these, until dead, never display to our curious eyes the history of their struggles for life, as written on their naked branches; yet to them alone among trees has a voice been given. The poet has often been a more sensitive listener than seer in the natural world; and from the earliest times he has resung for his fellow-men the mysterious song of the pine.

Although our evergreens retain their working garb, yet they are trees of fine leisure during the months of frost and ice; and whether they lift their mighty heads singly above the



"The tatterdemalion birch." The native white birch of New England



"Picturesqueness gone mad." A California oak

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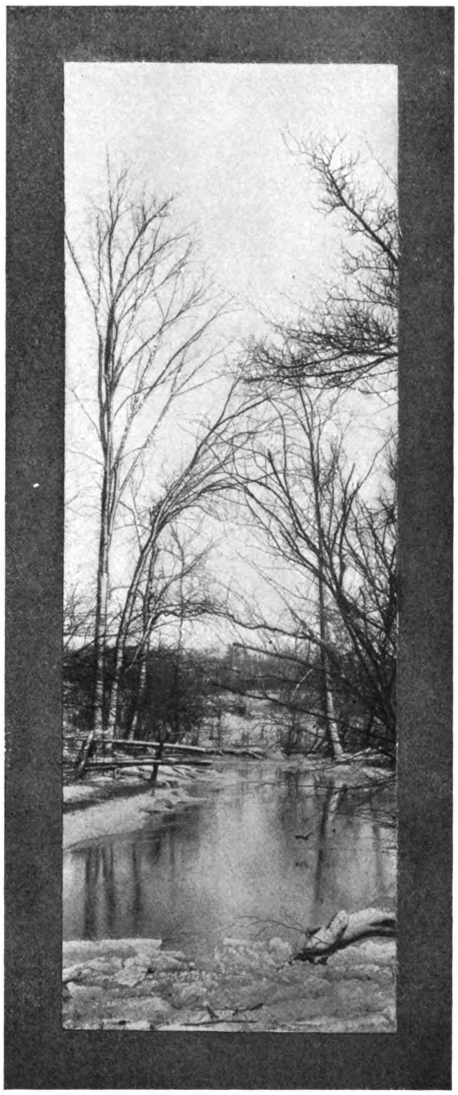
forest level or group themselves in green-black masses, they make strong the composition of the winter picture. Nothing brings out the perspective of the snow-covered hills like a clump of great hemlocks in the foreground, and the tassels of the pine are never so beautiful as when tossed in defiance against the stormy winter sky. Brave tree folk are these conifers of ours, whether their span of life extends over three centuries, like our pines, or twenty, like the redwoods. They give us a wide sense of the earth as an abiding-place.

Some winter mornings even the most careless are obliged to pay admiring tribute to the trees, for again are they clad, this time in the glittering raiment of soft snow. Such a day is the apotheosis of winter, and one must needs go into the still forest and worship. The stillness is commensurate with the whiteness. The trees themselves seem conscious of it, and rebuff the iconoclast breeze with their slowly and silently moving branches. How differently the same forest meets the wind a few days later when a storm is brewing! Then the stiff branches with their twig-sprays tear the howling intruder into whistling shreds, until there is an all-pervading roar that is unlike any other of nature's sounds. It might well be compared to the surf breaking on a rocky shore, if it were not that it seems overwhelming instead of restless, conquering instead of unceasing, sentient instead of unaware.



"It is during this winter resting time that the tree stands revealed to the uttermost"

February is of the winter months the impressionist, the colorist. In December the forest masses on the hills were brown or gray; now they are painted in warm purple and the same royal color is to be seen in the shadows of the snowy valleys through a veil of sapphire haze that brings sky and forest and white hills into restful unity. This slowly increasing color of the late winter in our northern landscapes is not often appreciated. Long before the frost leaves the ground and the snow sinks away from the hillsides, the impulse of the warming sun is caught in bark and buds. It is this warm color of the forest in February that brings to the heart the first subtle prescience of spring, even before the chickadee feels it and makes the still woods echo with his lively, cheering song.

Happy is he who keeps his picture gallery always with him! His life is full of joy. To each of us is given a sky which many times a day is painted anew for our delectation; and it is never more perfect than when in winter it is a background against which the trees are etched. Whether the horizon be crimson with the sunrise or gold with the sunset, whether it displays the blue of the turquoise uplifted into the color of the rose on snowy mornings, or glows with the amethystine splendor of afternoons or the beryl tints of evening, the bare branches strongly outlined against it in harmonious contrast, complete the color chord — with infinitely varying hues the trees there illuminate, and with exquisite and intricate writing the trees there sign the diplomas of those whom they have educated.

"The glittering raiment of soft snow"

"The pepperidge, extravagant in horizontal branches"

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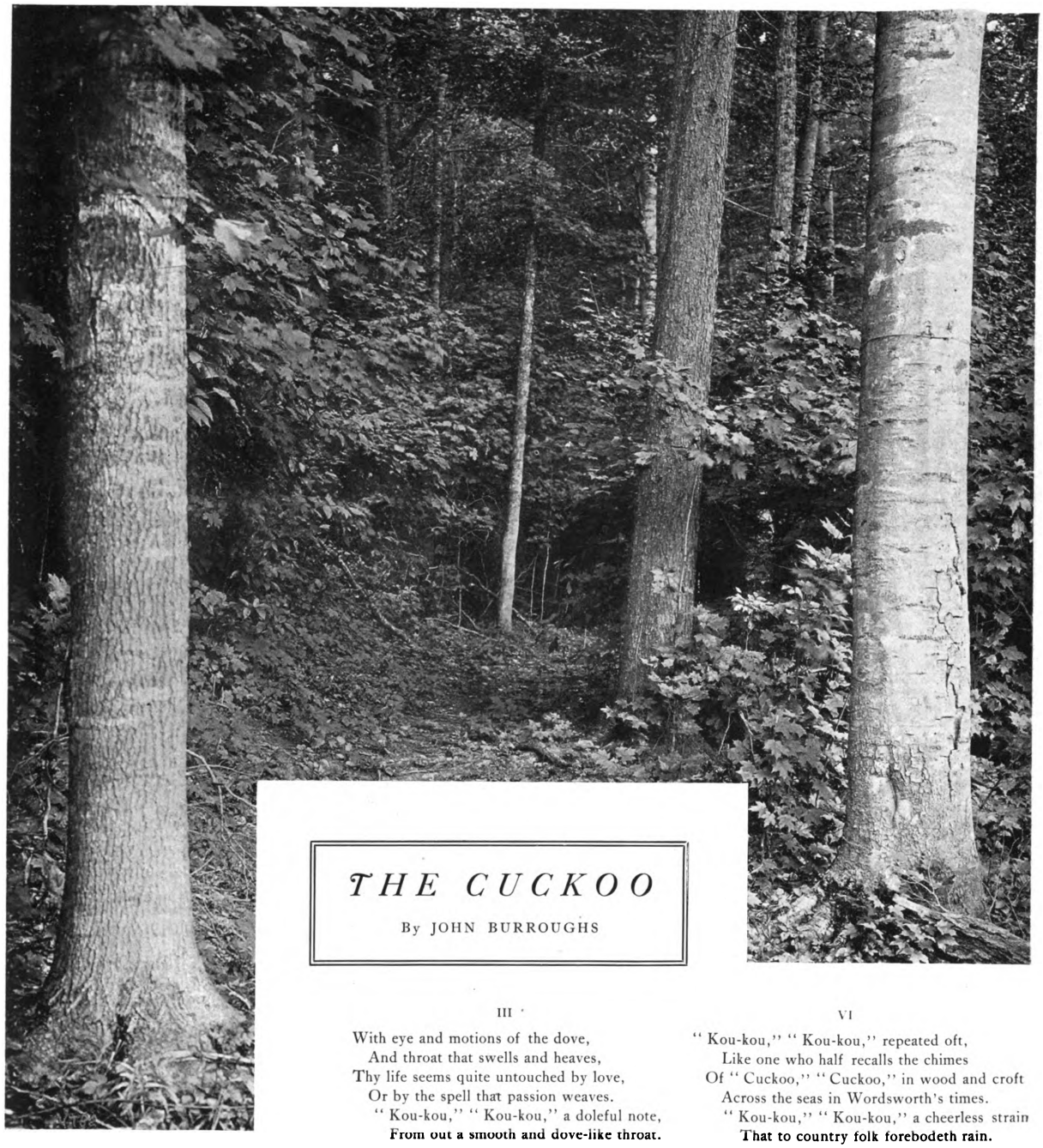

THE CUCKOO

By JOHN BURROUGHS

I

Strange, reserved, unsocial bird,
  Flitting, peering 'mid the leaves,
Thy lonely call a twofold word
  Repeated like a soul that grieves,—
  "Kou-kou," "Kou-kou," a solemn plaint
    Now loud and full, now far and faint.

II

A joyless wingèd anchorite,
  Or hapless exile in the land,
Oft intoning in the night
  A rune I fain would understand,—
  "Kou-kou," "Kou-kou," a boding cry,
    When night enfolds the earth and sky.

III

With eye and motions of the dove,
  And throat that swells and heaves,
Thy life seems quite untouched by love,
  Or by the spell that passion weaves.
  "Kou-kou," "Kou-kou," a doleful note,
    From out a smooth and dove-like throat.

IV

Thy nest a little scaffolding
  Of loosely woven boughs,
Compared with nests of birds that sing,
  A hut beside a house.
  "Kou-kou," "Kou-kou," unsocial sound,
    When blithe and festive calls abound.

V

Art prophet of the coming rain,—
  The raincrow-wise in weather lore?
Or dost thou try to say in vain
  The words of thine of days of yore?
  "Kou-kou," "Kou-kou," a weird call,
    When happy skies are over all.

VI

"Kou-kou," "Kou-kou," repeated oft,
  Like one who half recalls the chimes
Of "Cuckoo," "Cuckoo," in wood and croft
  Across the seas in Wordsworth's times.
  "Kou-kou," "Kou-kou," a cheerless strain
    That to country folk forebodeth rain.

VII

Thy voice hath lost its blithesome tone,
  Thy ways have changed from gay to grave;
Do nesting cares make thee to moan
  Since finchie now is not thy slave?
  "Kou-kou," "Kou-kou," in voice forlorn,
    As if thy breast were on a thorn.

VIII

But thou hast gained in love, I ween,
  And gained in hue a burnished brown;
In thicket dense thy nest is seen,
  And love of young is now thy crown.
  "Kou-kou," "Kou-kou," a call of love,
    Though doleful as a mourning dove.

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Skibo Castle from the South Meadow, showing the new south frontage

A GLIMPSE OF SKIBO CASTLE

HOW AN EMINENT AMERICAN LIVES ACROSS THE SEA—THE SCOTTISH HOME OF ANDREW CARNEGIE

By A SCOTCH COUNTRY EDITOR

MR. CARNEGIE is a man of bold strokes—no reference to his golfing prowess—and whether he initiates and carries through a purely business transaction, startles the world by his designs with his millions, or, what more immediately concerns our present purpose, buys and improves a landed estate for a summer home in Bonnie Scotland, he shows his genius for attempting, and achieving, great things. He would not be Andrew Carnegie were his aims and actions otherwise than ample and masterful. Nineteen out of every twenty purchasers of Scotch estates, say in the Highlands—and the Highlands, by the way, afford the best scope for every recreative and sporting purpose of a wealthy man—simply content themselves with following up their purchase by either improving or rebuilding the "laird's residence;" and in any case the new structure will most certainly be larger and more akin to a castle than the original, and, along with that, the sporting resources and minor amenities of the property will invariably be increased and enhanced. But in Mr. Carnegie's case all that and much else has already been done, and still there is more to follow. At Skibo he has not only rebuilt the castle, which promises to be the finest laird's residence in the north of Scotland, but he has vastly improved his moor and forest stocks and transformed his angling lochs and streams into the most productive for their size in the Highlands; he has added to the former angling resources of the property by constructing new water channels and lake areas, one of the latter having been reclaimed from the open sea by means of an embankment of huge dimensions almost wholly composed of masonry and concrete, leading up to which (from seawards) there runs a skilfully constructed "fish-ladder," along which the salmon, at spawning time, can pass into the large artificial loch above; he has built a handsome stone and concrete pier for his private yacht; he has laid out a delightfully sportive golf course of nine holes, and built quite a model golf house; he is erecting palatial swimming baths close to the castle, wherein salt water from the sea and fresh water from the mountain rill will be available for the bathers. He is constructing another huge embankment at a point below the swimming baths where the sea leaves a great expanse of exposed mud at every ebb of the tide, the enclosed part of it to be filled up with fresh water from the hill streams that flow by; and in this new expanse of water a number of artificial islands are to be "built," thus transforming what has hitherto been an ugly wilderness of mud into what is intended to represent a "fairy lake." Much else that it is unnecessary to detail has been done at and around the once romantic castle of

Ruin of an old flax mill on the Skibo property

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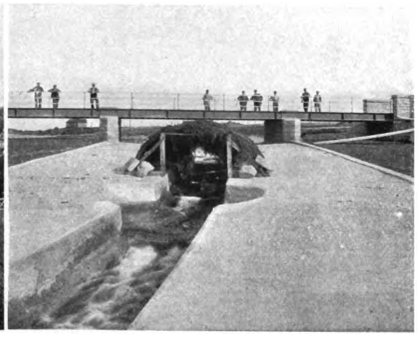
The dairy and pet donkeys

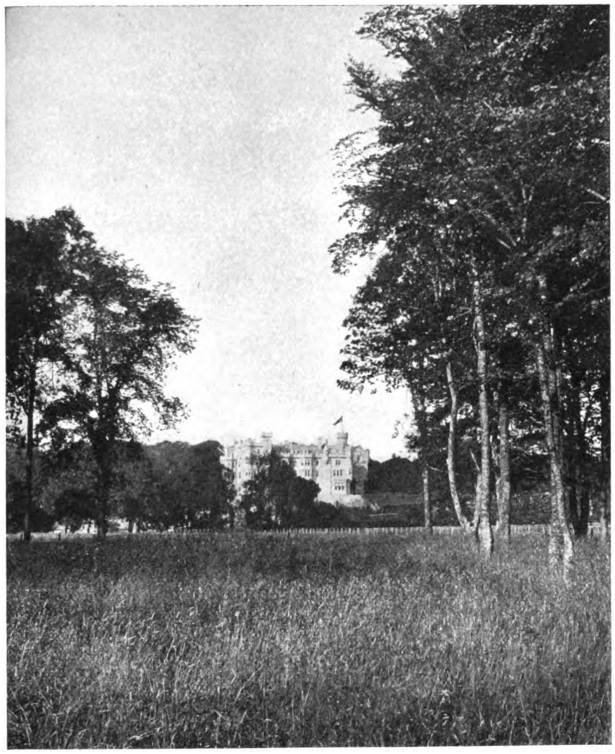


The fish ladder

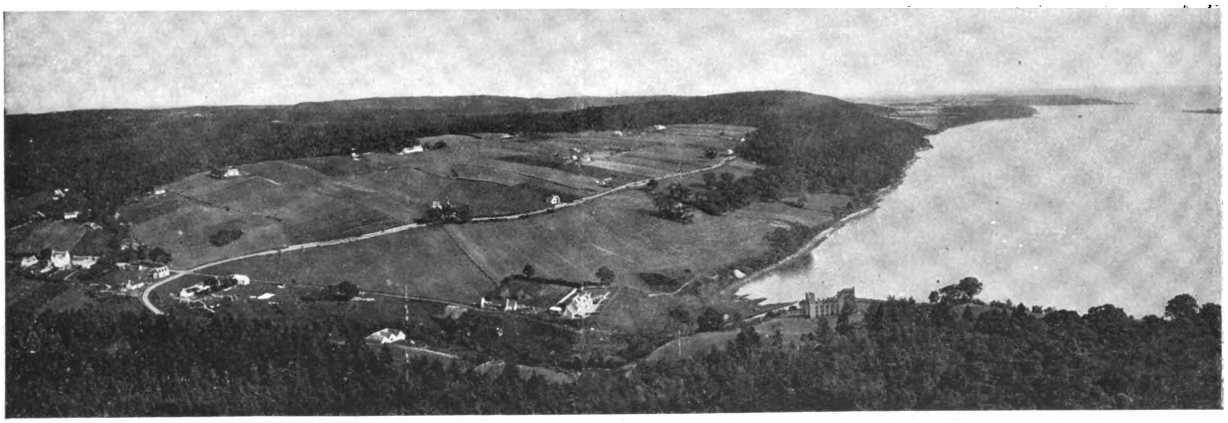
The golf house

Skibo, and the improved grounds, gardens, the model stables with their stud of twenty steeds, the coach houses, home farm, dairy, poultry runs, and the like, would require a special article to themselves. Suffice it to say that in the course of a year or two, when the improvements are completed, Mr. Carnegie's castle and grounds at Skibo will be among the chief wonders of the Highlands of Scotland.

Skibo has ever been one of the most romantic spots in a country that is wholly romantic. Possessing every feature typical of a Highland landscape, it is equally remarkable for its display of scenes characteristically Lowland. This constitutes the unique charm of Skibo, and, in Mr. Carnegie's view, gives it its peerless value—mountain and moorland, crag and corry, woodland glade and grassy meadow, each with its distinct and substantial attractions for the varying moods and manners of holiday life in the country, and that country none other than Bonnie Scotland. Here Mr. Carnegie and his friends can yacht, shoot, fish, golf, drive and "do" the hundred and one recreations and amusements of the Scottish laird with means. In shooting he can have choice of the whole range of Scotland's game-bill—high and low ground in less than a day's march, affording ample opportunity for that most delightful occupation, the making of "mixed bags." He need have no trouble any day in autumn in excelling the famous bags made by that prince among Scottish sportsmen, the late Charles St. John, author of "A Tour in Sutherlandshire"—bags which sometimes included as many as fifteen different varieties of fur and feather, not to speak of fin. In fishing—and Mr. Carnegie takes more kindly to the rod than to the gun—he can have burn and river trout, salmon, sea trout and deep-sea fish—the latter off his steam yacht or its dinghy with the hand or long lines. The burn and river trout run up to two pounds. Salmon, however, in the new loch should run well into double figures from and after



Skibo Castle from the woods



The Skibo country. Crofts and Crofters' dwellings, with Moray Firth in the distance

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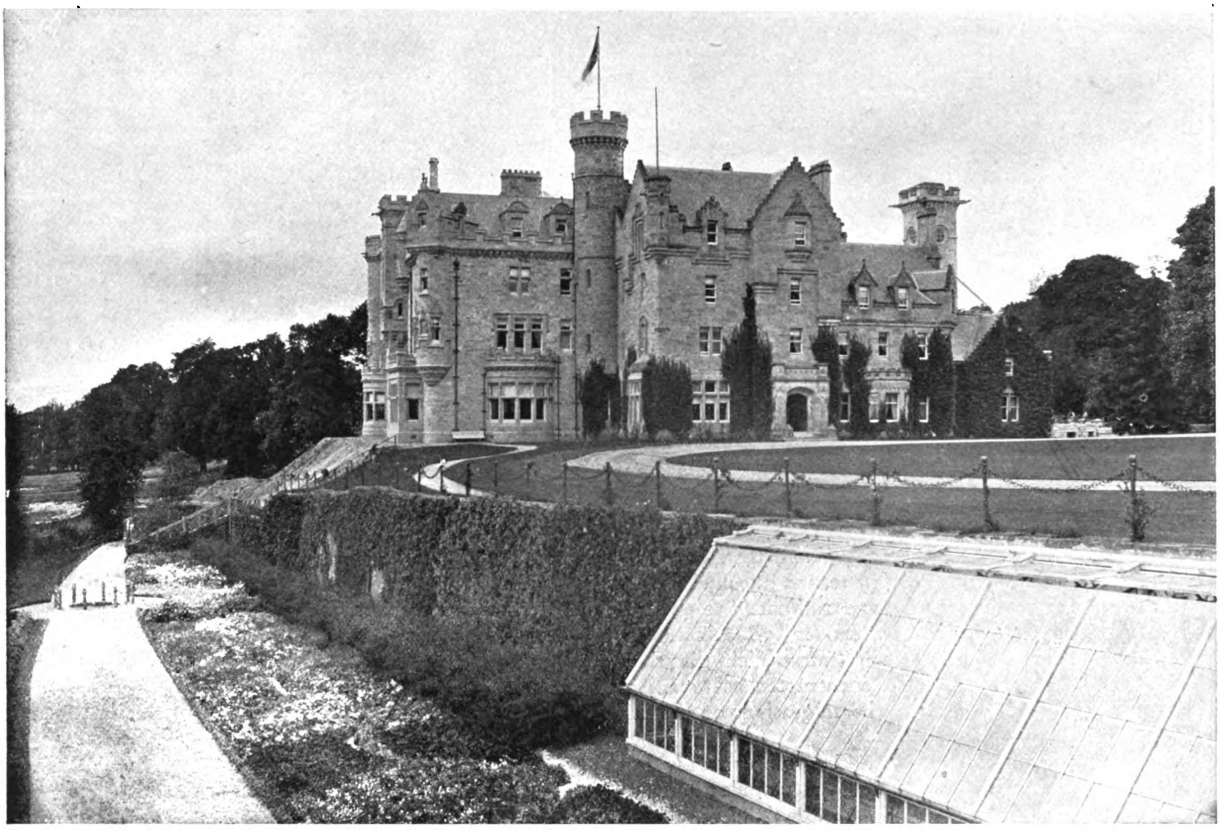

Skibo Castle from the south terrace

next year. Mr. Carnegie, by the way, has no fear that the salmon will refuse to negotiate his newly-constructed ladder. Like Charles St. John himself, he believes in the marvelous propensity of salmon to "ascend" from the sea to the loch, the river and the burn. Nothing, indeed, can exceed the salmon's determination to work and wriggle its way up stream, gradually ascending until at last it reaches "rivulets so small and so shallow that you wonder how two

A lovers' arcade. In the woods near the castle

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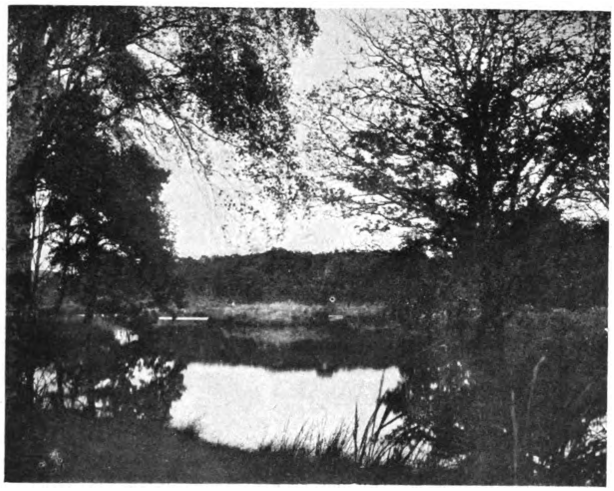

In Skibo woods. Picture taken after 6 P. M. in October

salmon can pass each other in them," and then, when the spawning function is fulfilled, they return during the winter floods to the larger streams and ultimately to the sea. It is a fascinating study, and the "ladder" which connects Mr. Carnegie's new angling loch (into which the river Evelix flows) with the sea is so constructed as to afford every opportunity for watching the migrations of the fish from season to season.

On the golf links, again, Mr. Carnegie can sally out from the Club House (in telephonic communication with the castle and the stables) where he dons the regulation golfer's habilaments, say after a forenoon's deep-sea cruise in the Sea Breeze, and, in company with Mrs. Carnegie, or guests, or alone with his specially retained greenkeeper and caddie, strain every nerve and sinew to reduce his own best record of 46 for the nine holes. The record for the course, by a champion player, is 32, so that Mr. Carnegie's score is certainly a good one considering that he is a comparatively young player so far as practice goes. Mrs. Carnegie, by the way, is an adept wielder of the driver, cleek, lofter, mashie, and putter, and, though also a young golfer, can run up a tolerably good score by pretty play. The Skibo Links, it may be of interest to note, are situated within a few miles of the celebrated Links of Dornoch, famous long before 1630, in which year Sir Robert Gordon, the traveler, wrote of them as the "fairest and largest linkes or green fields of any pairt of Scotland, fitt for archery, goffing, ryding, and all o' the exercise; they doe surpasse the fields of Montrose or St. Andrews." The Skibo "green fields" are practically a continuation further up the coast of those of Dornoch.

An angling lakelet within a short distance of the castle

But this sketch must not run into a mere catalogue of Skibo's many attractive charms. These would occupy a goodly volume — and volumes have been devoted to much less. Its scenic beauties, however, cannot be overlooked, for these are the delight of every tourist who has "done" the Sutherland country. Nothing finer can be met with than the views, perfect pictures, from the Rosshire shore of the Firth of Dornoch, looking either northward, eastward or westward, and all of the earth's crust that the eye commands in all three directions, when the spectator stands just opposite the Castle of Skibo, belongs to its new laird. The westward view is particularly charming, taking in the white mass of the castle in its framework of dark pines, and, in front, looking to the northwest, the richly pastoral and wooded slopes of Spinningdale, backed by the bold mass of the Migdale Hills and the fainter blue of the "Meall" ridges in the farther distance. From the Skibo side the view is just as remarkable, whether one looks across country from the summit of the castle

Skibo avenue, leading to the castle

tower, from the brow of Migdale Rock, on the height above the village of Bonar, the largest on the property, where, by the way, and also at each of the other larger villages on the estate, there are handsome "Carnegie libraries."

From every possible viewpoint one looks over country that is rich in historic associations, not the least romantic being those that cluster around Skibo Castle itself. Skibo (pronounced Skeebo) was originally Norse, and several large standing stones in the castle neighborhood are said to mark the burying-place of Danish chieftains. In the thirteenth and fourteenth centuries the castle was one of the principal residences attached to the Bishopric of Dornoch Cathedral, which dates from the eleventh century, and part of which still remains. Towards the end of the fifteenth century it was acquired by the Grays, a sept of the old Grays of Gray and Kinfauns in Perthshire, the family at present holding the earldom of Moray, perhaps the most famous in the scroll of Scotland's old nobility. The first Gray who came north was a fugitive from justice, having fled into the wilds of Sutherland after killing the then knight-constable of Dundee in an affray. After the lapse of a few years he married into a Sutherland family of rank, succeeding to lands belonging to the Mackays, lands which in

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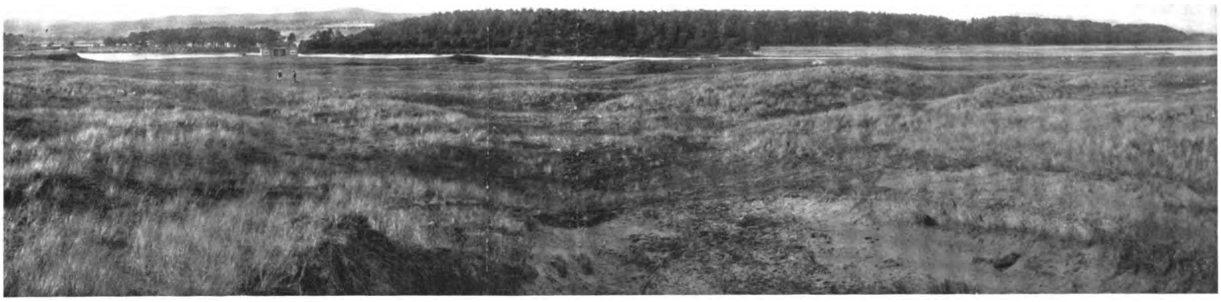

The golf links at Skibo

course of time were exchanged with John, Earl of Sutherland (ancestor of the present duke) for Skibo. From the Grays the estate passed into the hands of a Sir Patrick Dowall, in 1744, and after only a two years' possession he disposed of it to the Mackays of Reay, from whom again it passed to a succession of different proprietors, of whom the present is Mr. Andrew Carnegie.

It may be of interest to note that Pittsburg Institute boasts of a reminder of Skibo's barbarous days in the shape of a man-trap, discovered by Mr. Carnegie's workmen when demolishing part of the old castle for the new improvements. These, so far, are the only relics of the castle's "good old times" which have come to view since Mr. Carnegie's possession of Skibo, but it would not be surprising if further antiquities of some importance should be heard of ere the Skibo improvements are completed. About a dozen miles to the west of the castle a local antiquary recently discovered a valuable hoard of Bronze Age implements and ornaments, which Dr. Anderson, of the Edinburgh Antiquarian Museum, pronounces to be the most remarkable of the kind hitherto met with in Scotland. The hoard was found near a granite knoll on the wild moorland, and near by two hut circles were discovered at the same time, with the remains of many Old World tumuli and cairns. The Skibo country, by the way, is remarkable for the great number of stone circles, mounds and standing stones which abound within its borders. Its Pictish tower and vitrified fort are also well known to antiquaries. But whatever may have been the ancient glories of Skibo, the estate of to-day is what more immediately concerns and interests Mr. Carnegie. When the improvements now in progress and those in contemplation are happily complete he will be the proud possessor of an "earthly paradise" indeed.

It was perhaps only natural that Andrew Carnegie should gravitate again Scotlandward. However attractive other lands may become to a Scottish exile, the old home ever remains the same —the one romantic spot of earth to which his heart as naturally and irresistibly turns as the needle does to its pole. His is, indeed, the land of the bens and the glens and the heroes. There is something in its soil, something in its atmosphere, something in its incomparable song and story, something bred in the bone, something which no Scotchman can explain, which binds him to the land of Wallace and Bruce, of Covenanters and Martyrs, of Burns and Scott, and many more and much else, by cords which even Death, as an old Scotch worthy once said, only makes the more secure and permanent. In the case of Andrew Carnegie we, Scotsmen, say he has come hither in the capacity of landlord and sojourner to prove beyond doubt that he has no intention of forgetting the land which gave him birth—a land which has woven of its own stern and rugged grandeur into the woof and warp of his being, for there is no doubt that Andrew Carnegie's genius is most distinctively Scottish at bottom, thus giving the necessary stability and grit to the faculty of resource and pushfulness which is substantially American.

While seeking his own happiness at Skibo Mr. Carnegie strives to make others as happy in their particular lot and circumstance; and in all this he has the willing and devoted help of Mrs. Carnegie, a lady beloved of every man, woman and child in the wide Skibo dominions. Mr. Carnegie's relations with his tenants strikingly recall the best traditions of the old Highland land-fathers. Indeed, he struck the true chieftain note when he declared on the occasion of his first home-coming to Skibo that the best title-deed to the land and the best key to the castle was the possession of the hearts of his people. This attachment between landlord and tenant comes from something more than money. In Mr. Carnegie's case it has resulted from their knowledge of his own innate kindliness of heart and their experience of his ever frank and genial courtesy of demeanor even towards the humblest "auld body" he meets by the wayside. It is, therefore, no wonder that every traveler in the Skibo country hears nought but the best of wishes for Dr. Carnegie, as his people now delight to call him. The Gaelic proverb common among the Highland peasantry, "Gu mo fada thic ceo as a shimilar" ("long may his lum reek"), that he and his may enjoy long life and happiness at Skibo, sums up, in a homely but expressive fashion, the wishes of them all.

Over the hills from Skibo

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AT PEACE

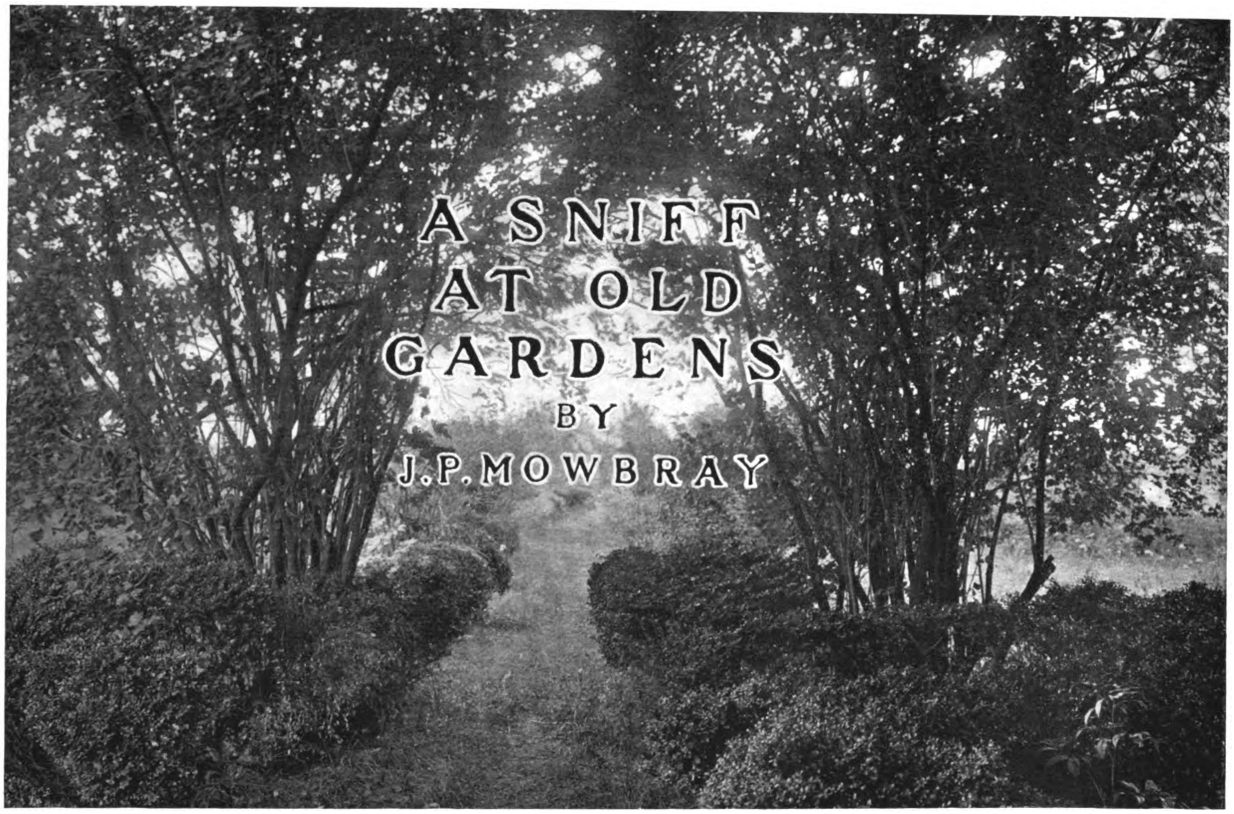
By ROBERT LOVEMAN

Every little blade of grass
Says "Good-Morning" when we pass;
Every tree doth nod and say,
"'Tis a rare" or "Rainy day";

Every rose on every bush,
Be it Brier, Moss, or Blush,
Lifts its lips in fragrant bliss
For a caress or a kiss.

Would we only list and hear
All they whisper in our ear,
Thou and I need never know
Foolish words like "Want" and "Woe";

I and thou in tranquil ways
Might employ the nights and days;
Nature loveth to confer
Peace on him who heedeth her.



MEMORIES AND REMNANTS OF GARDENS AFORETIME—VESTIGES OF A PAST HOME-LIFE—THE OLD HUDSON RIVER MANORS

THE old gardens are the old melodies of the earth, pleasantly remembered as preludiums to a greater floral harmony. But unlike the other old melodies, they cannot be restored to the sense, and must live only in the recollection. All the homely compositions that our mothers wove in colors and scents have vanished as compositions, as completely as their toilets. Some straggling notes may be caught here and there in back gardens in the shape of quince trees or hoary gooseberry bushes, but the annuals and shrubs, which spread themselves in delight at their feet, have disappeared like the old lockets and earrings with which our mothers decorated themselves, and the vestiges that lean against the old fences remind us of the spinning-wheel, the old bake-ovens, and the shoe buckles that some of us have preserved.

To hunt along the Hudson, as I did, rather confidently and quite retrospectively, for old gardens, was, now that I come to write about it deliberately, very much like hunting on Broadway for old fashions. There was not a mode discoverable that went back more than two generations, and if it bore that near-by quaintness, it was a little ashamed of it in the blazonry of a later floriculture. The gardens that we love to read about, just as we love to read about figured waistcoats and quilted petticoats and tasseled boots, may linger in isolation like shriveled grandames along some of the half deserted lanes of New England, or perk themselves still in continental primness about the suburbs of Boston or Salem, where there is a tradition that even the mosses of an old manse may be revered, or they may sit in stomachers and fardingales in the quiet corners of old Charleston, S. C., where the catalpa trees and live oaks still believe in the

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old régime, and the box and the palm trees seem to be arranged in a *minuet de la cour*, or they may be traced in runes and herbaceous remnants along the James and the Pamunky—but on the Hudson the tramp of the passing suburbanite and the plow of the landscape gardener have either trodden them out of sight or thrown them up into more timely splendor.

Whatever charm those old demesnes had would come to us now in restoration with something of the archaic pathos and prettiness of "Sally in Our Alley." In the evolution of floral beauty this music of the earth was then a melody, running into rounds and catches and pleasant madrigals, not yet arrived at the sumptuous splendor of our symphonic times, and one must not expect the descendants of Katrina Van Tassel or Molly Stark to wear the close crimped caps, long-waisted short gowns and quilted homespun petticoats with calico pockets hanging outside.

Here and there are shreds and patches of the old garden times, not utterly sapless. Bits of old box hedge, as prim and square-cut as a Puritan pastor, with perhaps a steepling Lombardy poplar or wormy mulberry tree, one pointing upward like the village spire to where they have all gone, and reminding us of a day when our fathers, in close imitation of their Dutch and English progenitors, went back to Boccaccio for their landscape gardening; the other recalling to us the silk-worm craze. These picturesque vestiges almost seem to us to be trying to sing "Bonnie Doon" or "Barbara Allen" with uncertain voices, but the sturdy annuals that gathered round their roots like the children round the grandame's knees, —the pinks, the rockets, the "bouncing Bets," the annunciation lilies and Sweet William—dear me, you might as well look for Ichabod Crane with his psalmody, or expect to find the American girl of the period in stomacher with an old Guinea-gold ornament and a sweetbrier bud on her breast. The dooryards that were gladdened with hollyhocks and phlox and the casements that were embroidered by the guelder rose have disappeared like states-rights and tambour-work. The Johnny-jump-ups have given way to the ostrich-plumed chrysanthemum and the orchid-flowered canna. Where the Madeira vine tenderly twined itself like a slender strain of Auber's, Clematis Jackmani, the moonflower or the constrictive wistaria—that python of the garden—has wound its convolutions into the old trellis, and threatens to lift the porch itself from its foundations. The Johnny-jump-ups ("Johnny-jumpers" our mothers called them), those children of the summer, romping in staid and lowly delight along our pathway, have been displaced by the riotous petunias—those ballet girls of the garden —who flirt their tissuey skirts to every Offenbach wind that passes and make massed revelry if Zephyrus but wink his eye at them. The little shoots of beauty, together with the four-o'clocks and lady-slippers, so like the prismatics of a new rag carpet, have given up to the finer tapestries of the modern botanist's loom. Cacti and camellias will have pushed them from their stools, and you have but to stray to the edge of the old inclosure, where once the daisies spread their cool white sheets in the summer drought, to see alfalfa or Hungarian millet growing resplendently, where timothy and clover aforetimes were held to be the fat of the land.

I am afraid the restoration of sweet Katrina Van Tassel's garden would be very much like the restoration of "Sweet Louisa Pyne's" voice against our modern orchestra. The critical opinion would be disastrously terse—"thin." Nor would it fare much better with those few gardens that had the benefit of wealth and leisure in old times. I much fear that Washington's landscape gardening at Mount Vernon, with his mock oranges and French willows and English yews, that he no doubt intended to cut and trim into preposterous shapes, would to us seem very much like somebody trying to play a Gregorian chant on a spinet. He writes to Governor Clinton, of New York, thanking him for some balsam trees, and speaks pleasantly of the grape vines which the Chevalier de Lucerne has promised to send him from France. The entries in his diary in 1785 show him to be planting ivy, which, I dare say, some one brought him from Kenilworth, and which, with true English persistence, has alone survived to our day of all his planting. Elsewhere he has recorded his setting of a green-brier hedge, interspersed with hemlock trees from Occoquan, and then he is sowing "holly bushes in drills."

In those days it was necessary and customary to go to England, where beauty was still worshiped according to its perspective, for that which was oldest and best, and for many years after the American revolution we imitated England in our gardens much more servilely than we did in our literature, and the early plaisances of America no doubt reflected the demure beauty of Thompson and Cowper—Cowper, of whom Taine said that he looked at a tree and argued about the immortality of the soul. It took us a long time to learn that it was an affectation to trim our log cabins with English ivy and try to make them look castellated.

Since Washington Irving died, and took the Hudson River School with him, floriculture in America, like a great many other things, has put on her seven league boots. If Irving should come back to Sunnyside, or the great chief after whom he was named should return to Mount Vernon, they would know their places only by the sacred decay. Veneration, like the hand of death, has stayed a ruthless progression.

History does not try to recall the steps we made as a nation by the flowers we planted on our way. History is taken up, for the most part, with the fields that it devastated, or the effigies that it set up when the strife was over. And yet, Beauty did not let go of the hand of Thrift, only her invitation was so broad and generous that when our political liberation came and the great vistas of the continent opened and man went up to possess the land, Nature, with her sudden largesse of delight, shamed and shadowed his primitive art with her bounty. We picture to ourselves the pioneers at the close of the eighteenth century, wholly unaware of the stupendous voyage their ship of state was entering upon. They were hardly yet men of destiny, only lovers, with their sweetheart Outdoors. They broke over the Alleghenies into a measureless paradise, hand in hand with freedom and beauty, and we think of them in Austin's pretty lines:

> "My crew shall be only Youth and Grace,
> She lissome, he steel of limb;
> His bronze brow bent on her wild rose face,
> And her wild rose face on him."

By and by, when they had made their homes, their wives and daughters would plant poppies and London-pride and Canterbury-bells, and even foxglove, not one of which takes kindly to our climate and soil, but all

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"Now and then a garden retains its old-time flowers, with hedge-rows leading where they will"

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It was not till the British Horticultural Society was founded, somewhere I think in the beginning of the nineteenth century, that the serious study of floriculture became at all popular and Englishmen began to admire the intrinsic qualities of the garden. America never went through the European tergiversations of taste. The horticultural manias and artificial devices scarcely reached them. Even the tulip craze fell languidly on our shores. But it lasted in England down as late as 1836 when, at the sale of Mr. Clarke's tulips at Corydon, one hundred pounds was paid for a single bulb called "Fanny Kemble."

We shall never have any Chatsworth or Versailles, or Windsor Palace Gardens in this country, not because we have not the taste or the wealth to create them, but because the spirit of the country is distributive. It proceeds upon the principle of diffusing both intelligence and beauty, rather than of concentrating them. It is not with the park and palaces that English literature so lovingly deals, but with the cottage life, wearing everywhere the chaplets of rest and adornment. No householder in England is so poor as to be without his gilliflowers and bit of jasmine or hawthorn hedge; and what looked to Lowell like the "best groomed country on earth" appeared to Washington Irving to be the prettiest and most contented. One has to look at England through her flowers to see her real face.

What England has done in this respect guardedly, America is doing with her customary opulence and prodigality. She seems to know with a large intuition that no man can plant the tiniest root and take care of it without taking root himself, and thus it is that beauty in its simplest order leads on to duty.

With this view of the matter I felt that to regret the loss of the old gardens was very much like regretting the loss of one's first teeth. The old gardens were pushed out by the new. I found that our mothers were still planting and watering, making a great deal more visual music than their precursors could, because they had changed the harpsichord for a grand piano.

There are hundreds of acres of park along the Hudson; indeed, the east bank of that river is an almost continuous park from Spuyten Duyvil to Peekskill, but the bulk of the wealth and beauty is in small holdings. The domain passed through its castellated stage years ago when the retired Americans tried to make it mediaeval and spoke of it as the "Rhine of America," and erected turreted and bastioned piles on its overlooking hills. After that it fell away gracefully into modern and modest homesteads. As late as the thirties it was, to use an idiom that it probably gave rise to, "as Dutch as get out," just as the homes and gardens of Pennsylvania at the time of John Bartram and Humphrey Marshall and Peter Collingwood, who were all Quakers, wore the staid and precise method of that estimable sect, and the New England gardens were a little straight-laced with the formality of Cotton Mather and the severity of Plymouth Rock. But all those distinctions of locality and inheritance have melted away under a composite unification of beauty, and Washington Irving, that benevolent old raconteur, who walked the highway at Tarrytown as late as the fifties with his gold-headed cane, and got a familiar nod from all the hollyhocks which were still growing round Katrina Van Tassel's old house, would hardly know the gardens where now the roses of Persia, the orchids of South America, the geraniums of Africa, the peonies of China and the asters of America have set themselves down at every door-yard in naturalized content. Nor would those other graceful suburbanites, N. P. Willis and George P. Morris and Rodman Drake and James K. Paulding, be able to see through the world's efflorescence the Dutch husbandry that their pens lingered over so lovingly. It is only half a century ago that Willis, that dandy with Evelyn's pen, wrote so charmingly from his "Outdoors at Idlewild" and came down of mornings on the Mary Powell with a geranium in his natty coat and stood on the Astor House steps to tell us how far away from "the madding crowd" Idlewild was. You can almost throw a stone into it now from the terminus of the elevated road, and if you did it would fall among blooms of which Willis never heard. We had no Ruskin in those days to prophesy against the railroad and lament the destruction of Katrina Van Tassel's garden. Even Drake, who peopled those near-by plaisances with his Culprit Fays, seemed to know in advance what we have all realized since, that the iron horse when he came to be watered at this Hippocrene would drag the japonicas and the begonias after him and make the very depots blossom like the rose.

Those gardeners of the pen, who clipped their flowers of rhetoric along the Hudson, were spared that fear of the engineer which made England linger so long and so pensively against her hedgerows. When our Dutch Olympus was tunneled—lo! the vale of Cashmere opened to us on the other side. We never knew in those days, when we read Tom Moore and called China "the flowery kingdom" and were always longing for hawthorn buds, that we had prairies of flowers bigger than the British Isles. When at last we were able to get upon our trains and slip easily over the Alleghanies, we were ready to exclaim with Trench:

> "How thick the wild flowers blow about our feet
> Thick-strewn and unregarded, which, if rare,
> We should take note how beautiful they were,
> How delicately wrought, of scent how sweet!"

Old gardens, indeed! Why, those trackless wastes of flowers were as old as the alluvium!

Having opened the way, it may be truly said that it only required a little time to link the union of states with the chains of beauty, and presently there set in that reflex wave from our redeemed wilderness, that brought to our literature and our love the new and hardy buds of the West, orange blossoms from the bayous of Louisiana, cardinal flowers from the "dark and bloody ground" of Kentucky, fringed gentian from Kansas and purple lungwort from the James river in the girdle of "Lady Jocelyn Leigh" just as dewy and fresh as the wild geranium in the belt of "Alice of Old Vincennes."

Thus it is that Nature has returned us an hundred fold, and if we stop to consider too curiously that the artemisia is cousin to the sage-bush and "the shooting star" is only the American cowslip, and the pansy is the dainty grandchild of the "Johnny-jump-up," and Sir Helianthus himself is kin of the aster, and the yellow beauty of the nasturtium but the proud outcome of Indian cress, we may also recollect that our merchant princes and our ladies of the manor came out of the same soil and are now building their conservatories, not alone on the Hudson, but on the Mississippi, the Wabash and the Red River of the North.

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KNOW YOU THE RAPTUROUS TENDERNESS OF TREES,
THEIR KINDLINESSES, THEIR BEATITUDES?
GO YOU ABROAD INTO THE CLOISTRAL WOOD,
AND WANDERING THEREIN, LIST TO THE SPEECH
LEAF HOLDS WITH LEAF, AND BOUGH WITH SWAYING BOUGH.

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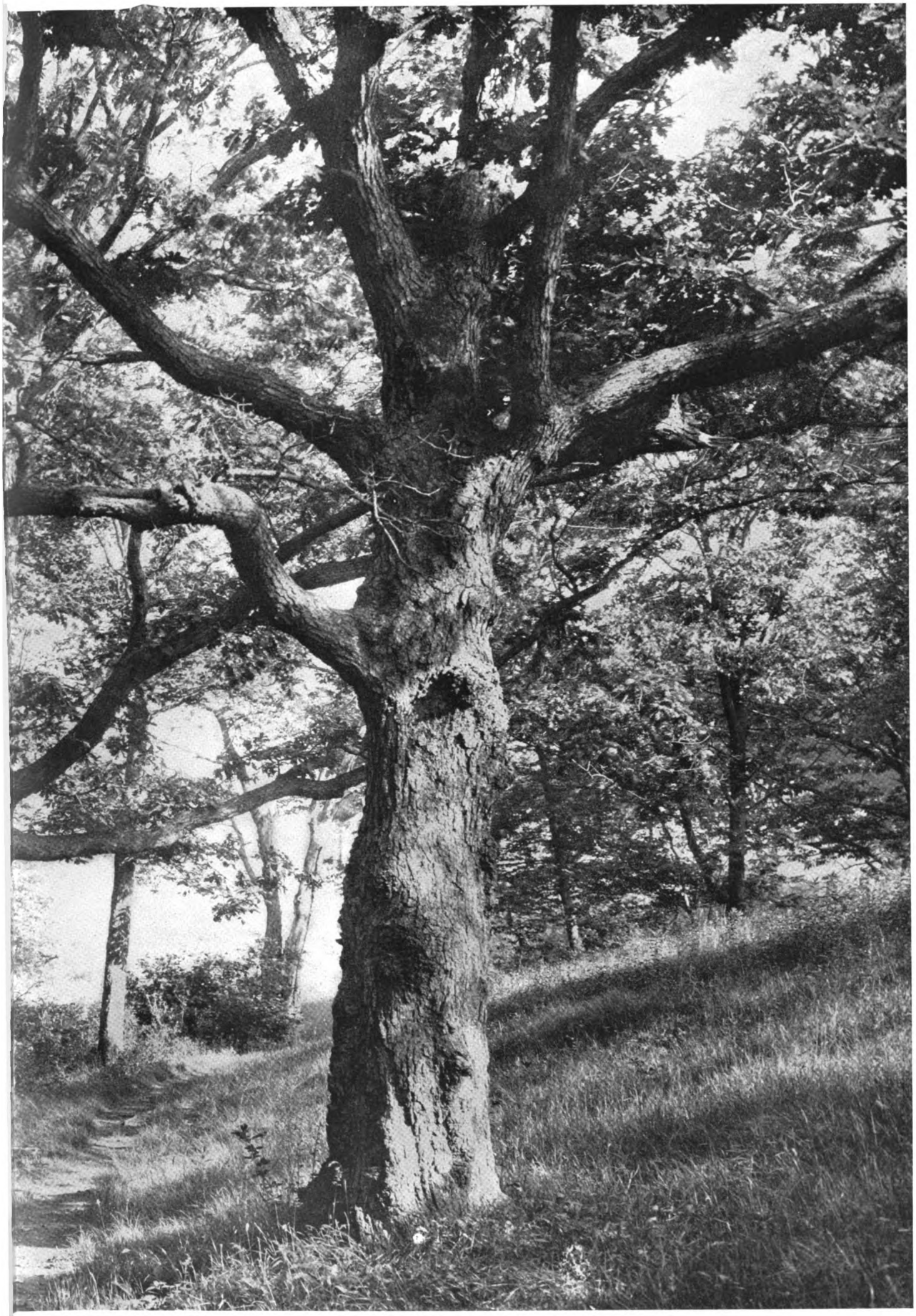

AND BOLE WITH MASSIVE AND MAJESTIC BOLE!
WHAT MELLOW-SWEET TRANQUILLITY OF TONE!
WHAT PURITY AND WHAT HIGH HEARTSOMENESS!
WERE IT NOT WELL COULD WE TRANSFER TO LIFE
A LARGE SERENITY FROM THE SPEECH OF TREES?—CLINTON SCOLLARD

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TWO 'POSSUMS AND SEVERAL MISTAKES

By A. RADCLYFFE DUGMORE

[The illustrations, including those of the animals "playing 'possum," are all photographs of live animals by the author.]

"'Possum Two remained in the window"

"A long nose protruded from the nest"

TWO 'possums each made mistakes, with the result that they both got themselves into many kinds of trouble, with almost tragic consequences.

As we know, 'possums, like owls, usually travel only by the light of the moon, the stars, or by no light at all. When all the world is hushed in sleep, hen roosts are much easier to rob, for except the cackling of a hen—and even that should not happen if the job is neatly done—there need be no noise or fuss of any kind. Even the watch dog, keen-eared as he is, may sleep on oblivious of all that the 'possums are doing within his precinct. But, as already stated, the two 'possums with which we are dealing, made mistakes, and the first of these mistakes was neither more nor less than that they came out by daylight. The day was dull and gray, it is true, but none the less it was day, and therefore not the time for 'possums to be out.

"'Possum One coming out of the door"

'Possum One (as we will call him), who had selected a temporary home in a drain pipe only the night before, had been disturbed, because some thoughtless man had turned a flood of water into his pipe home and had given him a most unwelcome bath. So he determined, force of circumstances urging the determination, to make for a certain large gum tree, whose branches overhung the muddy waters of the Passaic river. In this tree was his regular nest. A comfortable one it was, too—quantities of dead dry leaves placed in a hole in the trunk about ten feet from the ground. The hole faced towards the south, so that when the sun shone he had the benefit of its warmth. Curled up in this hole, covered with leaves, some muskrat fur and chicken feathers (whence came those feathers, Mr. 'Possum?), he had spent all last winter. When all around him was wrapped in winter's white winding-sheet, the snow had piled up over the entrance of his home, but the warmth from his body had melted it away and left his doorway clear.

Now it was autumn, late November, and all was cold and dreary. The leaves, with which the ground was so thickly strewn, rustled loudly as he shuffled along towards his gum tree. Arriving there he stopped, for a suspicious odor greeted him, the unmistakable proof that but recently another 'possum had been there. The invisible trail led up the tree. Worse and worse! Bad enough to have any one come to his tree, but to climb up looked suspiciously as though the stranger had preëmpted his own home. Now came the question: What could he do if this stranger happened to be larger than he was? Would he have to give up his home, and that, too, without a struggle? or should he try to coax him out? Better first investigate. So up the tree he went, after the slow clumsy method of his kind, until he reached his doorstep, and then—well, he slid down again, just a few feet, and all because a long-pointed nose protruded from the nest of leaves and feathers, and the nose was followed in turn by an open, well-toothed mouth and a quite unnecessary amount of snarling, of that quiet guttural kind that 'possums delight in.

"So out came the two prowlers, disappointment showing in their dejected appearance"

'Possum One cared not to risk an encounter with one so much larger than himself, and so ill tempered too. It was better to wait a time, just to let his amiable tenant see that he was not afraid. Oh dear, no! Never even thought of such a thing! When, to show how entirely friendly was his visit, he wished to know if 'Possum Two would care to join him in a walk to the hen house. It was only a short distance away, and as it was late in the afternoon he felt sure the chickens would be home, and even if they were not, they could hide and wait until they did return. All this was said in the same sort of language that a dog uses when he comes into a room where another dog is lying, and asks him what he thinks of going off for a hunt; and off they go, one at a time, so as not to attract attention until clear of the house. So went our 'possums. In the lead was 'Possum One with 'Possum Two following a few yards behind. Up the lane they went, keeping careful lookout. When half way along they saw a man coming their way, so they quickly (and possums

"So up the tree he went, after the slow clumsy method of his kind"

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"The modern garden has sunny lawns and shadowing trees"

of which brought tender memories of homes and traditions beyond the ocean. In the old gardens of the Hudson the poppy, the marigold and the Canterbury-bell are always favorites. Those housewives would no more have thought of putting the common white field daisy into pots than they would have thought of gathering the superabundant goldenrod, two flowers that show how easily a weed may come to be a favorite in obedience to any popular whim. For years our fathers anathematized the daisy as sharply as the English anathematized the poppy. It was not until Gretchen came with Goethe's "Faust" and Gounod's music, wearing daisies, so comparatively rare in Europe, that we consented to the name of "Marguerites," and admitted them into our boudoirs.

Any one might suppose, as I did, that some scent of Sweet William would linger round the headquarters at Newburgh, or some brambly bits of columbine or tufts of "black-eyed Susan" peep out of the nooks at Sunnyside. If there is a place on the Hudson that the shielding arm of Nature and the indifference of the world have kept shadowy and green it is old Tappan, lying there at the end of the Palisades, wrapped, one might say, in revolutionary memories and red clover. Cole and Cropsy and Inness bivouacked there with their kits long before Cyrus Field and Dean Stanley tried to pull the old place out of its retirement with a monument. It is one of those delightful corners that do not grow and do not fade. There are some very old trees there and the stone fences remind us of the paleolithic age of the seventeenth century, when the original patentees settled there. But the old gardens are gone. You will look in vain for the larkspur and boneset and periwinkle and candytuft. They stick out only in the old traditions and revolutionary records, and I dare say were worn in the buttonholes of the hardy fellows who took Stony Point under Mad Anthony Wayne.

A little farther up the river one may come, if he will, upon what was once the great pastoral domain of Orange county — the udder of the State, from which the Metropolis drew its milk for many years. Here, indeed, the old gardens have left us some scattering mementoes in rustic isolation, around old red sandstone houses, in sparse and neglected wildness. The scarlet runner climbs as of old, the star of Bethlehem peeps out of the grasses and along the streams the iris still flaunts its blue chalice. Here one will still find the medicinal herbs grouping themselves beyond the smokehouse and the well — sweet marjoram, sage, balsam and sweet lavender. Snowballs hang heavy over the gate on Decoration Day and the hollyhocks sentinel the windows in late summer. Here the Indian cress fringes the old wall with its yellow flowers, and the old woman, if there is one, still picks the nasturtium from its tender branches to pickle and eat with the home-cured pork at Christmas. On such decaying homesteads, from which the latest generation has fled, you will be sure to see the spring lilacs at the doorway, and if the sun shines the geraniums will be in the window, and I

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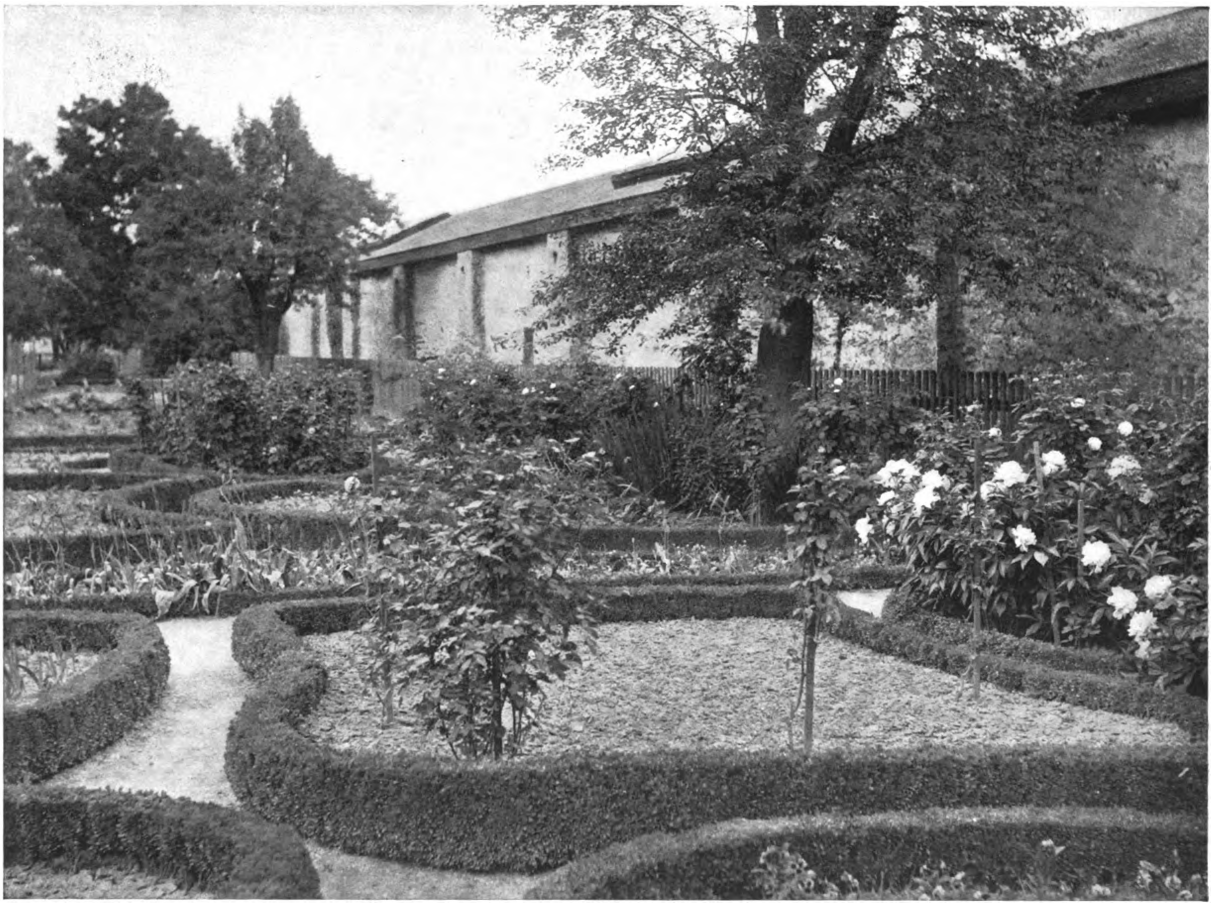
dare say if you go to the old stone church you will hear the inhabitants singing "Dundee" and "Boylston" and "China" in exactly the same way that their grandfathers and grandmothers sang them—that is, with much deliberation of drawl in the rhythm and much untutored freshness of soprano in the melody.

On the other side of the Hudson, where the sun lies all day, it is like the Fifth avenue with its flowers on an auspicious Easter. Flora on that side of the river is a modern belle, and she has made every country and clime contribute to her display. There are acres of rhododendrons and vistas of azaleas, conservatories galore, and orchids and cacti garnishing every door-yard. The distinctive character of these gardens of the wealthy Americans is in their cosmopolitan freedom and the informal breadth and profusion, which we have learned from Nature and not from Europe.

No one who has tried to acquaint himself with the history of gardening can have failed to notice how far away from Nature's purpose it strayed in Europe during the last century. Addison and Evelyn and Walpole have left us accounts of its vagaries and eccentricities. Addison, in one of his essays, treated the gardens of his time after the manner of poetry, and divided them into classical and romantic schools. Men made gardens then to exhibit their own conceit. Gardening, for a long time, was a theatric divertisement. Louis XIV handed over two hundred million francs to Le Notre to construct the gardens of Versailles, and the operation resulted in reducing Nature to a geometric system and keeping vegetation subservient to the architects and the sculptors, so that one delighted visitor said of them that "you were always going up and down stairs outdoors." What was theatric in the Frenchman's treatment of Nature became wholly fantastic in England, and we know from Evelyn's account to what excess of parterre and terrace, and to what lengths of deformity in distorting trees and inventing surprises, our ancestors went. Evelyn speaks with ardor of "trees cut in statues, statues thick as trees;" of muddy canals made for the rustic bridges; of mounds made for the trellis and hedges of jets d'eau, "to make the place agreeable, melancholy and countrylike." It was Chambers who said of this same place that when in it you had the profound satisfaction of knowing that you had one foot upon zig and the other upon zag. In the ducal gardens at Saxe Gotha there was a ruined castle, the builders' chief care being to make it a ruin. It was built completely and then tumbled down with artillery and planted with wild vines—for effect. It is doubtful if it was as successful as the Vicomte Girardin's device at the Chateau of Ermenonville, where a fabulous amount of money was expended on landscape gardening in order to enhance the beauty of his wife and daughters, who walked the grounds attired as amazons. How many delighted visitors to Chatsworth have come away with nothing in their recollections but the artificial copper tree that drenched the unsuspecting ladies with water when they were enticed under it!



"Bits of old box hedge, as prim and square-cut as a Puritan pastor"

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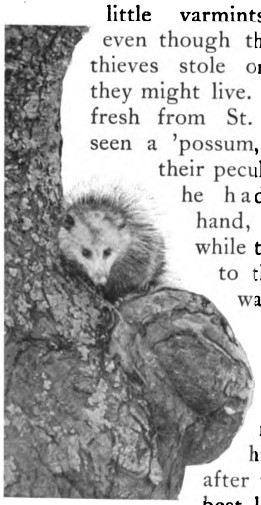
"Proceeded to climb an apple tree"

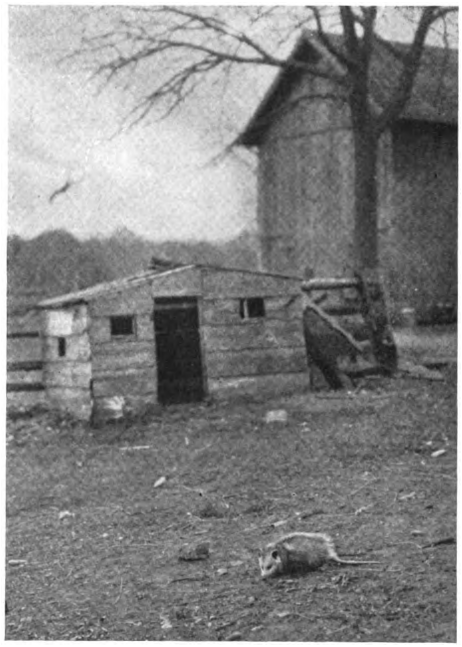
can do things quickly) crept in between the stones of the wall that edged the lane. Their enemy having passed they came out cautiously and once more resumed their way to the farm yard. On arriving there 'Possum One went ahead, on past the corn stack and the stables, past the corn crib and towards the small hen house. Everything seemed quiet and therefore safe, and soon he saw 'Possum Two, who had crept along the fence, standing on the top of the hen house. Then the two would-be thieves entered, one by the window and the other by the door, but the hen house was empty of hens, so out came the two prowlers, disappointment showing in their dejected appearance. The shutting of a door in the farm house near-by disturbed their peace of mind. 'Possum One on coming out of the door scrambled quickly on the roof of the hen house, while 'Possum Two remained in the window. Danger signals sounded loudly on the ground as a man came walking down the pathway. At this moment the 'possums made another mistake, for the man would probably have passed them unnoticed had they not both snarled, and thereby attracted his attention.

Now it happened that the man was not an American, and in that accidental fact lay the 'possums' one chance of escape. An American farmer would have picked up a fence rail and with it promptly ended the lives of the "darned little varmints," who even though they were thieves stole only that they might live. But the man was an Irishman, fresh from St. Patrick's Isle. He had never seen a 'possum, nor did he know anything of their peculiar ways. Only the week before, he had been engaged as a farm hand, and had been left on the place while the farmer and his sons had gone to the polls to vote, for the day was election day; hence the quietness of the farm which had inveigled our two marsupials from their retreats.



"'Possum Two as he sat on the large knob that protruded from the side of the tree"

Now when Dennis O'Connor saw the two strange beasts his surprise was very great, and after uttering a few remarks that are best left out of print—for, after all, they have nothing to do with the story—he turned, brave man though he was, and made straight for the house. He remembered having noticed a gun standing against the wall near the chimney-corner. With such a weapon he feared no animal under the size of a dog, and he hurried out to do battle against the small silver-haired animals. These same animals had been making the most of their time. No sooner was Dennis out of sight than they scurried along as fast as their short legs would carry them to the apple orchard. Once there each one proceeded to climb an apple tree. 'Possum One, in his hurry, selected a tree so small that it afforded him no hiding place, so he must perforce come down again, and that he did in the quickest possible time, clinging to the tree with his naked prehensile tail as he partly slid and partly climbed down. Once on the ground he made directly for the nearest tree, which chanced to be the same tree that 'Possum Two had chosen. Here was still another to add to the growing list of mistakes, and, like the proverbial drop that overflowed the equally proverbial bucket, it proved the undoing of their otherwise successful retreat.



"'Possum One went ahead"

"He must perforce come down again — clinging to the tree with his naked prehensile tail"

One 'possum might hide in an apple tree and remain undiscovered because of his color, which matches the rough silver-gray bark of the tree very closely, but two 'possums could scarcely hope to find places of concealment in the same tree. So thought 'Possum Two as he sat on a large knob that protruded from the side of the tree. He heard the scratching sounds of 'Possum One as he climbed the tree. Nearer and nearer he came, until his nose was visible over the edge of the large knob. What might have happened is not known. 'Possum Two's vigorous protesting at his friend's arrival was cut short by a loud report and a scattering of small pieces of bark where the shot had struck the tree just above the 'possums' heads. Scarcely had the echoes of the report died away when Dennis saw two 'possums fall to the ground at the foot of the apple tree, and he congratulated himself on "the foine shot" he had made, and forthwith marched up to the seemingly dead animals. "Shure but they're did as nails," he exclaimed, as he picked up one in a most gingerly way, quickly drop-

"Nearer and nearer he came, until his nose was visible over the edge of the large knob"

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"Had they not both snarled"

"Two 'possums fall to the ground at the foot of the apple tree"

"'Possum Two, standing on the hen house"

ping it again. Yet there was no blood visible, but in his excitement he had not noticed a detail so altogether trivial. Enough for him that the two animals were dead, and he himself was responsible for their slaughter, and he turned to lay down the gun that he might light his pipe preparatory to carrying the animals back to the house. As he stood still trying to light his short clay pipe his back was toward the 'possums. Everything was so quiet that 'Possum Two decided to have a look and, without changing his position, he opened his small, dark eyes, closing them instantly when he discovered the broad back of his enemy between him and the sky.

It was a close shave, for at that very moment Dennis, his pipe lighted, picked up the gun, and, catching hold of the two 'possums by their rat-like tails, took his way to the house. Once there he threw the two "dead" animals on the steps, and, leaving them, he turned and walked toward the gate, for he heard sounds of the farmer returning. Round a bend in the lane came a two-seated buckboard, mud-bespattered and rickety, and in it sat the farmer and his boys. Dennis O'Connor, all excitement and pride, rushed up to them and told the family all about "the two queer bastes Oi hev kilt," adding quickly that he had killed "thim both wid the one shot from the fowlin' pace." On being asked what he had done with his game, he pointed exultingly to the clean, bare steps, but —

It was many months before Dennis could be persuaded to give up his belief that some one had stolen his 'possums. He never saw them again, and the story of "playing 'possum" is and always will be a sore point with Dennis O'Connor.

Playing 'possum. "'Possum Two decided to have a look, and without changing his position he opened his round dark eyes"

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THE VIRGINIA OPOSSUM

WHAT HE IS AND HOW HE LIVES—REMNANT OF A ONCE IMPORTANT RACE

By C. HART MERRIAM

Left hind foot of Didelphis Virginianus ♂

IF the 'possum fails to occupy a conspicuous place in the politics of the southern states, the fact must be attributed to his humble origin and retiring disposition. For after all that has been said and done on the race question, does he not remain the only true and lasting bond of sympathy between the whites and blacks? Be this as it may, he is well worthy of consideration, and whether we study his habits, his ancestry, or his anatomy, we are sure to find him an interesting beast. His home is in the southern states, but he pushes northward irregularly to southern New York, southern Michigan, and eastern Nebraska, and follows river valleys westward to middle Kansas and middle Texas.

He is quiet, inoffensive, and rather sluggish, and when attacked usually suffers himself to be killed without outcry and without show of resistance. In habits he is silent and solitary; in disposition melancholy and taciturn—at least he lacks the buoyancy of spirit of the squirrels and playfulness of the raccoon and monkey.

He is about the size of a woodchuck or a very large cat, and when full grown weighs ten or twelve pounds. But in appearance and structure he is very unlike either the woodchuck or the cat, having a long, flexible snout, large, leaf-like, naked ears, handlike feet, and a long, naked, scaly prehensile tail.

Most mammals wear clothes the elements of which are so blended that close scrutiny is necessary to separate their parts. Not so with the 'possum. His garments, like those of some ladies in evening dress, are so delicately adjusted that the inner shows through and forms a fitting background for the outer, his soft woolly undercoat of buff, washed on the surface with black, contrasting handsomely with the long white hairs by which it is overlaid. His white face is marked by dark rings around the eyes and contrasts strongly with the dark body color, which reaches forward to the top of the head. The large naked ears are black, tipped with white, and in life have a pinkish tint. The only other conspicuous markings are the black feet and ankles and the broad black band which encircles the base of the tail.

That the opossum is a forest-loving animal goes without saying, his naked prehensile tail and hand-like foot bespeaking arboreal habits. The tail is a great aid in moving among the branches, for by throwing the tip over a limb the animal can swing off by it or remain suspended like a monkey. The foot also is a great help and worthy of close examination; the big toe has no nail, but a flat pad that can be opposed to the other toes in grasping like our thumb and fingers, and which when climbing takes a firm hold of the branches. Dr. Bachman has seen an opossum in a persimmon tree, gathering and eating fruit while hanging head down, suspended from a branch by the hind foot and tail—sometimes by the tail alone.

Like the raccoon the opossum is nocturnal, and spends the day asleep in hollow logs or stumps, or in holes in the larger limbs, or even in the dense foliage of trees. His den is usually hidden among roots, in hollow logs or trees, among rocks or in cliffs and caves, or, more rarely, in holes in the ground like that of the woodchuck and skunk. Along the coasts and rivers of the South he has been known to forsake the forest and take up his abode in the tall grass and reeds of the marshes.

The opossum is the poor man's turkey, and his flesh is regularly sold in the public markets of Washington and other southern cities. 'Possum hunting is one of the famous amusements of the negroes, and often of the whites as well. The usual season is the fall of the year, when the ground is strewn with acorns and chestnuts, the tender persimmon has ripened and lost its pucker, and the 'possum himself is fat and in prime condition. The hunting is invariably done at night. The necessary outfit consists of dogs, torches, and an ax. The dogs are often sidetracked by rabbits and coons, whose fresh scent they cannot resist; hence the hunt is likely to furnish meat additional to that which is the special object of the chase. Returning from these digressions, the dogs and hunters continue until the live trail of a 'possum is found; this is eagerly followed and the animal, a slow runner, is soon forced to take to a tree. The barking of the curs and baying of the hounds—if hounds there be in the motley pack—soon bring the hunters to the spot, and the bright blazing torches reveal the position of the unlucky brute.

If the tree is small it is promptly climbed and the poor beast shaken off, to fall into the gaping mouths of the mob of dogs below; if too large to be easily climbed it is felled by the ax and the end is only slightly delayed. In some cases, however, the animal is secured alive, brought home in a bag, and fattened on special food for a week or two before the dinner takes place. Three or more are often captured in a single night.

While a lowly animal in structure and affinities, the 'possum has considerable intelligence and has learned to profit by the inherited experience of his ancestors. When seized by dog, or clubbed by man, he almost invariably feigns death, and thereby often escapes—hence the expression "playing 'possum." The negroes call it "*sulling*," which term, according to a writer in the "Forest and Stream," is a corruption of "sulking."

The 'possum comes down to us as a reminder of the past, a survivor of a bygone age—a curious type which by its fossil remains in the rocks may be traced back many thousands of years. His near relatives, including some no bigger than a mouse, live in tropical America; his distant relatives in the remote continent of Australia, where he claims kinship with such strange forms as the kangaroo, wombat, dasyure, phalanger, and other primitive types.

Like most marsupials, or pouched animals, the female 'possum is provided with a bag or pocket in front of her belly, in which the young are carried until able to shift for themselves. When born they are exceedingly small and helpless and look like embryos—naked, hairless, with eyes and ears closed, and weighing only three to four grains. The young are about half an inch long at birth. When five weeks old they are as large as rats.

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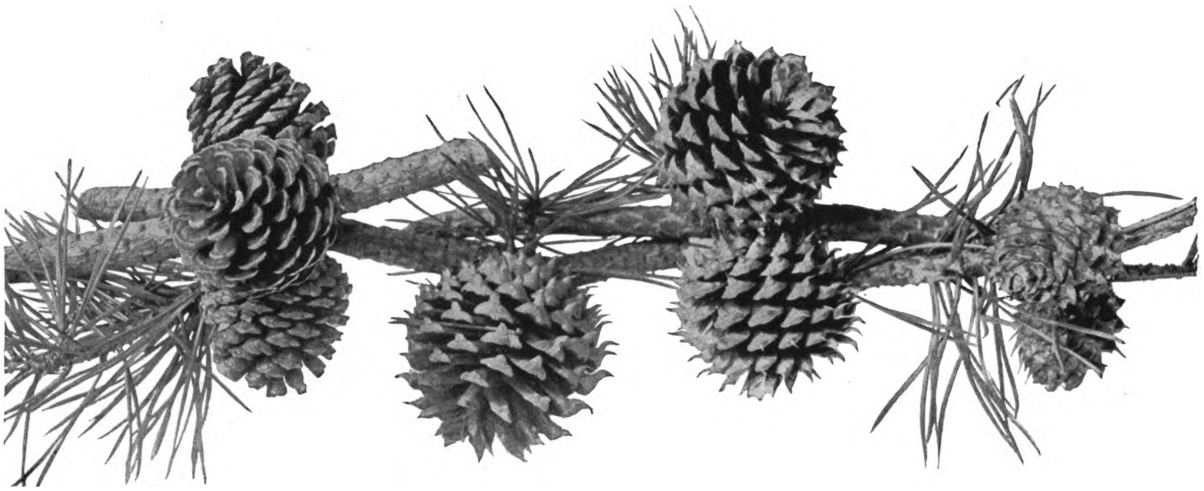

THE NATURE-STUDY IDEA

OF late years there has been a rapidly growing feeling that we must live closer to nature; and we must perforce begin with the child. There is effort to teach this nature-love in homes and schools, and the subject is called nature-study. It would be better if it could be called nature-sympathy.

THE REASON FOR IT It is an old desire to be near to nature. Men have always loved nature, but too often it has been an extrinsic and incidental love. It is one of the marks of the evolution of the race that we are coming more and more into sympathy with the things of the external world. These things are a part of our lives. They have intrinsic interest. The happiest life has the greatest number of points of contact with the world, and it has the deepest feeling and sympathy for everything that is. The best thing in life is sentiment; and the best sentiment is that which is born of the most accurate knowledge. Emerson has put this truth forcibly in his injunction to "hitch your wagon to a star"; but it must not be forgotten that one must have the wagon before he has the star. Mere facts are dead, but the meaning of the facts is life. The getting of information is but the beginning of education. "With all thy getting, get understanding."

THE METHODS As yet there are few codified methods of teaching nature-study. Herein lies much of its value — in the fact that it need not be reduced to a system, is not cut and dried, may not become a part of rigid school methods. Its very essence is spirit. It is as free as its subject-matter, as far removed from the museum and the cabinet as the living animal is from the skeleton. It thus transpires that there is much confusion as to what nature-study is, because of the different methods of its various exponents; but these differences are largely the reflections of different personalities. There may be twenty best ways of teaching nature-study. It is essentially the expression of one's outlook on the world. Nature-study is an attitude, not a system. Yet we believe that there are two or three fundamental misconceptions of what nature-study is or should be; and to these we may give attention.

WHAT NATURE-STUDY IS Fundamentally, nature-study is seeing what one looks at and drawing proper conclusions from what one sees; and thereby the learner comes into personal relation and sympathy with the object. It is not the teaching of science,—not the systematic pursuit of a logical body of principles. Its object is to broaden the child's horizon, not primarily to teach him how to widen the boundaries of human knowledge. It is not the teaching of botany or entomology or geology, but of plants, insects and fields. Many persons who are teaching under the name of nature-study are merely teaching and interpreting elementary science.

IT IS SEEING AND DOING Again, nature-study is studying things and the reason of things, not about things. It is not reading from books. Nature-readers may be of the greatest use, if they are made incidental and secondary features of the instruction. The child should first see the thing. It should then think about the thing. Having a concrete impression, it may now go to the book to widen its knowledge and sympathies. Having seen mimicry in the eggs of the aphis on the willow or apple twig, or in the walking-stick, the learner may then take an excursion with Wallace or Bates to the tropics, and there see the striking mimicries of other insects. Having seen the wearing away of the boulder or the ledge, he may go to Switzerland with Lubbock and see the mighty erosion of the Alps. Now and then the order may be reversed with profit, but this should be the exception; from the wagon to the star is the rule.

THE FACT IS A MEANS Yet again, nature-study is not the teaching of facts for the sake of the facts. We must begin with the fact, to be sure, but the lesson is not the fact but the significance of the fact. It is not necessary that the fact have direct practical value to the daily life; for the object is the effort to train the mind and the sympathies. It is a common notion that when the subject matter is insects, the child should be taught the life-histories of injurious insects and how to destroy the pests. Now, nature-study may be equally valuable whether the subject is the codlin-moth or the ant; but to confine the child's attention to insects which are injurious to man is to give him a distorted and untrue view of nature. Children should be interested more in seeing things live than in killing them. Yet we would not directly emphasize the injunction, "Thou shalt not kill." Nature-study is not recommended for the explicit teaching of morals. We prefer to have the child become so much interested in living things that it has no desire to kill. It is true that we must fight insects, but this is a matter of later practice, not of education. It should be an application of knowledge, not a means of acquiring it.

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FACT AND SENTIMENT There are two ways of interpreting nature—by way of fact, and by way of fancy. To many men, the interpretation by fact is the only admissible one. They are not open to argument or conviction that there can be any other truthful way of knowing the external world. Yet, the artist and the poet know this world, and they do not know it by mere knowledge or by analysis. It appeals to them in its moods, not in its things. Yet it is as real to them as to the analyst. Too much are we of this generation tied to mere phenomena. Yet poetry is not mere sentiment. The true poet has first known the fact. His poetry is misleading if his observations are wrong. Therefore, we should begin nature-study with facts; for facts are tangible, but sentiments cannot be seen. Whatever else we are, we must have the desire to be accurate. We begin on the earth; later, we may drive our Pegasus to a star.

WE SHOULD CULTIVATE FEELING We have a right to a poetic interpretation of nature. The child comes to know nature through its imagination and feeling and sympathy. Notice the intent and sympathetic face as the child watches the ant carrying its grains of sand, and pictures to itself the home and the bed and the kitchen and the sisters and the school which comprise the little ant's life. What does the flower think? Who are the little people that teeter and swing in the sunbeam? What is the brook saying as it rolls over the pebbles? Why is the wind so sorrowful as it moans on the house-corners in the dull November days? There are elves whispering in the trees, and there are chariots of fire rolling on the long, low clouds at twilight. Wherever it may look, the young mind is impressed with the mystery of the unknown. The child looks out to nature with great eyes of wonder.

THE SUBJECTS FOR NATURE-STUDY Two factors determine the proper subjects for nature-study: First, the subject must be that in which the teacher or parent is interested and of which he has knowledge; second, the subject must be one that is common and that can be easily seen and appreciated by the child, and that is nearest and dearest to his life. The tendency is to go too far afield for the subject-matter. If the subject-matter is of such kind that the child can collect the objects, the results will be the better. With children, begin with naked-eye objects. As the child matures and becomes interested, the simple microscope may be introduced now and then. Children of twelve years and more may carry a pocket lens; but the best place to use this lens is in the field. The best nature-study observation is that which is done out of doors, but some of it can be made from material brought into the home or the school-room. The subject should be vital.

CONSIDER THE CHILD'S EXPERIENCE It is a sound pedagogical principle that the child should not be taught those things which are necessarily foreign to the sphere of its life and experiences. It should not have mere dilutions of science. Usually the young child cannot understand the subject of cross-pollination of flowers. It should not be forced to learn the names of the parts of the flower. Such technical subjects are likely to be beyond the child's realm. They are exotic things to the beginner. They are translations of the knowledge of grown-up investigators. Pollen and stamens are not near and dear to the child.

THE FACTORS There are three factors in the teaching of nature-study: (1) the fact, (2) the reason for the fact, (3) the interrogation left in the mind of the learner. It is impossible to find a natural history object from which these three factors cannot be drawn. It may be better to choose definite subjects, taking pains—at least at first—to select those having emphatic characters. But even in the dullest days of winter sufficient material may be found to keep the interest aflame. For example, a twig or branch may be at hand on a February day. Let the teacher or parent ask the child what it sees. The reply will discover the first factor in the teaching—the fact. However, not every fact is significant to the teacher or to the particular child. It remains for the teacher to pick out the fact or answer that is most significant. The questioner should know what is significant, and he should keep the point clearly before him. A child says that the twig is long; that it is brown; that it is crooked; that it is from an apple tree; that it has several unlike branchlets or parts. Now, this last reply may appeal to the teacher as the most significant fact. Stop the questioning and open the second epoch in the instruction—the reason why no two parts are alike. As before, from the responses the significant reason may be developed: It is because no two parts have lived under exactly the same conditions. One had more room or more sunlight, and it grew larger. The third epoch follows naturally: Are there any two objects in nature exactly alike? Let the child think about it.

AVOID LABORIOUS LESSONS It is a common mistake to attempt to teach too much at every exercise, and the parent or teacher is also appalled at the amount of information which he must have. Suppose that one teaches two hundred and fifty days in the year. Start out with the determination to drop into the child's mind two hundred and fifty suggestions about nature. One suggestion is sufficient for a day. Five minutes a day of nature-study may be preferable to an hour, but make it quick and sharp. Let it be designed to develop the observing and reasoning powers, and not to give mere information. Spirit counts for more than knowledge.

WHAT MAY BE THE RESULTS OF NATURE-STUDY TEACHING Its legitimate result is education—the development of mental power, the opening of the eyes and the mind, the civilizing of the individual. As with all education, its central purpose is to make the individual happy; for happiness is pleasant thinking. The happiness of the ignorant man is largely the thoughts born of physical pleasures; that of the educated man is the thoughts born of intellectual pleasures. One way to lessen evil-doing is to interest the coming generation in dandelions.

WE LIVE WITH COMMON THINGS Nature-study not only educates, but it educates nature-ward; and nature is ever our companion, whether we will or no. Even though we are determined to shut ourselves in an office, nature sends her messengers. The light, the dark, the moon, the cloud, the rain, the wind, the falling leaf, the fly, the bird,—they are all ours. Nature-love tends towards naturalness, and towards simplicity of living. It tends countryward. If one is to be happy, he must be in sympathy with common things. Few of us can travel. We must know the things at home. No person should depend wholly on another person for his happiness.

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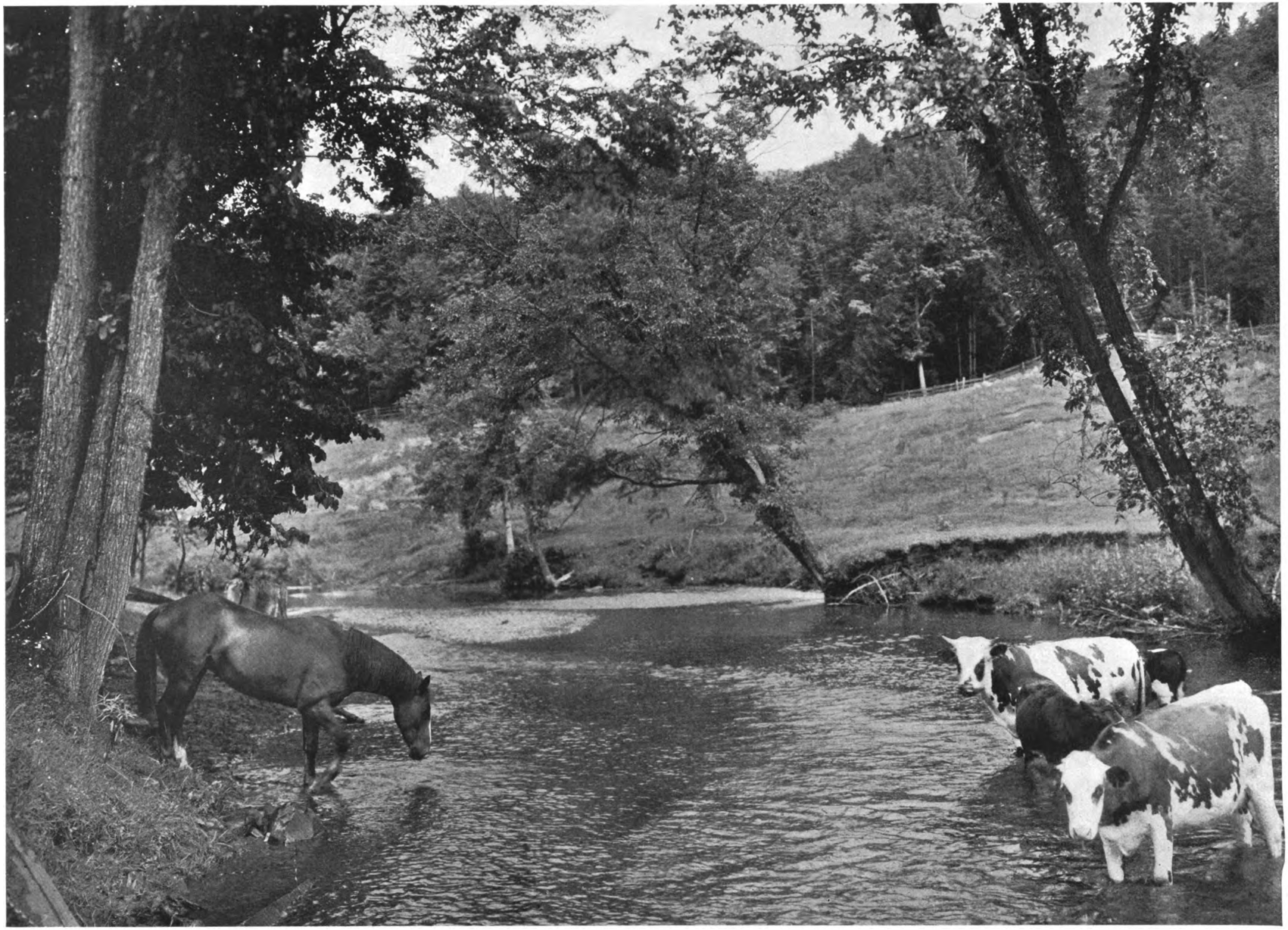

THE MEETING-PLACE

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AN EXPERIENCE WITH THE SOIL

WILD GARDENING IN LITTLE—THE TRIALS OF A SUBURBANITE AND THE REWARDS

By JAMES J. ALLEN

I CANNOT remember ever to have seen the gentle art of wild gardening numbered among the kingly sports, yet of them all there is perhaps none more worthy of the name. When we read in Mr. Robinson's entertaining book how whole estates may be devoted to its development, we can understand how the ideal wild garden may call for an amount of time, money and elaborate equipment such as only those of princely birth or fortune may be presumed to possess. But it is not of such extensive affairs that I purpose to speak, but of a modest experiment of my own, one quite within the reach of any purse and calling, for no more of royalty than inheres in any citizen who exercises sovereignty over his own back yard. In fact, mine is such an unpretentious little thing that I am hardly worthy to be called a wild gardener, and it may be thought presumptuous for me to speak as if I was an accepted member of the guild. Still I have noticed that the true wild gardener is to be recognized by certain qualities of the mind and heart rather than by the number of acres over which his possessions extend. If he delights in the out-of-door life, if he prefers the field laughing with daisies and spotted with Queen Anne's lace to the regularly laid out garden, he exhibits some of the hall marks of the brotherhood. There is hope for him that he may yet attain to that attitude of tolerant contempt for all purely conventional gardening which is the distinguishing characteristic of the wild gardener. There never was one yet at all worthy

76. "While my two young but enthusiastic assistants sat in the shade and offered advice upon the various problems of floriculture as they presented themselves"

of the name who could abide a regular flower bed. Your prim and formal border is an abomination to him, and it is a settled canon of his cult that wild gardening bears about the same relation to the ordinary kind that epic poetry does to the roundelay. And I take it to be some evidence of inward grace and worthiness that the feeling appeals to me as by no means indefensible. Just as if there were not beauty enough in the individual flowers, but we must strive to construct out of them a lot of formal beds, designed after the latest oil-cloth and in which the subtle and delicate beauty of the parts is lost in the commonness of the whole!

It is much the same as if the masterpieces in the Uffizi were grouped together so as to reproduce the mosaics in its pavement, and all the sweetness of Fra Angelico, the grace of Raphael and the power of Buonarroti were sacrificed to the mediocrity of a Greek border. If one can imagine how Ruskin would have felt over such an arrangement of the masters, one can understand how it is that all lovers of the wild garden, the world over, go back to nature for their inspiration and echo Mr. Robinson's prayer for deliverance from the "death note of the pastry cook's garden." But to our subject.

The country home faces upon a street in a little rural community not so far from New York, but that the proprietor of the wild garden, who works for a living during such intervals as his royal pastime allows, has no trouble in passing daily back and forth. From the side and rear the house looked out upon a piece of waste ground which until my novitiate began had been abandoned to the sumach and the bramble. This was separated from the cultivated garden and the

77. "A fallen tree or an old stump is an invaluable possession for a wild garden"

road by a terrace four feet high, surmounted along its entire length by a trellis covered with sweet peas. Behind this trellis and the bank the seclusion was complete. It was here that I started the wild garden, working entirely screened from the road, while my two young but enthusiastic assistants sat in the shade and offered advice upon the various problems of floriculture as they presented themselves.

I commenced by uprooting the briers and the sumach bushes, being careful to preserve such natural features as the place possessed. A couple of boulders were rolled into picturesque positions and clusters of bushes were left standing here and there. In one corner near the house, a clump of tall white birches grew directly out of the terrace. Another corner was filled with a dense growth of staghorn sumach. Not far off was a fair-sized maple. These furnished shade, so necessary where forest-loving plants are to be naturalized. But by far the most attractive of the natural features of the garden was a wild grape-vine with gnarled and twisted stem, as thick as one's wrist, which had clambered up over a couple of birches, covering them with its

78. "Occasionally when I return at night, I find that during the day my junior assistant has dug up my most cherished possession"

interlacing arms and bending them over by its weight until they formed a natural arbor of great beauty. Two wild cherry trees standing near by furnished convenient supports on which the birches leaned when the midsummer wealth of leaves and fruit made the vine too heavy for them to bear. From a little distance off it rose above the surrounding bushes with the symmetry of a dome, the broad, overlapping leaves covering it as with tiles. Beneath was a veritable bower, at all times shady, and a spot presenting many possibilities. Such were the prominent features of my wild garden, as yet uninhabited except by the ever-present daisy, the goldenrod and the aster.

The task which now presented itself was to fill this up; to bring from forest and meadow and swamp every plant that was "pleasant to the sight" and make it to grow in the garden. The work was commenced in the early spring and the hepatica and the violet were planted in masses

75. "The country home faces upon a street in a little rural community"

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beneath the vine-covered birches. Here, too, I set out in favorable positions under the tangled lower branches of the trees, colonies of the pink lady's slipper and of the showy orchis. In the shade of the maple were naturalized the mountain laurel and the wild azalea, with such success, too, that both bloomed the season after transplanting. Along the fence the wild sunflower was started, and it has grown since with increasing profusion. Under the cluster of birches near the house, I commenced a fern bed, and in early May excited the mild amazement of the cows by wheeling barrow-loads of unfolding fiddleheads up through the pastures where they grazed. Among the ferns were planted the trillium, the pyrola and a few stalks of the graceful, if evil-scented, cohosh. Out in the open lot and just close enough to the maple for its swaying branches to give alternate sun and shade, I established a fine colony of wild bergamot. The flowers were found in a distant field, where they grew in great irregular masses, like a lake of lavender in a sea of green. With great labor I brought a quantity of the roots home. All about them I spread a broad, thick mat of creeping thyme. The next year when both came up in their beauty, the picture was well worth seeing. Verily, no oriental monarch sits upon carpet more magnificent; nor can the looms of Wilton or of Brussels or of far Bagdad produce its equal! At all times an exquisite green, there comes a day when myriads of unsuspected buds blossom into simultaneous beauty, and presto: "the bank where the wild thyme blows" rivals in its carpeting the tapestries of Ormus and of Ind.

79. "I have inserted thirty or forty roots of the false Solomon's seal"

80. "They had hardly gone when the violets took possession"

82. "I had brought to my very doors a bit of woodland life"

Beside one of the boulders a populous little community of the Venus' looking-glass was planted. To my mind there is something peculiarly attractive about this little plant,—an out-of-the-way something that baffles definition. With its slender tapering spires, curiously turned and clasped at regular intervals by circular shell-like leaves, each with its star-flower seated on the stem, it is enough different from everything else to suggest no analogue near at hand. I have studied them often, unable to satisfy myself whether they resembled more a forest of diminutive totem poles or a village of liliputian pagodas.

Out in the blazing sun the gorgeous butterfly-weed spreads its orange blossoms above the grass, an attractive flower and so plentiful that one would think none easier to procure. But let me warn any enthusiastic proselyte with all the earnestness that the memory of aching back and blistered hands can give, that it is easier to draw up leviathan with a hook than to raise the obstinate asclepias from the depths to which its fleshy roots go down.

A fallen tree or an old stump is an invaluable possession for a wild garden. No matter how bare or unsightly at first, the Virginia creeper or the Virgin's bower, in a year or two, will clothe it in draperies that nothing can surpass. Just under one edge of my grape-vine I placed a curious stump that I found in one of my rambles near a neighboring lake. I astounded a native by paying him twice his charge for carting it home. Had he known my delight over its discovery, he might have exacted fourfold with impunity. But I managed to conceal my eagerness under a most indifferent exterior, and thus the tide of opportunity in the life of one rustic passed unnoticed by. The stump was hollowed out with age, and shaped somewhat like a boat. Filled with leaf-mold it makes a picturesque habitation for the partridge vine, the flowering wintergreen, the pipsissewa and the smaller ferns. All along one side it rests upon a bed of moss, and near by it I have inserted thirty or forty roots of the false Solomon's seal. Back of these a more pretentious fern bed has been planned. Here great masses of the interrupted fern have been installed, along with the ostrich fern and the stately osmundas, the tall varieties in the rear and sloping down to the shield ferns and the humble polypody in front. Next year, if all goes well, that corner,

83. "Were planted the trillium." Trillium grandiflorum, and in the foreground, a plant of dentaria

embowered beneath its vine, and flanked with ferns, will be as charming as Titania's dell. Even this year it was full of interest. If one had gone there in the early spring, before the buds on the birch trees had burst or the grape-vine put forth a single leaf, one would have found the ground purple with hepatica, planted the year before. They had hardly gone when the violets took possession. A little later beneath the tangled lower branches of the trees a number of stout green cones could have been seen pushing their way up through the mould. These were the lady's-slippers and the showy orchis. All winter long I had been wondering whether the spring would call them into life again, so that now I watched the unfolding of the pairs of broad oval leaves with intense interest.

81. "These were the lady's-slippers"

Probably a dozen of each had been set out. All came up and more than half of them bloomed as naturally as in their native wilds. Indeed, nothing could be more life-like than the low purple and the white spikes of the one and the nodding pink bags of the other, as they grew amid the tangle of dead twigs about the foot of the trees. To see them growing there in their freshness, one had to pinch himself to realize that only a hundred feet away was a much-traveled road, lined with street lamps, and that just beyond the terrace was a most conventional and lady-like border of coleus, geranium and the like. This was my first great triumph. I had brought to my very doors a bit of woodland life such as Nature reveals, as a great favor, to a chosen few; something which

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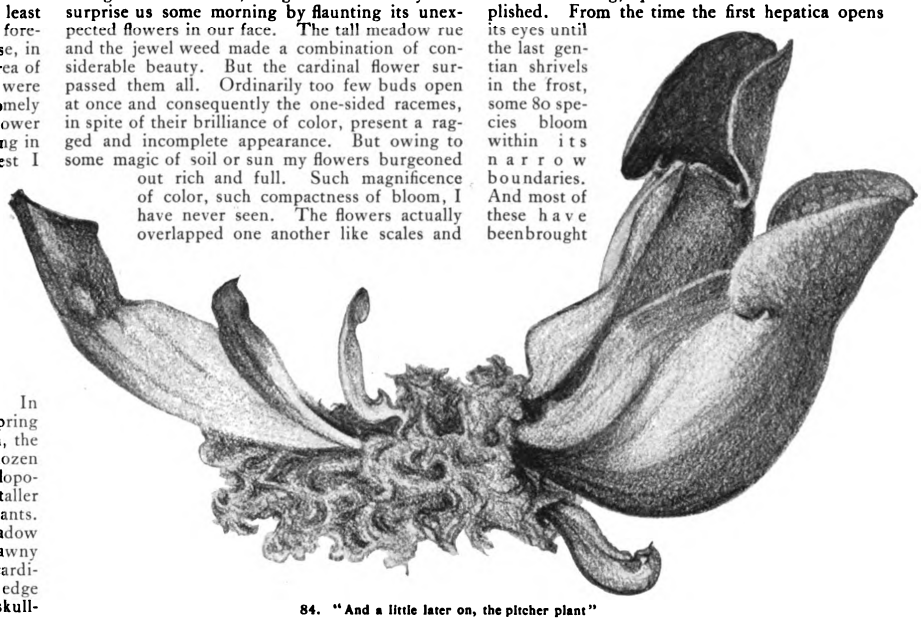
only those who seek her in her most secluded haunts are ever permitted to see.

The most serious difficulty with which I had to contend in the construction of my wild garden was the lack of natural moisture. A small pond or running stream is almost a necessity. So many of our most beautiful wild flowers live in the lush lowlands that a garden that cannot at least approximate those conditions must perforce forego many a handsome inhabitant. Of course, in my modest patch of ground, with its total area of little more than a city lot, lakes and rivulets were things merely to be dreamed of. Even so homely a matter as a bit of swamp was beyond my power of production, all efforts to that end resulting in nothing better than a mudhole. The best I could do was to build of stone and cement a rectangular tank which I connected with one of the leaders of the house and thus made do service as a miniature pond. With the aid of the garden hose I had no trouble in keeping this full, and the overflow kept the ground below it at all times fairly wet. In this tank I placed the yellow spatterdock, the purple pickerel weed, the arrowhead and the white water lily, all gathered from a lonely pond in the woods, and in one end a compact mass of wild forget-me-nots, lifted from the margin of a near-by stream. In the wet ground were planted the early spring cress, the painted cup, and a little later on, the pitcher plant, the purple-fringed orchis and a dozen or more specimens of the pogonia and the calopogon. Surrounding these were placed the taller and more vigorous of the water-loving plants. At one end I put several stalks of the tall meadow rue and about them a few plants of the tawny touch-me-not. Back of these I massed the cardinal flower and the great lobelia. Along the edge and farthest from the tank grew the hyssop skullcap, the purple vervain and the yellow sundrops. At the other end a great quantity of the blue flag was set out, and a little way off a thrifty bunch of marsh marigold. During the year of transplanting all did well, for I was careful to keep everything wet. But I knew that the test would come in the fall, when the country house would be closed and the delicate plants would be left upon a dry hillside with no other moisture than the natural rainfall until the following spring. As I might have expected, with the more tender flowers I failed. Such of the pitcher plants as survived the winter sent up a few lean and impoverished pitchers, but none of them had vitality enough to produce a flower. To my surprise half a dozen pogonias and a few calopogons struggled to maturity amid the grass, and bloomed. Exquisite in color and fragrance they were, but it was easy to see that in the adverse conditions in which they were placed, they were not the "fittest" that were destined to survive. With the flowers of more vigorous habit I succeeded better. The Joe Pye weed grew like the fabulous bean-stalk. The blue flag was a mass of color, and right in the midst of it a sturdy buttercup scattered its golden disks in all directions. This illustrates one of the happy accidents of wild gardening, for many a root is brought in unawares, to grow to maturity and surprise us some morning by flaunting its unexpected flowers in our face. The tall meadow rue and the jewel weed made a combination of considerable beauty. But the cardinal flower surpassed them all. Ordinarily too few buds open at once and consequently the one-sided racemes, in spite of their brilliance of color, present a ragged and incomplete appearance. But owing to some magic of soil or sun my flowers burgeoned out rich and full. Such magnificence of color, such compactness of bloom, I have never seen. The flowers actually overlapped one another like scales and the inflorescence was without a break. For whole weeks they stood there like tapers of vermilion flame; and day by day I watched them as, with the advancing bloom, the superb color crept slowly up the stems until, at length, the last glory flickered at the top and died. And all that was left were a number of unsightly stalks on which the seed-cases were already beginning to turn brown.



84. "And a little later on, the pitcher plant"

Of course I had many disappointments; but these are not so pleasant to dwell upon. Many a specimen transplanted with tender care never came up. Moles beneath the surface and rabbits above had to be reckoned with. Once a workman hired to clear out the weeds eradicated a thriving colony of the beautiful though ephemeral day flower; and occasionally when I return at night, I find that during the day my junior assistant has dug up my most cherished possession.

Nevertheless in spite of all drawbacks, the making of the wild garden has been a positive pleasure. Holidays, vacations and many an hour snatched before and after the business of the day, have been devoted to its care. Woods and meadows and mountains have been explored, and the search after the hiding places of the rarer flowers has had about it some of the keen enjoyment of the chase. In the three years that it has been a-building, quite a deal has been accomplished. From the time the first hepatica opens its eyes until the last gentian shrivels in the frost, some 80 species bloom within its narrow boundaries. And most of these have been brought there, in basket or wheelbarrow, from the country round. The stocking of the garden has furnished an object for every ramble and been the dominant idea in every drive. It has involved manual labor of the most arduous kind, for I had not a corps of servants at command to whom I could say, go hither, and they went; or, do this, and it was done. The garden, such as it is, is the work of my own hands; and perhaps the enjoyment I find in it is heightened by the labor it cost. If the making of it has brought into closer contact with nature, so has it also awakened a wider sympathy with man. One cannot push a loaded wheelbarrow over many miles of unbroken country without getting rid of much of his indifference toward the men who work with their hands. As a recreation it has displaced tennis and the wheel, and even the links hold out their allurements in vain. Recreation, instruction, work: these three are found in my wild garden. What royal game can offer more?

HOW TO MAKE A GARDEN—THE CONSTRUCTION AND CARE OF THE HOTBED

THE PRACTICAL EXPERIENCE OF AN AMATEUR IN STARTING THE EARLY VEGETABLES AND FLOWERS—WHAT A HOTBED IS AND HOW IT IS MADE—HOW THE YOUNG PLANTS ARE HANDLED

A BEAUTIFUL greenhouse perennial treated as a tender annual for the garden. Sow under glass. Plants taken up in pots in fall flower well in the house. Two feet in height."

"The plants are from eighteen inches to two feet in height, should get a good start in the hotbed and not be planted out before the weather is warm."

"Sow early in the hotbed or house, and the plants will flower the first season; plant out where they are to remain about the first of June; or, sow in any convenient place and transplant the following spring where the plants are to remain."

These are the legends that greet us on the backs of the innocent appearing little envelopes that our desires have beguiled us into purchasing. The advice contained must cause dismay to many amateur gardeners to whom the possession of hotbeds presents many apparent difficulties, the most notable difficulty being ignorance of the proper construction and management and the question of expense. As this latter point is more easily disposed of, we will take it up first.

Where new lumber and florists' sash are employed and labor of construction must be paid for, the cost of even a limited amount of sash, to adopt the vernacular, is considerable. Florists' sash, glazed and painted, sell for about $2.50 for 3 x 6 feet sash. The cost of construction and of the lumber for a two-sash bed will bring the cost up in the neighborhood of $6 per bed. It should prove a profitable and satisfactory investment even at that figure. If more than this space is desired, the beds may be extended as explained below.

This extreme expenditure is, however, seldom necessary, most country places affording sufficient waste material in the form of discarded window sash, odds and ends of lumber, bricks from old chimneys, etc., for one or more hotbeds. The remodeling of an abandoned farm, for instance, should supply material for rods of sash.

The first consideration in constructing a hotbed is the location. It should be as near the house as convenient, that the labor of caring for it may be as light as possible, as, in the changeable weather of early spring, the hotbed often needs very prompt and unexpected attention. It must be in a position where it will receive full sunlight during the greater part of the day. It should also be protected from cold winds, a position on the

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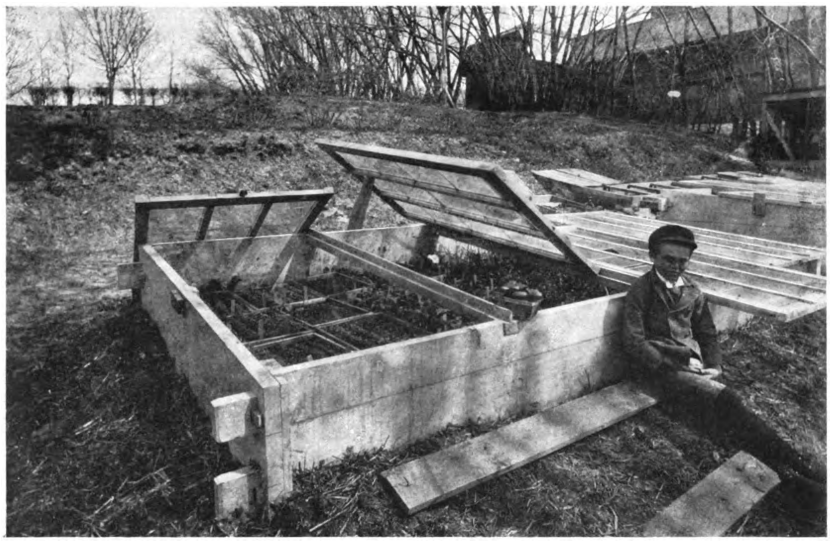
south side of a building, wall or high board fence being most favorable. The land should, if possible, slope away from the beds—preferably toward the south—to insure good drainage. Failing sufficient elevation, it will be well to fill in at the point selected for the bed sufficiently to insure against water settling in or around the beds. Given these three conditions of location,—exposure to sun, protection and drainage,—the situation may be considered ideal.



85. "If one is to have a hotbed every year, it is usually better to use heavier lumber, and to mortise the corners together"

THE MAKING OF THE BED

A hotbed comprises three parts: (1) the pit or excavation, in which the heating manure is placed; (2) the frame or box (without top or bottom), placed above the pit; (3) the glass sash, placed on the frame as a cover. It may be said in this connection, for the benefit of the uninitiated, that a hotbed always has bottom heat (usually furnished by fermenting manure), while a coldframe has no such heat but depends wholly on the sun's rays.

The size and shape of the beds will depend upon the sash used. Two sash side by side, only long enough so that one can reach across them from the two ends, make a bed of convenient size. This makes the bed or frame 6x6 feet, since common sash are 3x6. A frame thirty inches high in the back and twenty-four in front should be constructed of any available inch boards, using three-inch posts for the corners. If the sides of the bed are of earth these posts may extend to the bottom of the pit, though this is not necessary. If of brick the frame will rest upon the wall and may be several inches lower. With earth walls the frame should extend several inches below the surface of the ground. The difference in height between front and back affords sufficient slant to the sash to shed water and at the same time to absorb the greatest amount of sunshine.

The frame may be made of ordinary hemlock or other cheap lumber, and be merely nailed together at the corners. A frame made in this way is relatively short-lived, as it may warp and pull apart; if one is to have a hotbed every year it is usually better to use heavier lumber as, for example, two-inch plank, and to mortise the corners together. Fig. 85. The frame can then be knocked apart after the plants are taken out and the lumber be stored for another year. It is sometimes recommended that a permanent pit be made for the hotbed, laying up the sides with brick or stone, and allowing this masonwork to project a few inches above the ground. On this wall a board frame may be placed. The principal advantage to me of such a structure would be the avoidance of injury from moles, which are likely to burrow under the edges of the frame in sandy soil. If one is to have cold-frames for protecting plants during the winter, these permanent pits would also come handy for that purpose. For general amateur conditions, however, it is doubtful whether it is often advisable to make a permanent structure. The land, where such a pit is placed, cannot be used to great advantage during the summer time and the pit is always in the way, as every available bit of land must be utilized in the home grounds.

The size of the pit will depend somewhat upon how early the hotbed is to be started in the spring. If very severe weather may be expected it will be better to dig the pit at least a foot larger all around than the frame, packing the fresh manure well all around and bringing it well up against the frame; but ordinarily it is not desirable to start the bed so early as to make this extra care necessary. The pit may be dug just large enough to admit the frame and three feet deep, leaving the sides as even and firm as possible. In removing the soil, the surface, if of good quality, should be placed at one side to be replaced when the bed is made up.

Into this pit fresh manure, from the stalls of vigorous grain-fed horses, mixed with about an equal weight of bedding, straw or leaves, should be placed, sufficient to nearly fill it. The addition of this litter, straw or leaves, is most important, as it furnishes the fuel on which the bed depends for permanent heat. Without it the manure would quickly burn out, and the temperature of the bed fall to that of the ground outside. Place a thermometer in the manure, close the sash and wait for fermentation to take place. If the manure is fresh, that is, is taken from the stalls in the morning—not collected from the previous day—fermentation will begin almost immediately. Should it not have begun heating inside of twenty-four hours, it will be better to remove it and substitute fresh manure from another source. When the entire mass is heating freely it should be packed thoroughly by placing a board on top and trampling on it, making it as even as possible. Over this place a couple inches of old well-rotted manure made fine and even, and cover with five or six inches of fine mellow soil free from stones and hard lumps.

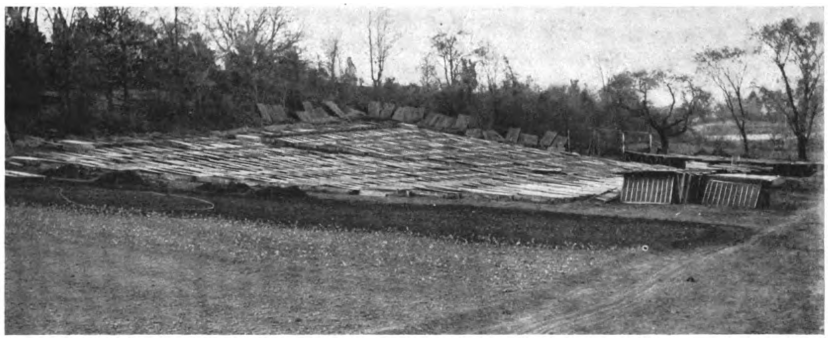
The object in placing the old manure over the fresh is to prevent the tender roots of the seedlings penetrating the rank manure and being injured thereby, if, as sometimes happens from a season of unfavorable weather, the plants are detained in the beds longer than anticipated. In such cases the plants, pushing their roots down into the soil in search of nourishment, may be attracted by the rank manure and injured. If, however, the old manure intervenes the roots will spread out on reaching it, and be for some little time safe. I have frequently seen patches of badly scalded plants ascribed to the sun that were, in fact, suffering from the fresh manure at the roots, and on digging up a few specimens the roots proved brown and dead with bits of the manure clinging to them.

If the manure and earth seem dry the bed may be wet down with boiling water, pouring it well around the sides of the frame, if old, to destroy any sow bugs or other vermin that may harbor there. If the earth is moist and free from insects only the manure should be wet. If the earth is wet it must be allowed to partly dry out and be worked fine and mellow with the trowel. When the heat begins to subside the seed may be sown.

Professional gardeners and those who must do operations on a considerable scale, usually start the manure to heating before they place it in the hotbed pit. This is done by piling the manure and when it begins to heat in one or two places, turning it over for a few days in order to make the whole mass uniform and to distribute the heating areas throughout the pile. Persons who are obliged to use much manure cannot secure that which is fresh or of uniform character, and, therefore, must take this precaution. For the small home garden, however, this extra trouble is seldom necessary. I have had good results from putting the manure directly in the pit, as described above. The precaution is that the manure should be very recent.

A word about the sash: It must be water-tight. If old sash is used it will doubtless need reglazing. It will also need painting and it should be put in perfect order before undertaking the construction of the hotbed, that the putty may have time to harden and the paint to dry before it is needed. It should fit exactly over the frame, putty side up. I like to have the sash secured to the back with hinges. A bar of two- or three-inch stuff should be fastened securely across the frame where the sash meet for them to rest on, and also serve as a brace for the frame.

It will be well for the one on whom the care of the beds devolves to lay in a supply of putty and a few extra panes of glass, and to acquire sufficient knowledge of glazing to set a glass in an emergency, as the proneness of inanimate things to disaster has no more brilliant example than is found in hotbed sash. A broken glass demands immediate attention, and in country



86. A market-gardener's lay-out of glass. Near New York City

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homes the service of the regular glazier is not usually available at a moment's notice.

When several beds are made, one pit may be dug for the entire range of frames set end to end: or a foot or more space may be left between the beds, these little spaces making very convenient little coldframes when covered with glass laid on cleats fastened near the top of the frames. These receive considerable warmth from the beds and, being thoroughly protected, make admirable places for starting cannas and, later in the season when filled with sand, for rooting cuttings of the rose and carnation, where they may remain during winter and be planted out the following spring.

GROWING THE PLANTS

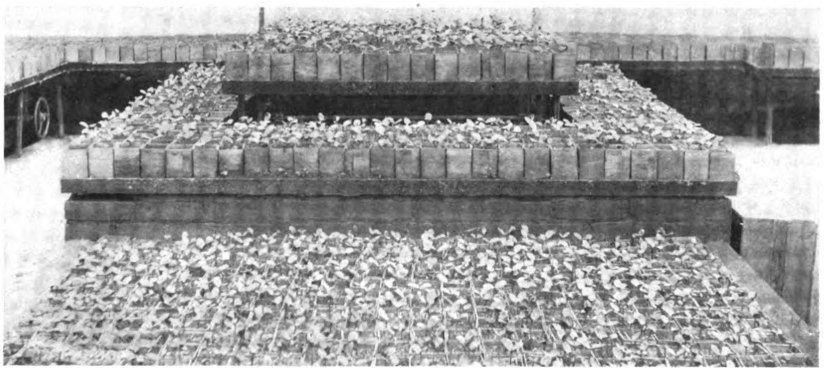
In sowing seeds of either flowers or vegetables the care of the beds will be simplified and better results attained by observing a few simple precautions. First: Sow seeds that germinate at about the same time in the same bed, or, when only one bed is used, in the same side of the bed. For instance, asters, salvias, cosmos, etc., which germinate in from three to five days, should occupy contiguous territory, while such slowly germinating seeds as maurandia, ricinus, thunbergias, etc., should be placed where they will not be affected by the stronger light required by the earlier risers. Then, too, tall-growing plants should occupy the back of the bed that they may have more room to develop and be out of the way of low-growing varieties. Cosmos, ricinus, *Cobæa scandens*, etc., come under this head, while plants requiring little sun will do better along the front, where they will be protected somewhat by the frame.

Very small seeds, as nicotianas, should be simply dusted over the surface and pressed down into the soil. A flat, smooth board 6x10 or 8x12 inches, with a handle on one side, will be found indispensable in pressing seeds into the soil of the hotbed. Larger seeds, as asters, phlox, pansy, etc., may be sown in drills or scattered broadcast and covered with fine soil or sand sifted over and pressed down with the board. I prefer covering seed with sand, as there is less danger of damping-off or other fungous growth in damp weather. Large seeds should be sown in drills and covered their depth with soil, but the earth in every case must be pressed firmly over them. There are several objects to be attained by this—that the tiny sprout may come at once in contact with and lay hold upon the soil at its birth; that no dry or cold air may reach and wither it; and that the roots may be held firmly in their proper positions and not be carried above ground by the natural rebound of the seed-shell at its rupture. It must also be borne in mind that seeds sown under the protection of glass do not need the same deep planting as those sown in the open ground exposed to cold winds, drying sun and heavy rains.

Each section of seeds should be separated from its neighbor by narrow strips of wood; this not only serves to define boundaries, but prevents the washing together of the seeds when watered. It is also a wise precaution, when it is desired to keep varieties of the same plant quite separate, as of asters, tomatoes, etc., to alternate the varieties with some other class of plants of about the same period of germination. Label each section plainly with name, date of sowing and when known period of germination. It will then be possible to tell at a glance whether the seeds are germinating as they should. It will also do away with the necessity of digging them up every day or two to "see if they have sprouted" as is the way of the amateur. When all the seeds have been sown or planted, water carefully with a rubber sprinkler or whisk broom; cover each section with paper; close the sash and leave. The thermometer should be placed where it can be read from the outside and when the temperature rises over eighty in the sun the sash should be slightly raised. Do not allow the soil to become dry. When the first seedlings are up and have shed their old seed-coats remove the paper, placing it directly over the glass; or a thin coat of whiting may be applied to that part of the glass.

The hotbed must be closely watched after the plants are up, especially in variable weather. An hour's neglect may result in the loss of an entire stock of plants. Temperature under the glass rises very quickly under a bright sun, and the sash must be raised sufficiently to allow it to fall to a safe degree; since, however, a cold draft would be equally fatal, it would be best to protect the opening in the sash on the windward side by a piece of matting or carpet, the leeward opening then allowing the overheated air to escape without admission of a harmful current of cold air. Should the sun go under a cloud the sash must be closed and at night and in stormy days the bed should be protected with rugs or mattings.

When the plants have attained sufficient size they may be gradually hardened off by replacing the sash with lath screens during pleasant days, and during the last week or two of their residence in the frames they should be exposed entirely to the weather, with no protection other than that afforded by a wire netting—if that should be necessary—to protect from predatory cats, chickens or mischievous children.



87. "Persons who raise quantities of melons often plant all their seeds in splint forms or baskets made for the purpose." View in a greenhouse; but the same kind of boxes may be used in a hotbed

Much sturdier plants will be produced if the hotbed affords room for transplanting all plants that are at all crowded. This will not only prevent their being "drawn" or spindly, but encourage the formation of new feeding roots, which increase by that much the plant's capacity for receiving nourishment and making consequent growth.

If the plants are well hardened off, so that they are stocky and strong, they can usually be set in the field with very little loss. There are some kinds of plants, however, among which are melons and cucumbers and some of the flowers, that do not transplant readily. These may be sown in small pots or in cast-off berry boxes, and when these receptacles are full of roots the plants may be taken directly to the field. This, of course, entails some expense and labor and usually not many such receptacles can be accommodated in a given area in the bed. Persons who raise quantities of melons often plant all their seeds in the splint forms or baskets made for the purpose, as shown in the illustration (Fig. 87); but in a home garden small tin cans from which the bottoms have been melted off may be used for the same purpose.

Plants that are not injured by light frosts, as asters, pansies, cauliflower, etc., may be removed as soon as large enough and their place given to tender plants that must be retained in the beds until all danger of frost is passed and the nights are warm.

WHEN TO START BEDS

In this connection it may be well to say a few words in regard to the season for starting the hot-beds. One sees a great deal in horticultural and agricultural papers about the starting of hotbeds in February, some writers urging the storing of soil in a frost-proof place that it may be ready against a time when the earth will be frozen too hard to procure it elsewhere. Personally, I have never had occasion to start a hotbed so early. I know of nothing that will be benefited by so early a start, unless it be cauliflower, which may very well be started in flats in the dwelling house and transferred to the hotbed or coldframe when a suitable season arrives. Generally speaking, six weeks or two months from the sowing of the seed is sufficient time to allow for most plants to reach a condition suitable for transplanting to the open ground. Having reached that condition, every additional day it remains in the beds is a detriment to it. If, then, the date at which it is desirable to transplant into open ground is known, it may be easily determined when the hotbed should be put in commission.

For plants of a tender nature the season when all danger of frost is past furnishes the proper date for transplanting to the open. That time on the calendar varies from east to west, from north to south. In the vicinity of Chicago, Toledo and Buffalo, it is usually conceded to be about May 20, but in the nomenclature of "the man with the hoe" it may be roughly stated as "corn-planting time." Given, then, the 20th of May as a standard, it will be seen that the first of April is early enough for all practical purposes for starting a hotbed. I usually start my own somewhat later, getting plants out after the ground has begun to warm up and the nights to be comfortable, when the plants go forward rapidly without any set-backs. This advice applies to southern Michigan.

I. D. BENNETT.

THE FIRST SPRING WORK

The first work of any spring should have begun the spring before. The first effort is a mental one, and this effort should be a determination to profit by the mistakes of the previous year. Each year we plan to do the work better, hoping for better results and always securing greater satisfaction in the work whatever the results may be. It is quite as much pleasure to plan the spring work when the days begin to lengthen, as actually to do the work in March and April.

A set of good implements will add much to the pleasure and efficiency of the early spring work. Plows, hoes, rakes, pruning tools, spraying apparatus, carts, wagons may now be repaired or purchased. There can be no waiting when the frost is actually out of the ground. We must be ready for the first stroke; and the crop depends more on the first stroke than on the last.

How to till the land is the fundamental question. On the solution of this question depends the success of the year. By deep and thorough preparation in the beginning, liberal supply of vegetable matter in manure or crops turned under and frequent shallow surface tillage, thereafter, the land may be made to hold and to retain its moisture; and moisture is more important than liberal addition of plant-food. The very tillage which saves the moisture, however, also makes plant-food more available. Incidentally, this tillage destroys the weeds. Too often we begin at the wrong end of the problem, and aim first to destroy the weeds. Even so, we gain much, but the most important gains are then incidental

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PRIZE DOGS. Left, "Our Bobs," winner of first New York prize last February; 29 in class; winner of Col. Ruppert's Challenge Cup, Pan-American Exposition. Right, "Marvel Croft," winner of prizes wherever shown. Won special Best St. Bernard prizes wherever entered

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"Coquette," two years old; 7 puppies worth $200 each. Mr. Gould's favorite. Won first prize at last February's show

"Marvel Croft"

"Baron Sundridge, Jr.," (two pictures). Smooth St. Bernard. Won first prize at New York and Pan-American

"Lyndhurst Nigger," son of Marvel Croft. Winner of first prize at Burlington, Vt.

"Champion Alter Ruth," 4 years old. Winner of special Pan-American open class first prize for best short-haired St. Bernard

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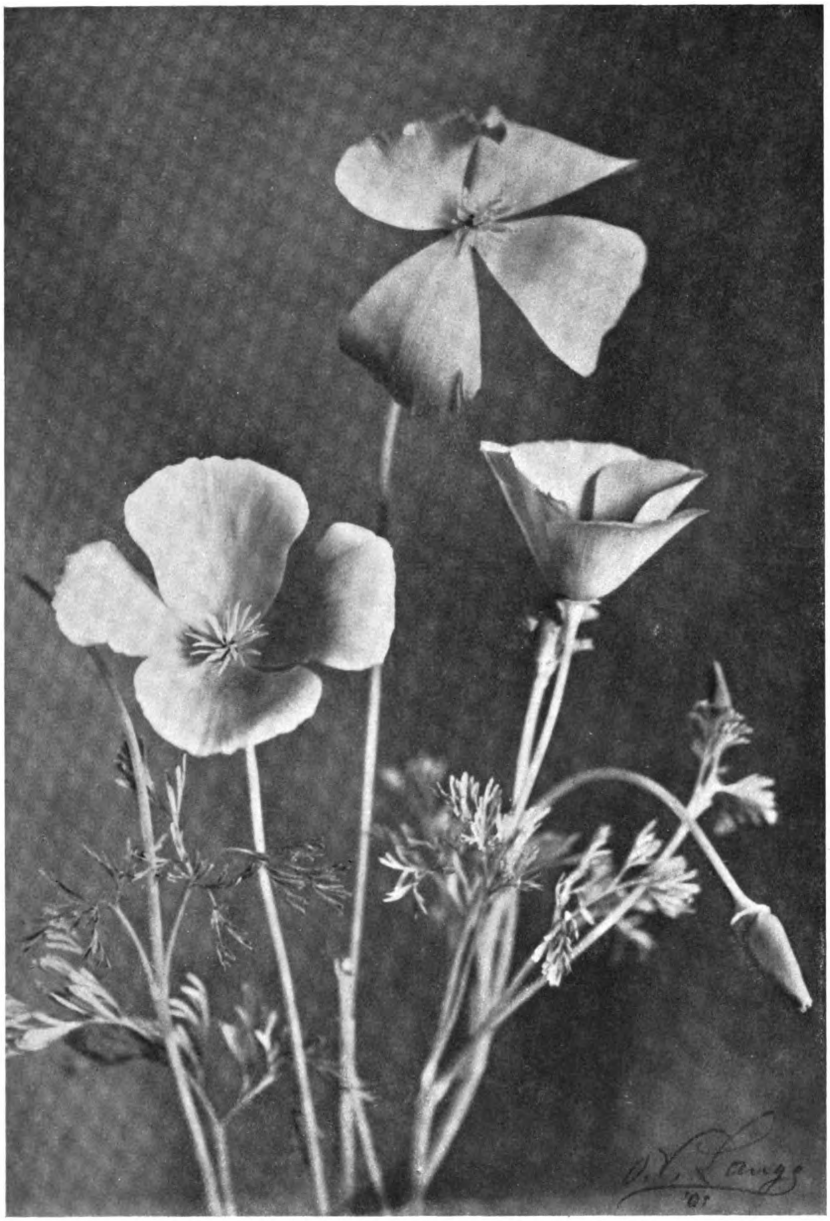
THE POPPYWORTS

SKETCH OF SOME OF THE HIGHLY-COLORED FLOWERS THAT HAVE GIVEN CALIFORNIA ITS FAME AS A FLOWER-LAND

AMONG the wild flowers of our fields and pastures, particularly in California, the poppyworts occupy a prominent place in the number both of individuals and of species: out of eleven genera belonging to this family, which are indigenous to the United States, nine are found in the California flora. Of these, by far the most abundant and best known, alike to inhabitant and to visitor, is the gorgeous eschscholzia, popularly known as the California poppy, and fittingly selected as the state flower by popular choice and the concurrence of both houses of the State Legislature.

The popularity of the eschscholzia is undoubted. No other native flower of the state is so well known or has received such a meed of praise. No other plant is so fitting an emblem of the wealth of the state in gold, golden oranges, golden grain and golden sunsets. And the poppy is with us almost the whole year through! In the rainy season and the time of drought alike it seems to flourish; one of the earliest flowers to greet us in the spring, it is about the last to leave us in autumn, and there is probably no week in the year when poppy flowers cannot be found in some county of the state. What a wonderful sight is a stretch of level plain, hundreds of acres in extent, covered in spring with a dazzling mass of rich orange-colored poppies, like a veritable carpet of flame, contrasting with the beautiful emerald green of the young grain! Or, late in the year, when the grain has been harvested, what a relief to the eye from the brown and dusty plain is offered by these same poppies in their autumn coloring of light gold, harmonizing beautifully with the soft brown of the stubble! In summer, when the sky is high and colored a deep azure-blue and the grasses on the hillside are just turning brown, what an exquisite effect is produced by the trade wind as it ripples over the surface of such an expanse of color! The sunlight is glorified by this veritable "field of the cloth of gold," and the charm of the whole landscape wonderfully heightened by the miles of glowing eschscholtzias.



88. The California Poppy — Eschscholzia Californica

The poppyworts are known under the botanical order of Papaveraceæ, and form a small but well-marked family comprising three tribes, nineteen genera and only about one hundred and thirty species in all. The family is remarkable for the large number of genera, thirteen out of nineteen, which have less than five species. Of these, seven are monotypic, that is, having only a single species. Of these seven, three (Platystemon, Romneya and Canbya) appear to be found only in California; one (Hunnemannia) is confined to Mexico; one (Sanguinaria) to the Atlantic States; one (Chelidonium) to Europe and western Asia; and one (Eomecon) to China. The 130 species are principally found in the warm-temperate and subtropical regions of the northern hemisphere; very few reach the cool-temperate regions. Three are found in tropical South America, and only one is known to occur in Australia and South Africa. Eleven out of the nineteen genera are represented among the indigenous plants of the United States, and of these nine are found wild in California, while only two, each with but one species, are native to the Atlantic States. Five genera are not found beyond the confines of California, and seven occur only west of the Rocky Mountains. Not only on account of abundance of individuals, therefore, but also because of a large majority of the genera and species of the United States, the poppyworts form a distinctively characteristic Californian plant-family.

None of the Californian species ascend the mountains to any great height; none are alpine, as are some of the species of southern Europe. The tree poppy, *Dendromecon rigidum*, occurs on dry, rocky ridges and slopes up to an altitude of between three and four thousand feet in both the Coast Range and Sierra Nevada Mountains. It is the only truly woody plant in the family and sometimes attains a height of eight feet. The flowers are of a golden yellow color, and sometimes as much as three inches across; as they are produced in great abundance, a large mass of bushes in blossom at one time is very effective. The leaves differ from those of other members of the family in being entire, and thick and firm in texture. The tree poppy is well worthy of garden cultivation and is sometimes met with in European botanical collections; it is but rarely grown, however, because it is found so difficult to propagate. On account of the long taproots, which penetrate to a great depth among the broken and decaying rock of its native haunts, the shrub is transplanted with difficulty and rarely survives the shock. It seems to be equally difficult to raise it from seed.

There are many valley and foothill species. The open, plain-like valley flows of California and the washes of torrential streams are gay, in early spring, with a profusion of bright flowers, chiefly annuals, among which two poppyworts,

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the orange-colored eschscholzia and the delicately cream-tinted platystemon, occupy a prominent place, in company with brilliant blue nemophila, orange-colored amsinckia, pink alfilerilla, and numerous kinds of yellow or white compositæ, interspersed with patches of dark blue brodiea. Each species usually dominates its own particular area, almost to the exclusion of the others, so that it gives color and character to that patch. Acre after acre, mile after mile, will thus be covered with masses of blossom in tints of bright blue, orange, white, yellow, pink or cream, and the effect of the whole, especially during the month of April, may be likened to a huge patchwork quilt thrown on the ground, affording a pleasing relief to the eye from the otherwise monotonously uniform and almost level plain. These masses of color are most apparent in the drier portions of the Tulare valley in seasons of light rainfall when the ground is not broken for grain. But even in the great grain-fields of the San Joaquin and Sacramento valleys, vast areas of orange-colored eschscholzia almost dazzle the eye with the brilliance of their coloring as they rise above young grain, and here and there patches of blue nemophila, phacelia or brodiea afford a pleasing contrast. Of all the beautiful wild flowers for the abundance and showiness of which California has become justly famous, the eschscholzias take the leading place for brilliant coloring combined with exquisite texture, grace of form and dainty modesty.

The restfully harmonious beauty of our poppy-covered hills in spring attracted the eye of the poet, Edward Rowland Sill, and lent itself to the following descriptive lines:

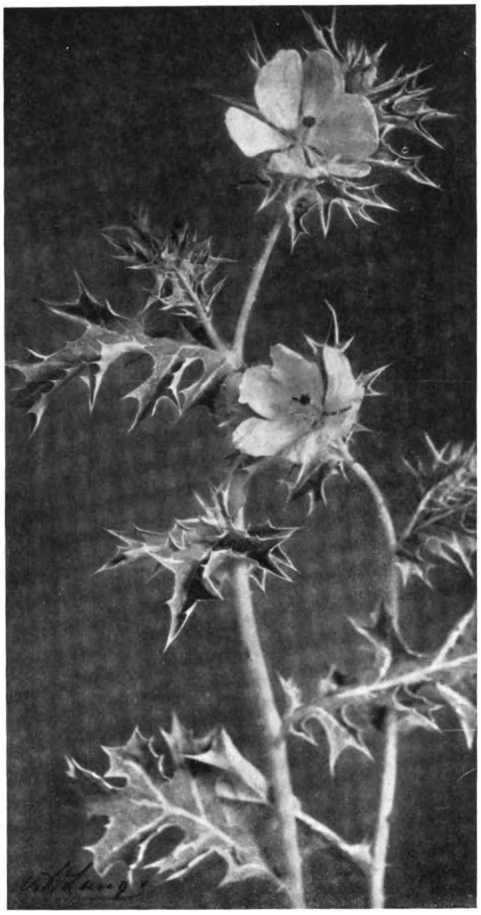
"By the wild fence-row, all grown up
With tall oats, and the buttercup,
And the seeded grass, and blue flax-flower,
I fling myself in a nest of green
Walled about and all unseen,
And lose myself in the quiet hour.
. . . . . .

Far up the hill-farm, where the breeze
Dips its wing in the billowy grain,
Waves go chasing from the plain
On softly undulating seas;
Now near my nest they swerve and turn,
And now go wandering without aim;
Or yonder, where the poppies burn,
Race up the slope in harmless flame."

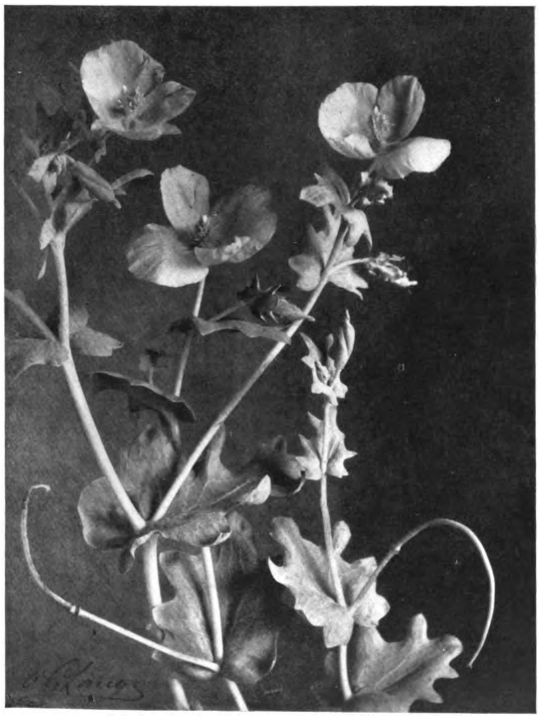
The eschscholzias, one of which is known as the California poppy, are herbaceous plants, either perennial or annual, and are usually found on deep soils, fully exposed to the sun either on the open plain or the rolling foothill country.

Three or four species of eschscholzia occur in California, of which the commonest and most ornamental is the California poppy, *Eschscholzia Californica*. This species occurs in several varieties, varying principally in size and coloring of flower. The typical plants, from which the species was first described, were collected on the San Francisco sand-hills; this form has comparatively small flowers with orange-colored center and broad, bright yellow margins to the petals. The form found away from the immediate vicinity of the ocean, known as variety *crocea*, is stouter and has larger flowers, the individual petals being sometimes two inches in length; individual flowers eight inches in diameter have been reported from rich alluvial soils. The color is a deep orange throughout, early in the season, at which time the flowers are much larger than later, when they become smaller and paler; the petals have an exquisite satiny sheen which it seems almost impossible to reproduce with an artist's brush. (See Fig. 88.)

The beauty and gorgeous coloring of the eschscholzia attracted the eye of the early Spanish inhabitants of California and led them to give it more poetic names than they usually assigned to any one plant, such as "Copa de Oro," "Torosa," "Amapola" and "Dormidera." Miss Parsons records that "in the early days, when Spanish vessels sailed up and down the newly-discovered coast, the mariners, looking inland, saw the flame of the poppies upon the hills and called this 'the land of fire.' They said that the altar-cloth of San Pascual was spread upon the hills, and, filled with a devotional spirit, they disembarked to worship upon the shore."



89. Mexican Poppy — Argemone Mexicana



90. Horned Poppy — Glaucium flavum

The long and somewhat awkward name eschscholzia was given to it by Adelbert von Chamisso, a German naturalist and poet who appears to have been the first botanist to see and collect it. He was on a scientific voyage around the world, in company with his friend, Dr. J. F. Eschscholz, and landed at San Francisco in 1816; not unnaturally he delighted to honor and perpetuate the name of his friend and companion by associating it, not only with a new plant, but with the most beautiful of the new plants he found on the voyage.

Next to the eschscholzias, the dainty little cream-cups, *Platystemon Californicus*, is probably the most abundant species in California. It is cultivated in European gardens as a spring annual.

The matilija poppy, *Romneya Coulteri*, receives its common name after the cañon of Matilija (pronounced ma-til'le-ha), in Ventura county, southern California, where it is plentiful. It is also found in Santa Barbara county and extends southward into Lower California. It some times grows on steep cañon sides and sometimes in fertile valleys, but perhaps nowhere in great abundance. The botanical name was given in honor of a noted astronomer, Dr. Romney Robinson. The matilija poppy has been called, and perhaps rightly, the queen of California wild flowers. It is a handsome herbaceous plant, almost a subshrub, with stems sometimes fifteen feet high, and solitary white flowers six to nine inches in diameter. In recent years it has become exceedingly popular in English gardens and is in great demand as an ornamental flower. The seeds germinate slowly and, like the tree poppy, the matilija is not easily transplanted. (P. 76, Jan.)

Even the arid desert of the Great Basin, which borders California on the east, yields its quota of poppyworts. These are none the smaller or less ornamental because year in and year out they are "born to blush unseen" save by the desert animals, which live among the sage-bush and cacti.

One of the genera known to us from the desert is Argemone, comprising some seven species, all natives of the warmer parts of America. The thistle poppy, *Argemone platyceras*, with large white flowers two to four inches in diameter, is a conspicuous feature of the desert flora from California eastward to Colorado and New Mexico. It is commonly known to the Mexican greasers of southern California as chicalote (the little lotus). It is occasionally cultivated in gardens, as is also the species known as *Argemone grandiflora*, from southwestern Mexico.

The Mexican poppy, *Argemone Mexicana* (Fig. 89), with lemon-yellow flowers and white blotches on the prickly leaves, is sometimes seen in gardens. It is said to be native to the region from Texas and northern Mexico to Central America.

The tulip poppy, *Hunnemannia fumariæfolia* (p. 96, Jan.), is a Mexican herbaceous perennial with yellow flowers and finely cut foliage resembling that of eschscholzia, but with separate petals instead of the calyptra of the latter.

The horned poppy (Fig. 90), from Europe, and several other Old World species, may be found in American gardens and home grounds.

J. BURTT DAVY.

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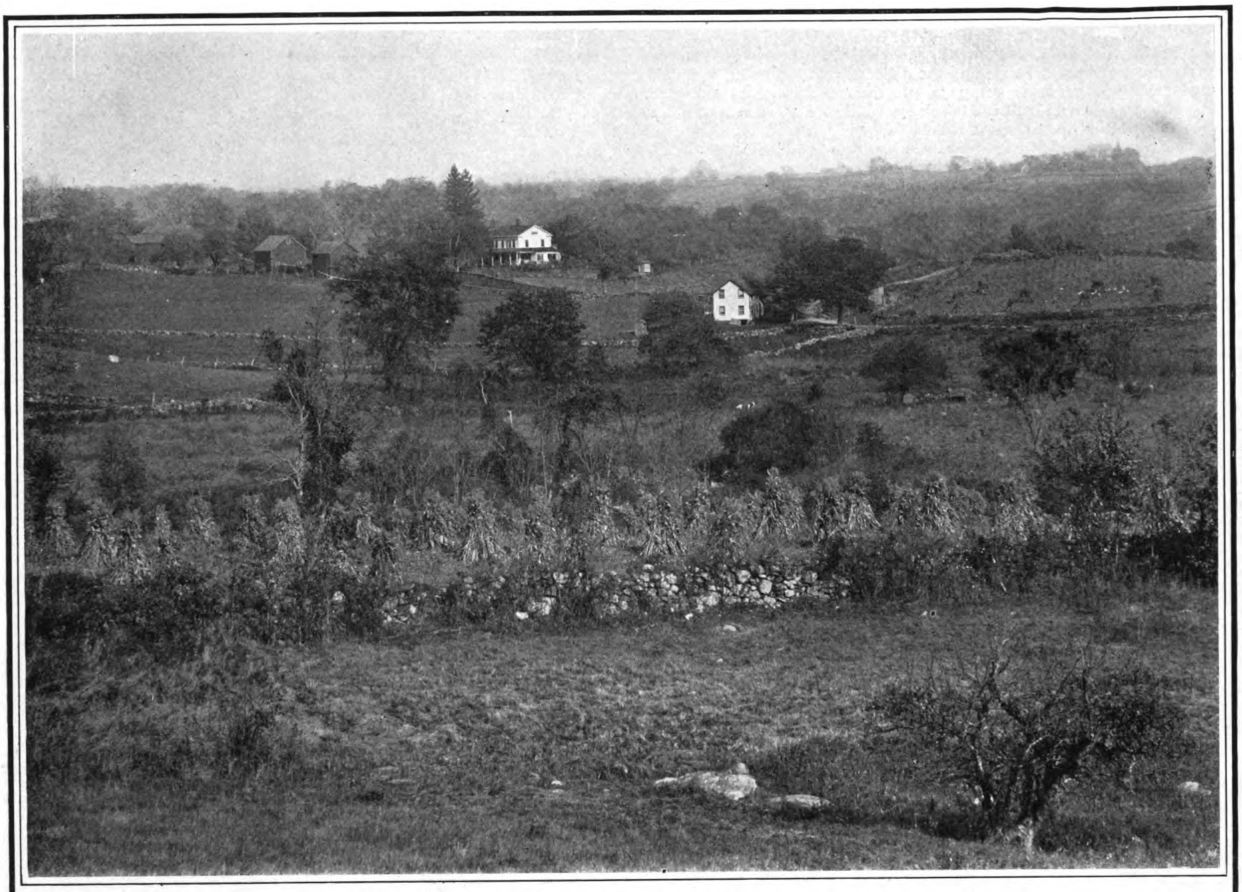
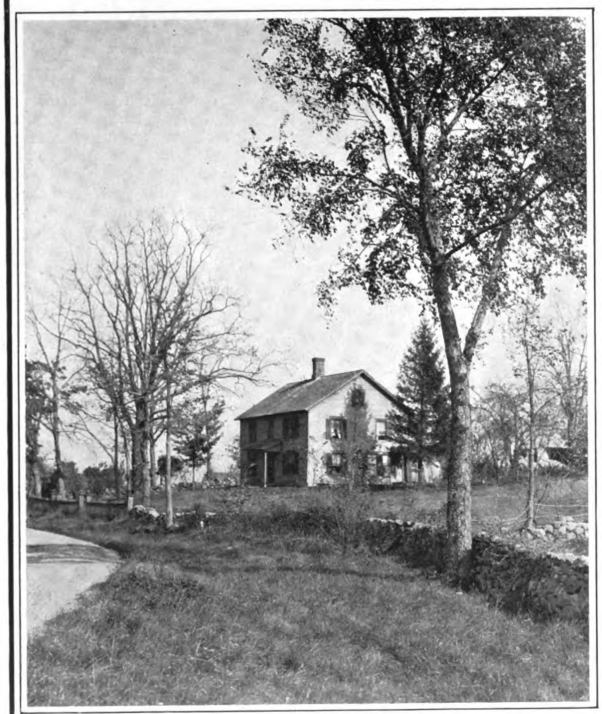
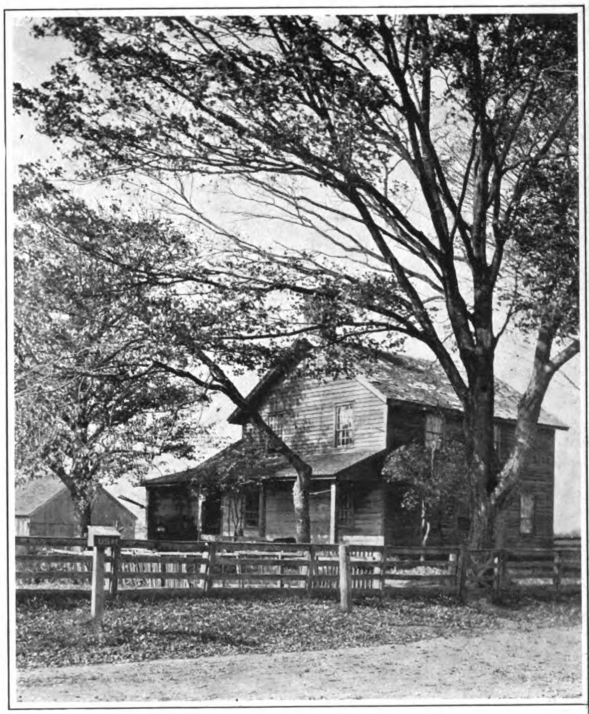


IN THE "ABANDONED FARM" COUNTRY





These pictures show representative cheap farm properties in southern Connecticut. A little repairing of the buildings, some attention to fences, orchards and gardens, will make many of the old New England farmsteads into attractive suburban and summer homes. Many of the larger properties can be revived into productive farms. Some of them afford good opportunities for moderate investments. All of them call one into the freedom and unrestraint of the country.

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Crimson Rambler Roses. Our exhibit of these occupied over 1,300 square feet. At blooming time the best known rose-growers were warm in their expressions of satisfaction and surprise at the splendid results produced. By careful estimate there were not less than 300,000 blooms in full flower when the bed was at its best.

Largest and Best Collection of Cannas. We not only received gold medal at the Pan-American Exposition, but also received the highest award at the World's Columbian Exposition in Chicago, 1893. Our exhibit in both instances comprised about 4,000 plants of the very choicest and newest introductions.

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Besides the above we were awarded numerous silver and bronze medals. The articles enumerated above on which we received gold medals are only a few of our specialties. We would call particular attention to our large stocks of Hardy Field-grown Roses, Hardy Ornamental Shrubs and Trees, Hardy Azaleas, Japanese Maples, Colorado Blue Spruce, Retinosporas, Kalmia latifolia, Andromeda Japonica and Floribunda, Hardy Herbaceous Plants, etc. We have a grand collection of Hardy Perennial Phloxes, Japanese Iris, Hollyhocks, Japanese Anemones, Heuchera sanguinea, etc. Also large stocks of Palms and Decorative Plants for greenhouse and conservatory decoration, large Hydrangeas in tubs for summer-blooming, as well as all the best and newest introductions in Carnations, Chrysanthemums, Dahlias, etc.

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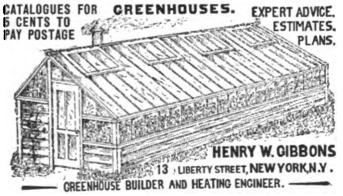

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THE IRRIGATION DISCUSSION

THE discussion of irrigation policies promises to be one of the interesting topics of the present Congress. The agricultural interests, both West and East, are likely to make themselves felt. The result, whether it comes in this Congress or at some future time, is bound to be better and safer because of a thorough airing of all sides of the question. Some of the arguments in favor of governmental aid of irrigation were given in the January issue of this journal; below are given quotations showing various points of view and which were received too late for that issue. One objection to federal aid is based on the general theory that it is beyond the proper sphere of the government: the matter should be left to private enterprise. There is a large body of opinion to the effect that governmental aid and control will foster serious competition with farmers in the older states. Other persons fear that it will retard the fuller development of the older states by diverting enterprise to the reclaimed lands. Others, who believe in the justice and wisdom of the movement as a matter of principle and theory, think that the time is not yet ripe for the government to act. Still others see serious practical difficulties in adjusting the many diverse and conflicting interests, in case the government should undertake the building of irrigation works. If governmental control finally comes, it will inaugurate a change of policy in dealing with the western lands. There is likely to be much shifting of opinion in the meantime.

The National Grange, at its recent session, adopted strong resolutions against "all projects for irrigating any portion of the public domain at the public expense." This action is based on the following preambles: "The one great burden on the farming interests of the United States consists in the perpetuation of the superannuated policy of the government in giving away its arable lands to anybody and everybody who will occupy them, thereby constantly maintaining and increasing a most unfair competition with farmers already established, and diverting to the far West thousands of men who would naturally furnish the much needed force of labor for farmers who have bought their lands and paid or agreed to pay for them; and this injury would be continued for many generations longer should any project be adopted for bringing into cultivable state the immense tracts of the public domain now arid."

The Secretary of Agriculture, in his current report, begins a discussion of the subject as follows:

"There is every reason to believe that irrigation will, in the near future, become a subject for legislation by Congress, and there are important reasons why it should have the attention of that body. Hereafter the seekers for homes on the public domain must look for them in that part of the country where cultivated crops cannot be grown by the aid of rainfall alone, and where the extent of irrigation is the measure of settlement. It has been the policy of this country in the past to dispose of its public lands on liberal terms, in order that men of limited means could be enabled to establish themselves thereon. If this policy is to be continued, more favorable conditions for the reclamation of the remaining irrigable public land must be provided. The largest volumes of unappropriated water now existing are to be found in the great rivers of the West, of which the Missouri, the Colorado, and their more important tributaries are the notable examples. To make these streams available, costly and enduring dams and long and expensive main canals must be provided. If the outlay for these is to be added to the expenditure which each settler must make in building his lateral ditches, putting his land in condition for cultivation, and supporting himself and family during the period of this preparatory labor, the expenditure will be prohibitive for all except men of considerable means. Because of this, agricultural development in the West has for several years been slow, and the period of rapid progress has probably passed, even under the most favorable conditions which can be provided. The desire of the West is not solely, however, for a more rapid agricultural growth, but a more satisfactory one. The uncertain character of water rights has already been referred to. It is the

HANDY HUSBAND

Knew How to Get Part of the Breakfast Anyhow

"'I know one dish I can prepare for breakfast as well as any cook on earth,' said my husband one day when the cook was ill, and he had volunteered to help get breakfast. He appeared with his dish and I discovered it was Grape-Nuts, which, of course, was easy to prepare, for it was perfectly cooked at the factory, but it was a good illustration of the convenience of having Grape-Nuts about.

"We just added a little cream and, of course, had a delicious bit of food. We took up Grape-Nuts immediately after returning from a five years' sojourn in a hot country and our stomachs were in bad condition and we were in bad health generally.

"When we first tried it I confess we thought there were other and better things to eat, and were told we must acquire a taste for this new food. Sure enough, in a day or two we liked Grape-Nuts better than any other kind of food on the table. We both gained steadily in health and strength, and this was caused by Grape-Nuts and Postum Food Coffee.

"A friend of ours had a similar experience. She was seriously ill with indigestion and could find nothing to eat that would not give her heart-burn and palpitation, especially at night.

"She found that a small dish of Grape-Nuts with cream made her a satisfactory supper and gave her a comfortable night's rest. In a short time she has gained several pounds in weight." The writer lives in Topeka, Kan. Name given by Postum Co., Battle Creek, Mich.

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belief of those best informed that this can be remedied only by a larger measure of public control and the making of certain classes of irrigation structures permanently public works."

Secretary Wilson advises a general improvement of the land-entry system by "an entire repeal of the desert-land act and by requiring settlers on homesteads to cultivate as well as to live on their farms. The desert act was an economic mistake. Six hundred and forty acres is more arable land than a man of moderate means can cultivate under irrigation."

The Secretary of the Interior devotes considerable space to irrigation questions, the following being extracts:

"These easily available waters have been taken, and a man can no longer secure a foothold, although there still remain 600,000,000 acres of vacant land. It is possible, by water storage and by building diversion works from great rivers, to bring water to points where such men can utilize it and can enjoy opportunities similar to those had by the earlier settlers. Unless this is done much of the country must remain barren, and thousands of men and women eager to become independent citizens must remain as wanderers or tenants of others. . . . The works of reclamation already constructed have, as a rule, been unprofitable, and capitalists are no longer seeking opportunities for reclaiming desert land when the probabilities are against their receiving an adequate compensation for the risk and labor involved.

"The argument has been presented that if the Government will not make it possible to bring water to these lands they should be turned over to the states, but the majority of citizens who have studied the subject are opposed to such action, on the ground that the vacant public lands are the heritage of the people of the United States and should be held for the creation of homes, and not made a subject of speculation, as has almost invariably been the case with lands donated to the states. The whole trend of enlightened public sentiment is in favor of an expansion of industries and commerce internally through wise action by the National Government rather than attempting to get rid of the duties and opportunities of ownership by giving away this valuable property."

"There need be no fear of competition of western products with eastern agriculture, since the Asiatic markets now opened will absorb the surplus of the western farms. The character of these is also such that the staple crops of the East cannot now go to the remote West, nor those of the West come East, excepting in the case of semitropic and dried fruits.

"The investigations which have been carried on demonstrate that, looking at the matter from all sides, there is no one question now before the people of the United States of greater importance than the conservation of the water supply and the reclamation of the arid lands of the West, and their settlement by men who will actually build homes and create communities. The appreciation of this condition is shown by the fact that both the great political parties inserted in their platforms articles calling attention to the necessity of national aid for the creation of homes on the public domain.

"In view of the facts above noted it is imperative to adopt, at an early date, a definite policy leading to the best use of the vacant public lands."

THE FIRST LADIES' KENNEL ASSOCIATION DOG SHOW

THE first show of the Ladies' Kennel Association was held, December 18 to 21, inclusive, in Madison Square Garden, New York.

Two short years ago—patterned after its English sister—the Ladies' Kennel Association of America was formed. One would hardly have believed that in such a short time it would have become not only such a prominent, but such an important, factor in the dog-loving world. The prize list was in itself almost a guarantee of its success. More special prizes were offered by members, and friends of members, than have been offered by any other show in this country or abroad.

BLACK AND RICH

Is the Way Postum Coffee Should Be

A liquid food that will help a person break a bad habit is worth knowing of. The president of one of the state associations of the W. C. T. U., who naturally does not want her name given, writes as follows: "Whenever I was obliged to go without coffee for breakfast a dull, distracting headache would come on before noon. I discovered that, in reality, the nerves were crying out for their accustomed stimulant.

"At evening dinner I had been taught by experience that I must refrain from coffee or pass a sleepless night. In the summer of 1900, while visiting a physician and his wife, I was served with a most excellent coffee at their dainty and elegant table and, upon inquiry, discovered that this charming beverage was Postum Food Coffee, and that the family had been greatly benefited by leaving off coffee and using Postum.

"I was so in love with it, and so pleased with the glimpse of freedom from my one bondage of habit and so thoroughly convinced that I ought to break with my captor, that upon my return home I at once began the use of Postum Food Coffee and have continued it ever since, now more than a year.

"I don't know what sick headache is now, and my nerves are steady and I sleep sound generally eight hours regularly. I used to become bilious frequently and require a physic, but now seldom ever have that experience.

"I have learned that long boiling is absoiutely essential to furnish good Postum. That makes it clear, black and rich as any Mocha and Java blend. Please withhold my name, but you may use the letter for the good it may do."

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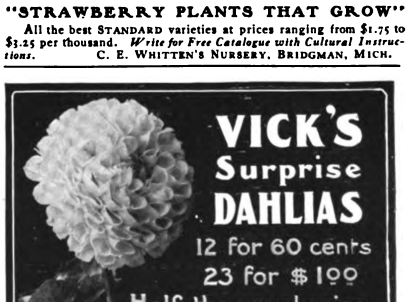

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free, with every order, and to others who write and mention what they wish to grow. Splendidly illustrated. Full of information and advice on planting. Vegetable and Flower Seeds, Roses and Shrubbery, Plants, Bulbs and Small Fruits—it contains them all. Whether you grow for profit or pleasure it will help you. Send for it.

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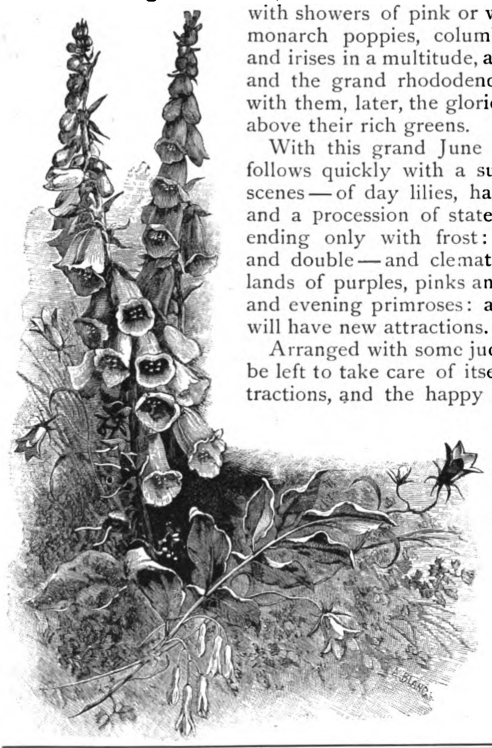
The Garden of Hardy Flowers

THE almost entire exclusion of the great wealth of hardy plants from American gardens in favor of a few — hardly a score — of tender ones has so impoverished them of all real beauty as to make them monotonous. In almost every garden are seen the same stereotyped carpet and ribbon beds, mere lines of color, that are as unchanging during their season of four months as the patterns of carpets, and that perish entirely with the first frost. The entire labor and expense is renewed the next season, and the annual outlay is only limited by one's willingness or ability to pay.

Hardy flowers have all artistic advantages and all practical ones as well. Their first cost being their only cost, and their greatly increasing in size and beauty year after year, makes an investment in them yield an annual dividend of loveliness not to be computed in any ordinary way.

We have seen a garden where early spring is ushered in with myriads of snowdrops, crocuses and violets peeping through the grass, with yellow daffodils and scarlet tulips, with rarest blue of scillas, and with odors of hyacinths; and later with lilies of the valley, and lilac, and hawthorns, and numerous flowering shrubs. June — the month of flowers — finds our garden fairly aglow with floral beauty, roses everywhere, in groups, on fences, sprawling on the grass with their wreaths of loveliness, clambering over bushes, and here and there covering even the tops of the trees with showers of pink or white bloom. Not only roses, but monarch poppies, columbines, early-flowering clematises and irises in a multitude, and Easter lilies in all their purity, and the grand rhododendrons, second only to roses, and with them, later, the glorious auratum lilies showing stately above their rich greens.



With this grand June overture to summer our garden follows quickly with a succession of lovely and changing scenes — of day lilies, hardy pinks, exquisite Japan irises, and a procession of stately lilies, commencing with June, ending only with frost: of phloxes, hollyhocks — single and double — and clematises with their wreaths and garlands of purples, pinks and whites: of foxgloves, larkspurs and evening primroses: and our garden, daily, until frost, will have new attractions.

Arranged with some judgment at first, this garden might be left to take care of itself: time would but add to its attractions, and the happy owner might go away for years and find it beautiful on his return.

I have gathered together the best collection of hardy plants and bulbs in America, and will send catalogue and information about hardy gardens on request.

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FROM COLD VERMONT

My new catalogue of Wild Flowers, Ferns, Old Fashioned Plants, Bulbs, Shrubs and Vines, should interest all who wish to plant permanently. Plants that live from year to year in this climate are hardy enough for any place where white folks live. I make a specialty of the best hardy kinds, and prove them here. Prices are very low, considering the quality of stock. Catalogue, now in preparation, will be sent for two-cent stamp.

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The Flowers

I grow in quantity here in cold New England are the best hardy garden sorts, the old reliable kinds that everybody wants for the border or shady corner. Also the best hardy Ferns and Wild Flowers of New England suitable for cultivation. Illustrated catalogue sent on request.

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The able officers were quite equal to the arduous task and great expense that such an undertaking entailed. Less decisive or influential women would have been daunted at the bare beginning. Prominent and really the main movers in this undertaking were its president, Mrs. J. L. Kernochan; its vice-president, Mrs. Jules Votable; and its able secretary and treasurer, Miss M. K. Bird. The enthusiasm and social backing these names imply would, of themselves, have prophesied success.

The judging of the best dogs bred in the country was of course the feature of interest. Mr. George Rapier—a famous English judge of dogs—came over especially to judge most of the classes. Others were judged by Miss Anna Whitney, Mr. G. Mifflin Wharton, Mr. G. Muss-Arnolt, Mr. Foxhall Keene, Mr. John Davidson, Mr. Henry Jarrett, Mr. C. Rodman, Mr. John Buchan and Mr. Dwight Baldwin.

A few among the many interesting cups offered were: the Suffold Challenge Cup, presented by Mr. Perry Belmont for Pomeranians; the Blemton Challenge Cup, given by Mr. August Belmont, for fox terriers; the Sea View Cup, given by Mrs. Clarence Mackay for the best dog, or bitch, owned by a member of the Ladies' Kennel Association. These, with the Hickory Valley Cup given by Mr. H. B. Duryea, and the Ballyhoo Bey Cup generously donated by Mr. W. C. Whitney, were but part of the many special prizes.

Specialty clubs also offered numerous prizes, and the various hunt clubs near New York entered packs of hounds, which added to the attractions.

As a proof of the cordial relations existing between the L. K. A. of America and the L. K. A. of England, three Alexandra Stars were sent over, for competition, by the sister organization in England. With such a prize list, can any breeder complain of lack of incentive to exhibit?

This show has been especially interesting from the fact that almost all of the women interested—especially its officers—are mistresses of country homes, in which the kennel is one of the main features. The dog of itself is the watch and guard of the country home by night and the companion of its master and mistress by day.

Many breeds are of special interest to country men. The old English sheep dog—docile, brave and tough—bred to tend rather than to destroy, has, I am glad to say, an enthusiastic champion in Mr. Howard Gould. The Beagles, already strong in the hearts of country lovers, had, of course, a full showing. What wholesome exercise and happy days—days filled with keen, blood-stirring, frosty air—can be gained by following these merry voices for many a mile over hill and dale!

ELIZABETH LEWIS.

WHAT GRAPE FRUITS AND SHADDOCKS ARE

THE name "grape fruit" was given because the fruits are borne in grape-like clusters of three or four or even fifteen to eighteen. Its proper name, however, is "pomelo." Pomelos are orange-shaped; shaddocks are pear-shaped. Shaddocks are much larger than pomelos, often weighing fifteen pounds or more, the tree is smaller and the leaves on full-grown trees are somewhat larger. The name "shaddock" is that of an English sea-captain who brought a kind of citrous fruit to the West Indies many years ago. These fruits are wholly distinct species from the orange and lemon.

About 1880 or 1885 the first pomelos were shipped from Florida and sold in New York and Philadelphia, netting the shippers about 50 cents a barrel. The freeze of 1894–95 so reduced the crop that the small amount sold brought an enormous price, in some cases as much as $15 or $20 a box. Last season's crop has brought $4 to $7 a box for good fruit. Thousands of pomelo trees have been set out in Florida in the past four or five years. So far the supply of fruit has generally been inadequate to the demand. The pomelo tree is a heavy bearer, is no more difficult to propagate and care for than the orange.

See a recent bulletin of the Florida Experiment Station, by H. Harold Hume, for this and other information on these fruits.

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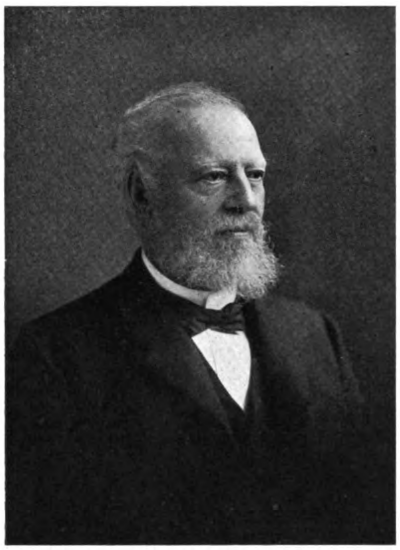
Persons Who Have Improved the Country



II. THOMAS MEEHAN

THE death of the venerable "dean of American horticulture" is still fresh in the minds of botanists and horticulturists throughout the world. Mr. Meehan died at his home in Germantown, Pa., November 19, 1901, at the age of seventy-five. He was known as the head of an honorable nursery firm, as editor of "Meehan's Monthly," author of "Native Flowers and Ferns of the United States," vice-president of the Philadelphia Academy of Natural Sciences, and in his own community as a public-spirited citizen who did much for museums, schools and small parks. The older generation will recall his management of the "Gardeners' Monthly" for something like thirty years. Thomas Meehan was a "horticulturist of the old school," being one of those Kew-trained men known for their great stores of botanical and horticultural knowledge,—a combination which is unfortunately too rare in this age of specialization. Thomas Meehan was the son of a gardener. He was born in England, of Irish and English parentage, at Potter's Bar, near London, on March 21, 1826. At seventeen, he was head gardener at an English estate. At nineteen he went to Kew Gardens and studied for three years. After completing the course he sailed for America in 1848, and entered the employ of Robert Buist, the leading florist and seedsman of Philadelphia. After a year or so he became superintendent at Bartram's Garden, then owned by Mr. Eastwick. He remained there until February, 1852, when he became gardener for Caleb Cope. *Victoria regia* was flowered for the first time in America by Thomas Meehan at Caleb Cope's place in Holmesburg in 1851. His career as nurseryman began in 1853. In the early years he was associated with the late William Saunders. The business was soon permanently concentrated at Germantown.

Meehan was a prolific writer. His great works are the three periodicals, "Gardeners' Monthly," "Native Flowers and Ferns," and "Meehan's Monthly," the first two of which are completed. He is supposed to have contributed over a thousand articles of considerable length to leading scientific journals on both sides of the Atlantic. He began writing at fifteen with a paper on double stocks, which was soon followed by an article of a monographic character on portulaca. His only book was written early in his career. It is entitled "The Handbook of Ornamental Trees." This is a work of considerable merit which never attracted much attention and seems never to have been revised. The "Gardeners' Monthly" ran from 1859 to 1887, and its twenty-nine volumes are a

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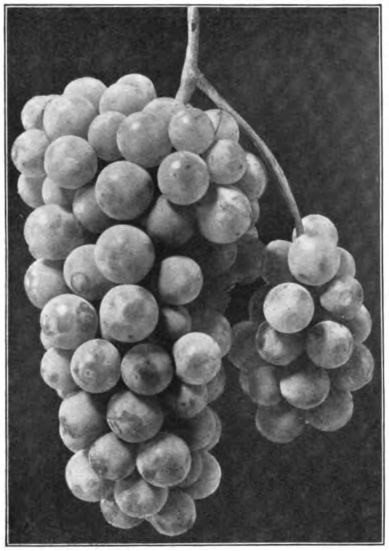

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UNION COUNTY NURSERIES

It is Now Time to Plan for the Spring Planting

Assistance will be cheerfully given in selecting ***Hardy Stock for Pleasure Grounds*** to give foliage color effects, continual bloom, shade or evergreen coolness. Also, hints as to grouping to secure most effective results, and in planting to ensure success. Among the most desirable decorative trees are the wonderful Japanese Maples; I have specimens as low as $1.00 each. Planting and landscaping under competent help if desired. Correspondence a pleasure. Estimates cheerfully submitted. Order now to save possible disappointment. My little "Brown Book" for the asking.

HIRAM T. JONES
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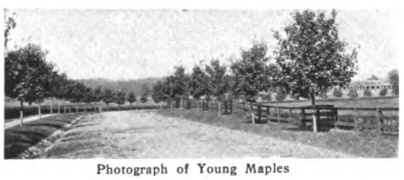

Photograph of Young Maples

NORWAY MAPLES AT WHEATLEY HILLS

The Norway Maple is one of the best shade trees for street and lawn, especially on thin soils. The qualifications of a good tree for planting are: abundant roots, straight smooth stem, symmetrical thrifty top. A single leader prevents future splitting of the trunk and permits trimming up to clear street traffic.

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rich repository. This magazine seems rather crude typographically and pictorially when judged by modern standards, but it was the only magazine of its kind in America during its period. "The Native Flowers and Ferns of the United States" is a work in four volumes, each of which contains forty-eight colored plates. "Meehan's Monthly" was founded in 1891, and its eleventh volume was nearly finished at the death of the "senior conductor." Its distinguishing feature is its monthly colored plate illustrating some American wild flower or fern with a two-page discussion of its botany, history and other points of interest by the editor. Thomas Meehan was a leading contributor to many other periodicals. He was agricultural editor of "Forney's Weekly Press" for sixteen years, and for nearly thirty years he conducted the science department of "The Independent."

His connection with the Philadelphia Academy of Sciences began in 1860. He was vice-president of that body for about thirty years, and senior vice-president for twenty-three years. In the latter part of his life he was chairman of the publication committee and had charge of the herbarium. He was one of the first fellows of the American Association for the Advancement of Science, and in both societies he was one of the oldest living members.

In public life he was locally prominent, although it was his boast that he never held a salaried office. He was called the "father of the common council," having served on that body since 1882. He was a member of the school board for about eighteen years, until January, 1901. The small parks of Philadelphia are due largely to his efforts.

He had many honors. From the state of Pennsylvania he derived the title of state botanist, and he was professor of botany in the Pennsylvania Horticultural society. He was the third American to receive the Veitchian medal for distinguished services in horticulture.

The portrait at the head of this article is from a photograph by Gutekunst, of Philadelphia, kindly sent by Thomas Meehan's Sons. There is a portrait in oil of Thomas Meehan by James L. Wood, which now hangs on the walls of the Philadelphia Academy of Natural Sciences.

A touching incident was noted at the funeral of Thomas Meehan. "At the head of the casket were sprays of Engelmann's spruce, taken from a tree grown from a sprig that formed part of Mr. Meehan's bed while on an exploring expedition in the Wahsatch mountains, which was used by him on the evening of the day he discovered the Engelmann Canyon."

The name of Thomas Meehan will long remain a pleasant memory with all who love our native trees and wild flowers. W. M.

·Recent·Writings·

BOOK NOTES

The Improvement of Towns and Cities, or the practical basis of civic æsthetics. By Charles Mulford Robinson. G. P. Putnam's Sons, 1901. 7¼ x 4¾ inches. 309 pages. Not illustrated. $1.25 net.

The need of a single comprehensive volume on civic and village improvement has been very great. Some sixty different objects for which improvement societies exist are mentioned by the American League for Civic Improvement. Enthusiasts in special societies often fail to grasp the significance of the greater movement and of their part in it. The result is too often waste of effort, unpleasant controversy over unimportant things or complete discouragement.

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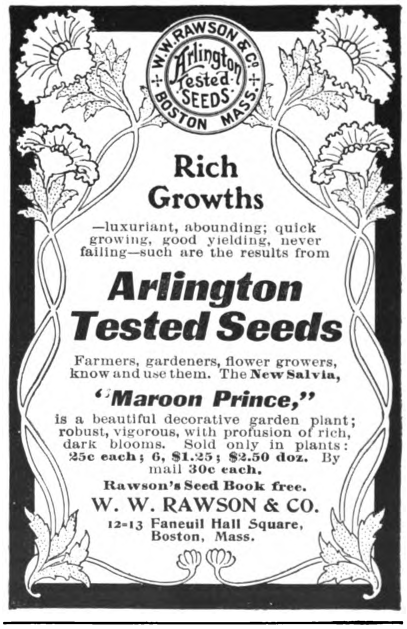

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earnest workers in such societies. He shows what is worth while. He separates fundamentals and incidentals. A whole volume might be written on the subject of any of his chapters. "In several of the cases there is a shelf full of books on the matter of a single chapter—as on the paving of streets, or a large volume on a single thought or phase of a chapter, as on trees in Paris." The author has expressed the aim of his book as follows: "It would be not only a handbook for ready reference, for suggestion, and for incentive along each special line of the work for beauty. It would show the co-ordination of the efforts, the dependence of each upon all the others in order to secure a logical, harmonious result; the place and duty of each regiment of fighters in the battle for urban beauty, and would be a reminder that none fights alone." This result the author has happily achieved. He makes one feel the unity of the joyous and earnest new crusade and holds up as an ideal Aristotle's definition of a city—"a place where men live a common life for a noble end."

In the "foreword" are mentioned the names of over a hundred societies, specific examples of whose work are cited. The roster is an inspiring one, and reveals the marvelous variety of ideas connoted by the words "civic improvement." Perhaps no better conception can be given of the orderly and logical method by which the writer has treated these manifold and perplexing problems than by making the following abstract of the table of contents (the numbers refer to chapters):

A. FOUNDATIONS OF CIVIC BEAUTY
- I. *The site of the city.*
- II. *The street plan.*
- III. *The elementary construction.*

B. BEAUTY IN THE STREET
- IV. *Suppression and repression.*
- V. *The advertisement problem.*
- VI. *Making utilities beautiful.*
- VII. *The tree's importance.*
- VIII. *Possibilities of gardening.*

C. ÆSTHETIC PHASE OF SOCIAL AND PHILANTHROPIC EFFORT
- IX. *Parks and drives.*
- X. *Squares and playgrounds.*
- XI. *Architectural development.*
- XII. *Architectural obligations.*

D. ÆSTHETIC PHASE OF EDUCATIONAL EFFORT
- XIII. *Function and placing of sculpture.*
- XIV. *Popular education in art.*

E. MEANS TO SECURE CIVIC ÆSTHETICS
- XV. *Work of individuals and societies.*
- XVI. *Work of officials.*

One would like to quote freely from Mr. Robinson's book, but space forbids more than a mere fragment:

"It is a rare façade in domestic architecture that cannot be beautified by the soft and clinging green of a vine. This will pick out and emphasize a good detail; it will soften lines; and, half covering a rude device, it will reveal only enough to suggest something better than the reality. It will give beauty to a shadowy corner, warmth where all was cold; and—now and then allowed free, luxuriant play—it will draw its protecting, beautifying cloak around a hideous exterior and make it fair and cool as the wall of a sylvan retreat. Perhaps, in its season, it will deck the ugly façade with fairy clusters and garlands of flowers."

The Insect Book: A popular account of the bees, wasps, ants, grasshoppers, flies and other North American insects exclusive of the butterflies, moths and beetles, with full life histories, tables and bibliographies. By Leland O. Howard, Ph.D., Chief of the Division of Entomology, U. S. Department of Agriculture. Published by Doubleday, Page & Company.

In this large and beautiful volume of 429 pages, a master hand has made a most noteworthy, useful and interesting contribution to American insect literature. No student of insects can afford to be without it, and it should be in a conspicuous and handy place in every nature-lover's library. Such a book was needed. It is unique in its title, its scope, its method of treating the subject, and its illustrations; and its general make-up reflects much credit on both the author and the publishers. No one is better qualified to write such a book than Dr. Howard, and in his vigorous and entertaining way he has

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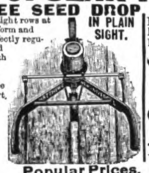

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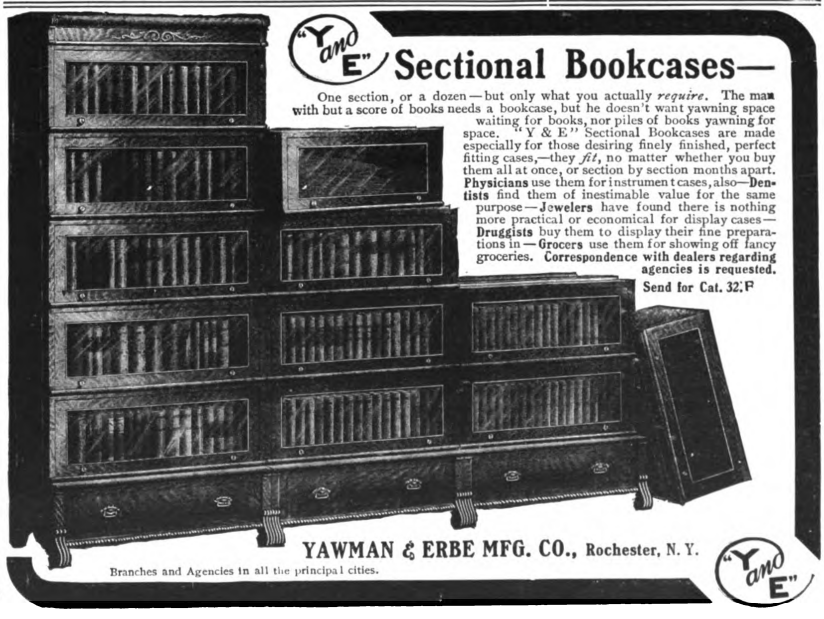

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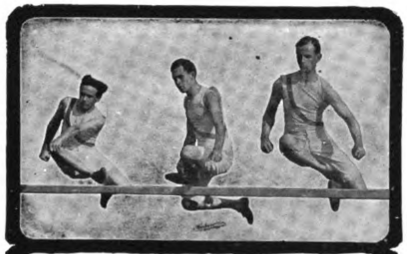

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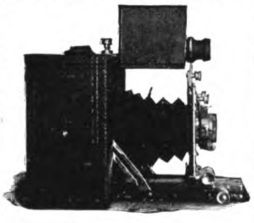

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filled every page with accurate and often fresh, first-hand information; it is a veritable mine of facts about insects. To tell about the lives and habits of insects, and to give general information in a popular, readable way, were the primary aims which the author has admirably accomplished. Structural or technical facts have been omitted or told in a few terse sentences. After a charming and instructive introduction, to begin abruptly the discussion of one of the most specialized, but most interesting groups of insects, the Hymenoptera, is rather unusual and unnatural. We believe that a chapter giving in the author's terse and popular way the principal features of the growth and structure of insects would have been appreciated by those for whom the book was written; and we prefer the more natural method of discussing the lowest or more generalized forms first. Unique and very useful are the stories of the lives of typical members of the different families of insects which are introduced wherever practicable. Another very valuable feature is the fact that, while telling what is known about insects, the author also points out the many gaps in our knowledge, and encourages the reader to try and see some of these unknown doings of these interesting creatures. The chapter on collecting, rearing and preserving insects is pertinent and good. To some the introduction of necessarily technical tables for determining the family to which any insect belongs may seem out of place in such a popularly written book, especially since there is no glossary or explanation of many of the technical terms used. But it would be very difficult to simplify the tables, and there is but one other book (Comstock's Manual for the Study of Insects) which gives such tables for American insects. We believe that many besides systematic entomologists will find the tables very useful. To those who care to go further into the classification, there is an admirable bibliography of catalogues, lists, general works, monographs and synopses for each order of insects.

And such a wealth of illustrations as the book contains! Besides 264 text figures, most of them excellent but some which would have looked better if smaller, there are 48 full-page plates of photographic illustrations. Over 1,000 different kinds of insects are pictured natural size on these plates, and 16 of the plates are reproduced by color photography. In many cases the natural colors of the insects have been reproduced with remarkable accuracy, but some are quite unnatural. The preparation and arrangement of the specimens for the photographer was excellently done and must have required much time and patience. In the case of many of the larger insects, specific determination can doubtless be made from these photographic figures, but rarely with the smaller species. Yet the vast array of so many different kinds and forms is a valuable part of the book, as it serves admirably to give one a conception of the wonderful variety in the insect world.

The great orders of insects which include the butterflies, the moths and the beetles are not included in "The Insect Book," as they are being treated separately. We now have Dr. Holland's "Butterfly Book" and he is preparing a "Moth Book," and we believe a "Beetle Book" is contemplated. To deal with all the rest of the insect world was Dr. Howard's difficult task. He has done it well, and nature-lovers are the richer by a most useful and interesting "Insect Book."

M. V. S.

Forest Trees and Forest Scenery. By G. Frederick Schwarz. Illustrated. New York: The Grafton Press. Pp. 183.

With genuine love for the woods, and appreciation of the beauties that there abound, the author, Mr. G. Frederick Schwarz, has ventured "to make simple inquiries into the sources of beauty and attractiveness in American forest trees and sylvan scenery."

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some detail, and forests of conifers in the chapter that follows. The book closes with a concise statement of the ideals and methods of European foresters, with some description of the artificial forests of Germany and France. The author usually writes in an easy and straightforward style. The book is fresh and full of information about trees, and it must be a dullard who can read it without imbibing some of the author's enthusiastic love of the woods. J. E. R.

Pamphlets About Birds

Recently the U. S. Department of Agriculture has published a number of interesting and valuable bulletins and circulars about birds. Some of these are available for free distribution.

Protection of Birds and Game. The Digest of Game Laws for 1901, Bulletin 16 of the Division of Biological Survey of the U. S. Department of Agriculture, is a document of 172 pages, besides a large folder, which gives the close seasons for all game in the United States and Canada. A capital feature is the map illustrating the need of greater protection for wild ducks. Such work can hardly be praised too highly.

While the Digest of Game Laws is not available for free distribution, the public may send for a twenty-page circular for information concerning game, together with laws regarding seasons, shipment and sales, Circular 31, Division of Biological Survey.

The latest directory of state officials and organizations concerned in the protection of birds and game is Circular 33 of the Division of Biological Survey, U. S. Department of Agriculture. This was issued April 18, 1901. It contains addresses of officials in thirty-seven states and provinces, nine national organizations, thirty-eight state organizations and the twenty-five Audubon societies.

The "Lacey Act" places the preservation, distribution, introduction and restoration of game and other birds in the hands of the U. S. Department of Agriculture. Circular 29 of the Division of Biological Survey gives the full text of the act, together with several pages of explanatory matter.

Those interested in the protection of birds may be reminded of two older publications of the Division of Biological Survey, both published in the year 1900. Bulletin 12 is a 94-page digest of legislation for the protection of birds other than game birds. Bulletin 14 is a 90-page summary of law relating to the transportion and sale of game.

How Birds Affect the Orchard. For a remarkably compact, expert and fair statement of the good and the bad work done by birds in orchards, the practical fruit-grower is referred to pages 291-304 of the last year-book of the U. S. Department of Agriculture. Those who cannot now secure the year-book may ask for a reprint of the article by F. E. L. Beal, as it has been separately published.

Forests and Snow

This is the title of one of the prettiest bulletins ever published by an experiment station. This is Colorado Bulletin 55, by L. G. Carpenter. It contains twelve pages of text and eighteen full-page half-tone pictures of mountain scenery. The following conclusions are reached. The preservation of the mountain forest is an absolute necessity for the interests of irrigated agriculture. The mountain streams in the early irrigation season are largely supplied by melting snow. There is a great daily fluctuation due to the daily variation in the rate of melting. Cloudy weather in the mountains, protecting the snow from the radiation of the sun, causes the fluctuation to disappear and the flow to decrease. This decrease is so great that the cloudiness associated with continued rain usually more than counterbalances the gain from the rain. The loss of snow by evaporation is considerable, especially when exposed to winds. Snow remains in the timber and in protected spots much longer than where exposed. This is due not so much to drifting as to shelter from the radiation afforded by the forest cover. Hence, the greater amount of forest cover, the less violent the daily fluctuation, the more uniform the flow throughout the day and throughout the season, and the later the stream maintains its flow.

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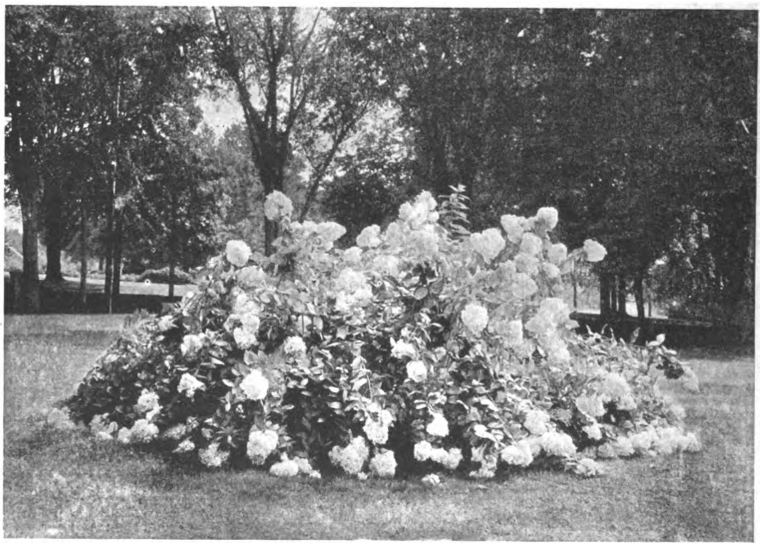

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VOL. I. NO. 5
Old Series: Vol. VI—No. 9

MARCH, 1902

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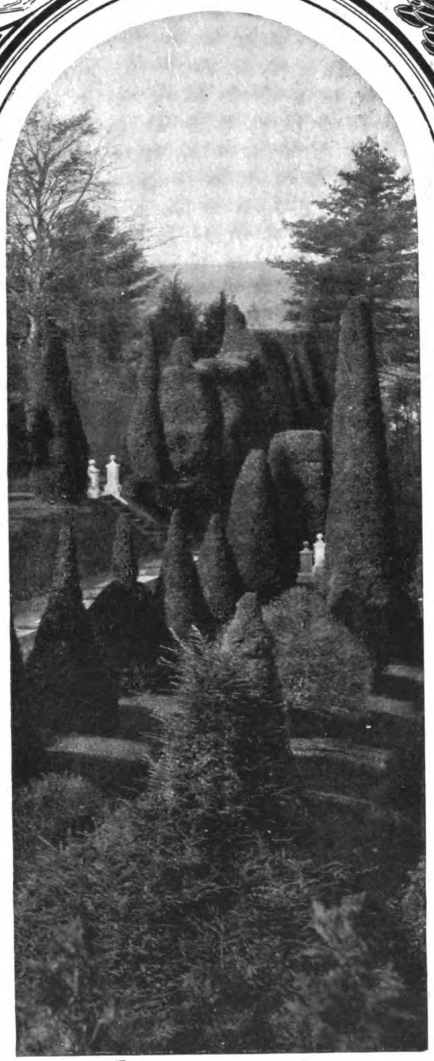
COUNTRY LIFE IN AMERICA



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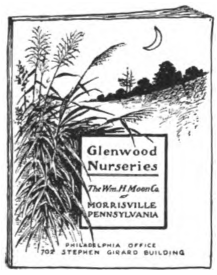

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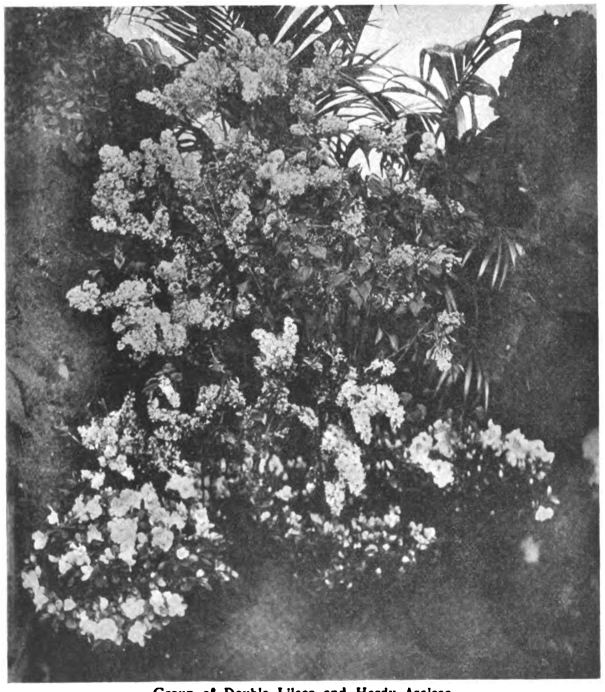

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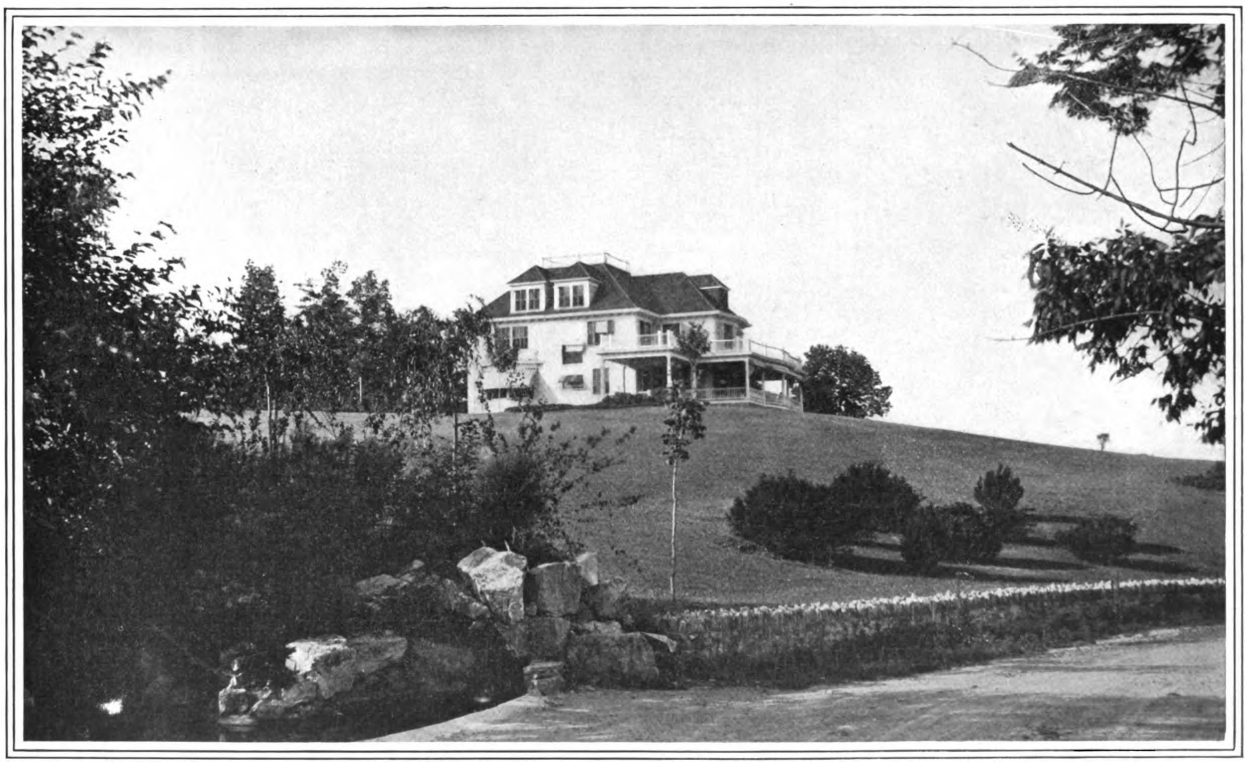

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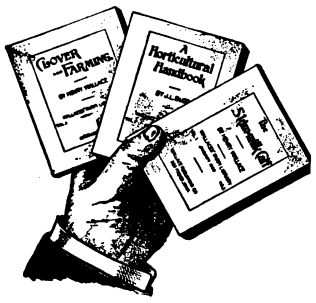

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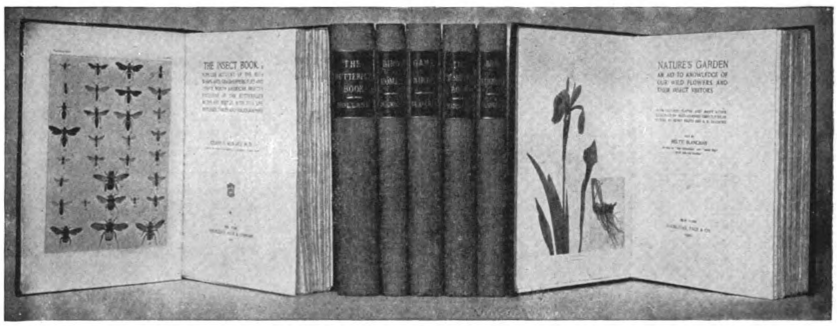

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Country Life in America—Some Publishers' Notes:

THE past four months have brought us a host of friendly letters expressing good wishes for COUNTRY LIFE IN AMERICA. More than this, our readers have helped to an extraordinary degree in making the magazine known to others, thus extending its circulation. These letters, which we have not been able to answer individually, have done more to make the task of publishing the magazine a pleasant one than the writers can imagine.

The success of COUNTRY LIFE IN AMERICA came so quickly that it proved beyond doubt the real need of a periodical made for people who love the country in season and out, in sunshine and rain. The field being assured we propose to occupy it adequately. The number of text pages has already been increased, and plans for every kind of improvement are in hand.

To Photographers:

We always need *good* photographs of out-of-door subjects. It is said that American photographers are not able to produce the deep, rich effects which are printed so superbly in our esteemed English contemporary "Country Life." We will welcome prints from interesting negatives and especially those giving detail and rich color effect as well. If the prints are to be returned, enclose stamp and write description and price for copyright on the back of the mount, otherwise such as are used will be paid for at the usual rate.

The Spring Number

The April issue will, we hope, carry out the spirit of spring. Additional pages, a special cover and a great number of superb illustrations will mark the most important issue yet undertaken. Besides the regular features there will be begun a new one entitled,

The Country Home

which will discuss from month to month all the fascinating plans connected with the building of a home (not a house alone) in the country. The April instalment will be devoted to "Choosing the Site." Later the building of a house, its furnishing, the garden and outbuildings, the home animals, and all that pertains to the home in the country will be touched upon. City people are but just now beginning to realize what may be gained for little money in country living.

Remarkable Illustrations

Among others will be a series of rattlesnake pictures made in the reptile's own domain—the snake rampant, so to speak. Another is a series of wild foxes taken from life, each of these sets of pictures form a most important contribution to photographic records.

Spring Blossoms

will be a photographic history of the spring beginnings of the flowers and trees, taken by J. Horace McFarland.

School Gardening

will show by photographic evidence the great improvement made in the school grounds by intelligent interest of the children themselves.

Re-making an Orchard

is the subject of a practical article showing what can be done in this direction, with photographs.

Pigeons

will be a practical article with some remarkable illustrations taken at a great pigeon farm in the West.

How to Choose a Horse

is another practical article, and

The Year's Calendar

for April will be especially charming, covering, as it does, everything connected with the country in this month, with many pictures.

How to Make a Garden

is continued. This month the preparation of the soil is considered.

Criticism and Suggestions

We will welcome both from readers, but to be helpful, they should be explicit and definite, and, if possible, practical.

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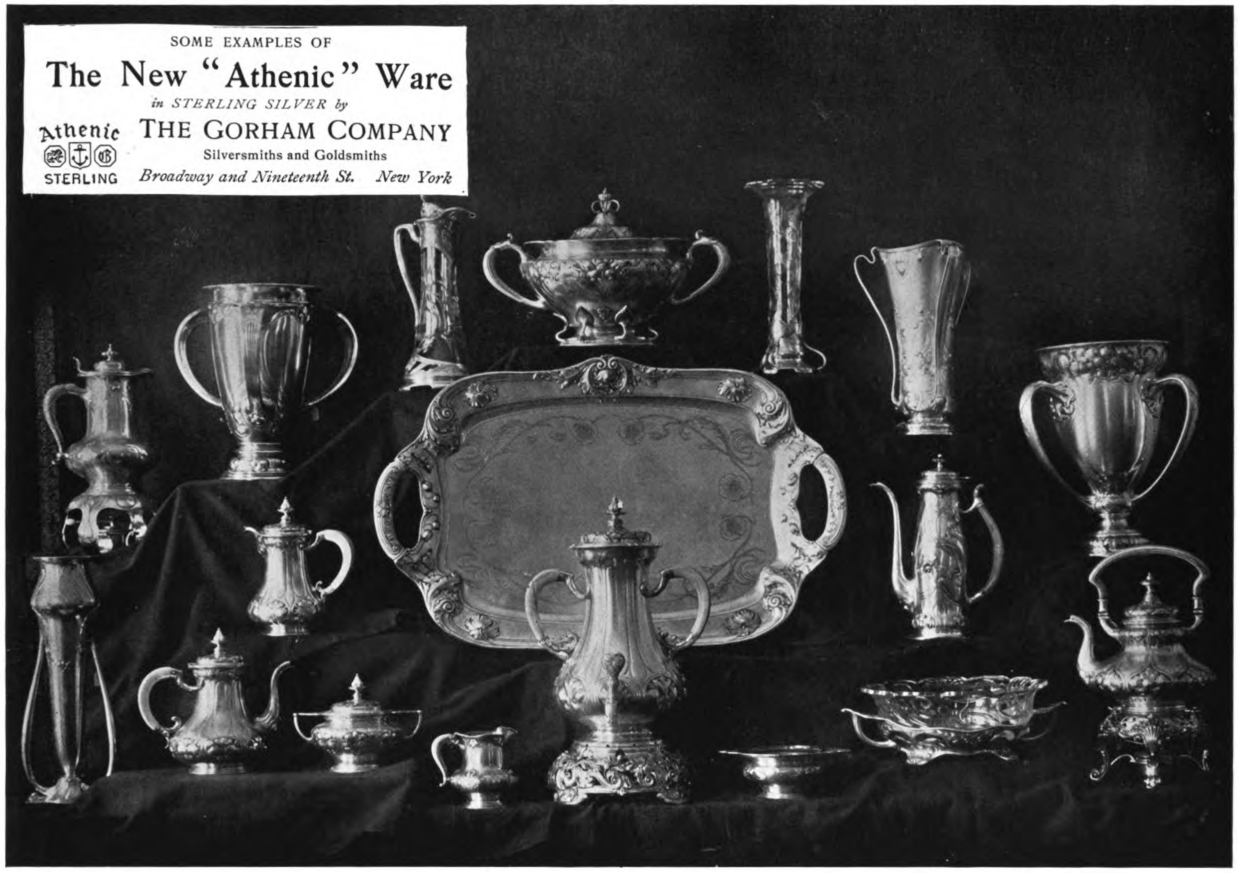

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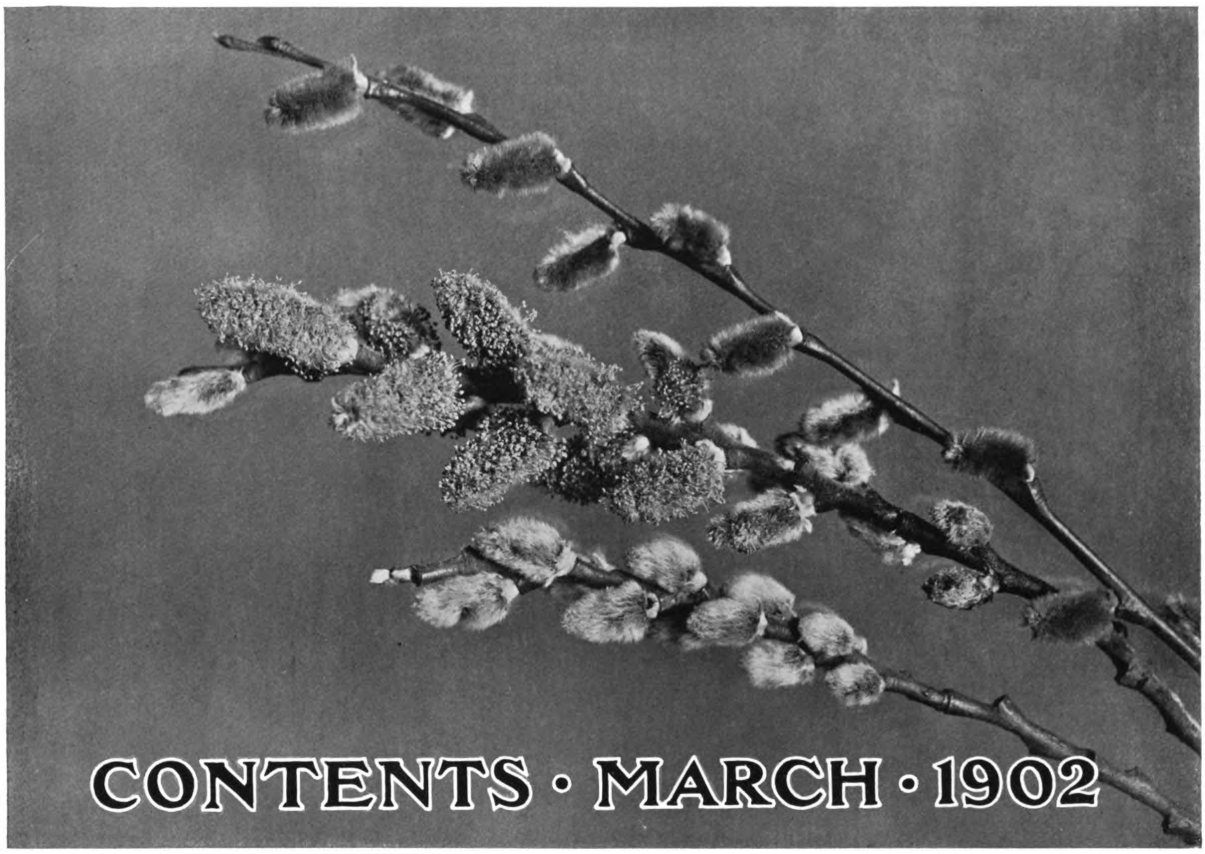

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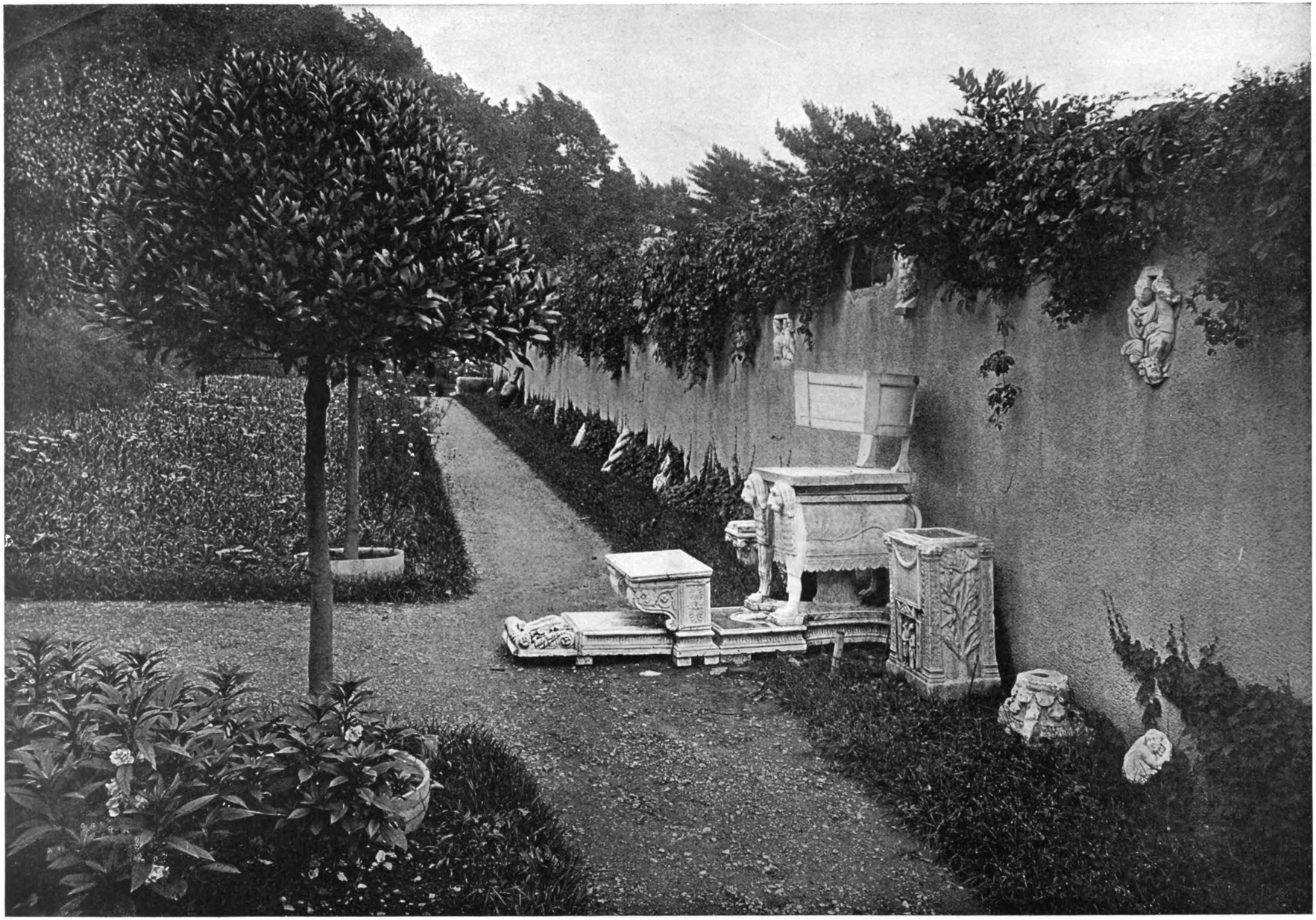

"The hospitable seats — some of them also of old marble — invite you to rest." (See page 150)

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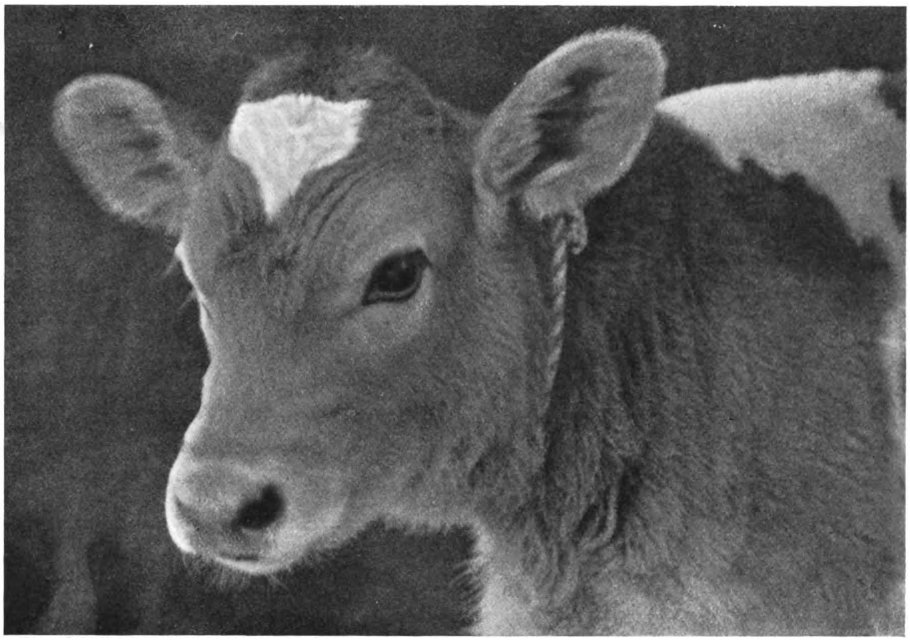

"Who loves a calf as a child does?"

THE ANIMALS OF THE FARM

WHAT THEY MEAN TO THE DEVELOPING BOY AND GIRL—THEIR IMPORTANCE IN A MEANINGFUL COUNTRY LIFE—A BIT OF FARM PHILOSOPHY AND ITS BEARING ON PRACTICAL AFFAIRS

By I. P. ROBERTS

FLOWERS and animals are the objects that the lads and lasses usually most admire. The flowers are pulled to pieces or quickly fade, but the animals, especially when young, are a joy for ever. What gymnasium furnishes opportunity for youthful development, both physical and mental, equal to a yoked pair of untamed yearling steers? In gaining dominion over them the lad gets the strength and enjoyment which come from learning how mind may dominate all else. So strong is the love for animal life in youth that cats and dogs, though sometimes not of cleanly habits nor always safe, become pets and playmates in the household of prince and pauper alike.

However abundant and desirable rare flowers, luscious fruits, beautiful shrubbery and velvet lawns may be in the country home, the refined taste and the artistic eye are not satisfied unless beautiful animals are present to add charm to the homestead by their grace of form, harmonious movement, expressive countenances, capacity for love and intelligent obedience,— all allying them closely with intelligent men and women. The moving life of sea and land has given joy and inspiration to the human family in all the past.

In these strenuous times the animal kingdom is looked upon too often as simply a means to an end, and that end is profits. In this age of stored resources, country life can be made grander, fuller and more enjoyable by a study of the most common animals of the farm. And this is especially true when animals and plants are studied conjointly. The draught horse has not the fine lines of the thoroughbred, but under appropriate conditions even this utilitarian animal becomes beautiful. Be the lad country-bred or city-bred, his blood quickens and his appreciation of the beautiful is expressed in joyous shouts when the great dappled Percheron, all unseen before, emerges from the lofty rustling corn. He may not fully realize how beautiful the scene is, nevertheless his face becomes more expressive by reason of it. This may be

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the beginning of his love for country life, and for the time the beautiful overshadows the utilitarian.

The animals of the farm, like the children, are living, growing and intelligent beings. There are bonds of sympathy. There is fellow feeling. Who loves a calf as a child does? All the mystery of birth and life and death becomes a constant association, and the sympathies are taken beyond oneself; and thus is learned the great lesson of altruism. The animals are individuals. The child feels this, although he does not know why. It is a personal matter with the child when the cow is hungry or when Bill and Charley are taken to the corner blacksmith shop to be shod. He cares for their wants. What child does not like to feed the pig?

"What child does not like to feed the pig?"

At the horse show at Madison Square Garden thousands stopped to admire the beautiful head of some thoroughbred, the graceful carriage of the hackney and the noble form and rounded lines of the placid draught horse. As I observed the delight of this vast throng I could but conclude that the American at least finds the highest type of beauty in the well-bred animal and secures the greatest and most lasting delight and the highest form of artistic instruction in studying form, motion, symmetry and exhibitions of love and intelligence as displayed not only in wild animals but as well in those intimately associated with rural life and reared primarily for commercial purposes. This love of animals is often strengthened, by such displays, even in the man who is all untaught in literature and art. How erect the driver sits, how proud of bearing, and what loving words as he draws rein over a pair of sleek roadsters! I saw a dozen street cars, as many conductors, and four policemen, all held up for ten minutes by a teamster because one of his loved Percherons had received a slight scratch from the car fender.

The love for a beautiful animal is a powerful factor in modifying the character for the better, notwithstanding the fact that occasionally the horse is found in company beneath him, forced to do the bidding of vicious associates and then indirectly modifying character for the worse. But in writing these lines I am thinking of the lads and lasses of the farm, who are as free, as untrammeled and as innocent as their companions, the chickens, the calves and lambs, with which they associate. The loving animals of the farm are far safer companions for nascent boys and girls than precocious youths already familiar with many petty vices.

It is a well-known fact that the rural population has furnished a proportionately larger number of distinguished men than the urban population. Not infrequently the overgrown, unpolished country lad in after life, when honorable prefixes and suffixes have been added to his name, looks back with pleasure and pride to the scenes and victories of his boyhood. He remembers the ox team, the fretful colt, the pigs that broke into the clover field. No such joy, no such rapid development has come to him in after life as he found in the cool woods watching the squirrels and the kingfishers, the foxes and pigeons, or lying prone upon the grass in the

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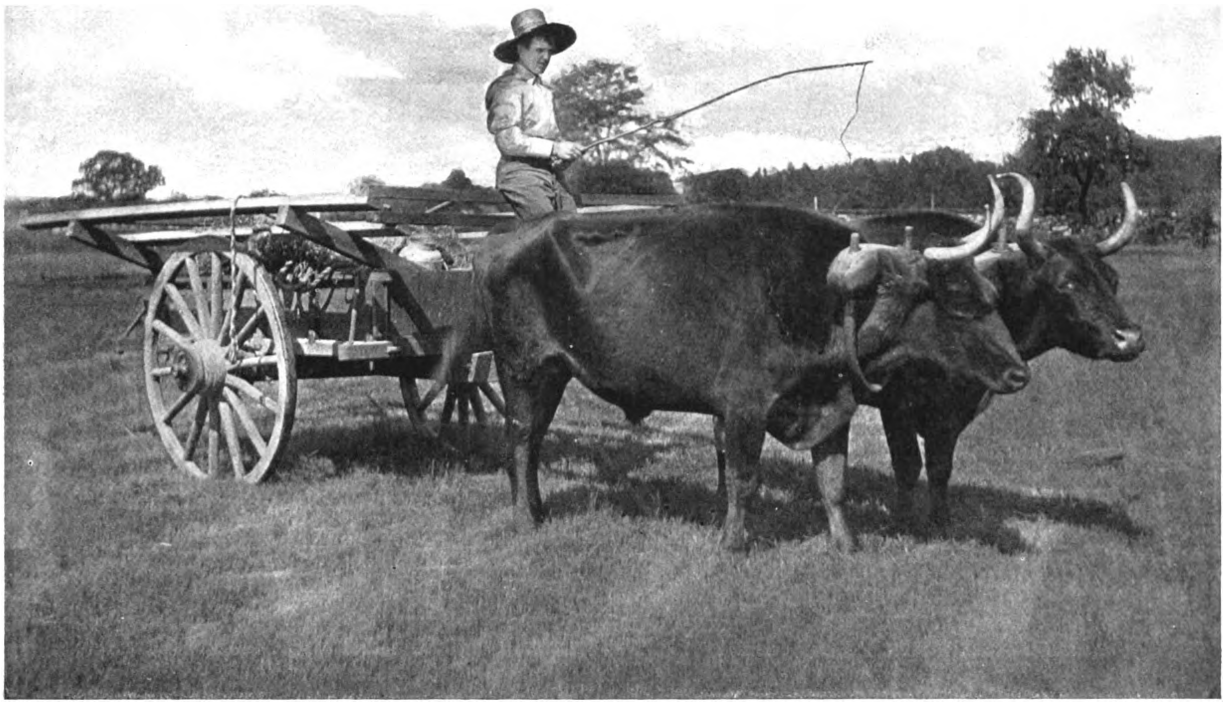
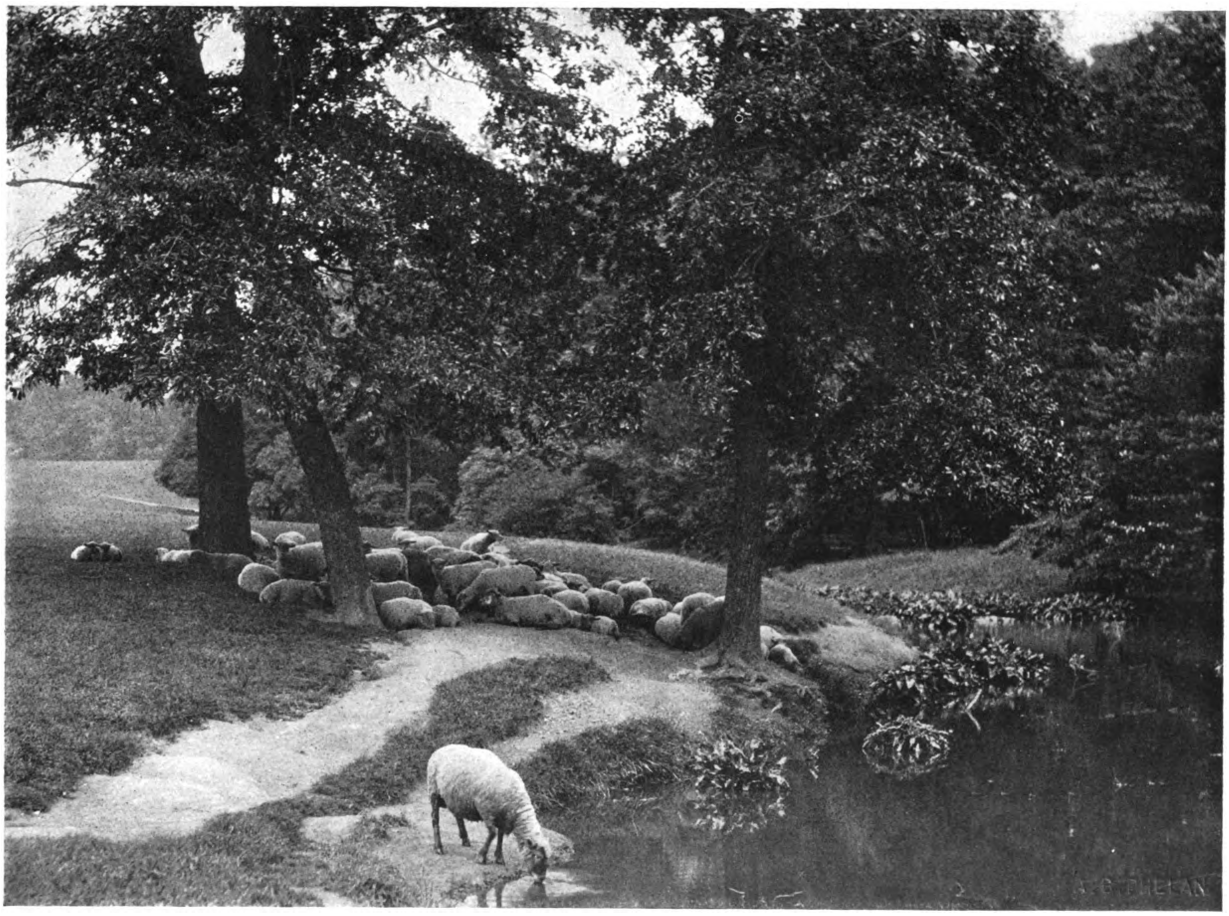


"He remembers the ox team"



"The leisurely sheep came to drink"

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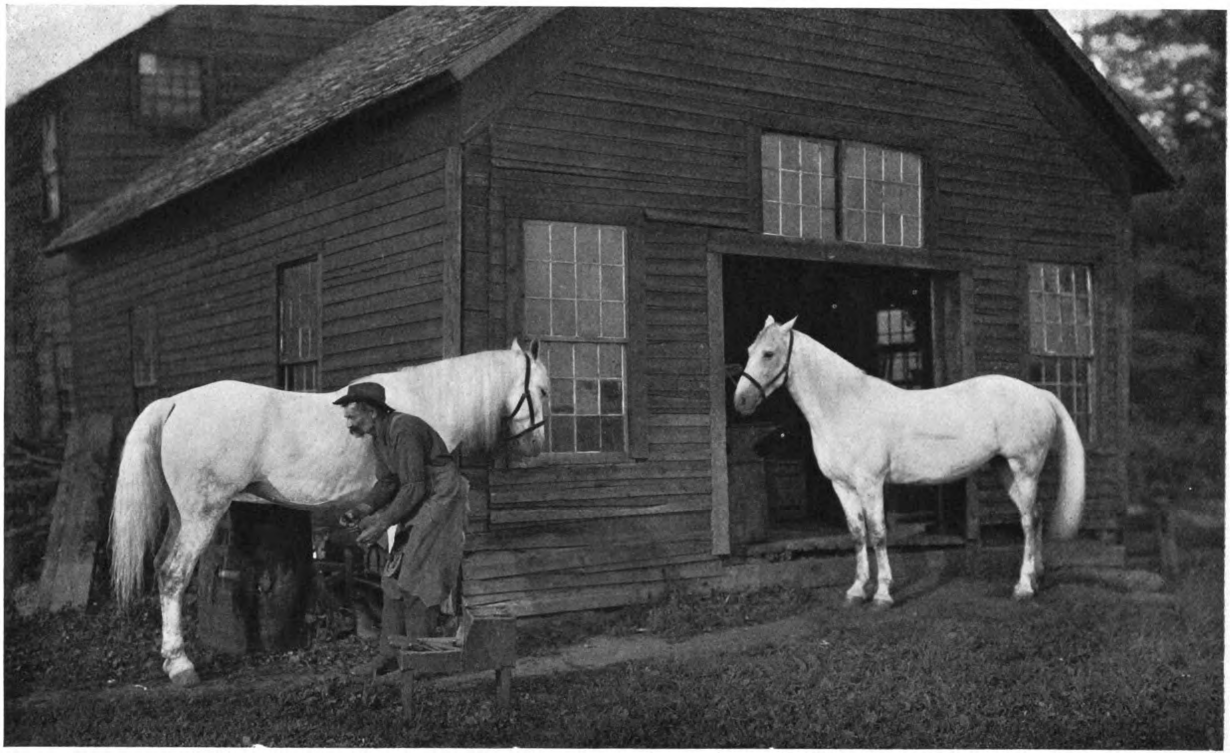
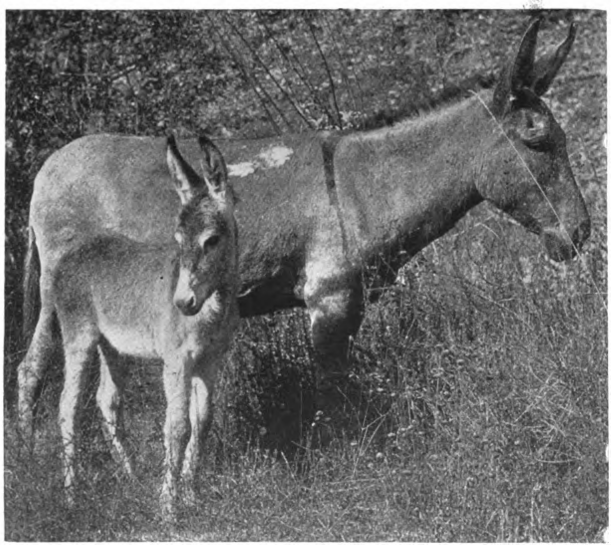


"When Bill and Charley are taken to the corner blacksmith shop to be shod"

declining sun of a Sabbath day by the pasture stream — as lazy as himself — where the mottled fish sported in the sunshine or under the overhanging bank waiting for the Lord to feed them. Here in this wood, here by this mountain-fed stream with miniature islands, peninsulas, capes and bays, here where he built the dam and erected his first water-wheel, here where the bright-eyed Jersey and the leisurely sheep came to drink, he absorbed, all unknowingly, that which neither city nor books, nor culture can give. Here, unknown to himself, without priest or prophet, he communed with the Creator and the beautiful things created. He realizes it all now; would that some one had helped him then to a fuller realization and enjoyment of what country life has to give! There in the creek bottom, and on the stony hillside, he grew receptive to nature, large of bone and hard of muscle, learned economy, acquired courage and self-reliance. The great heart and the great frame grew simultaneously. Crude and rough externally, so is the oak of which the shapely tough keel is made which supports all else. Unpolished, so are the great rocks which protect the land from the relentless oncoming of the angry sea. This large growth, this natural life which the boy has been leading, the power acquired by the buffetings and victories, make him long for wider fields and greater difficulties; sooner or later he gets dominion; he conquers. As he "broke" the steers, so he meets difficulties with determination, and overrides them.

In this day, when improved implements and methods have multiplied the productive power of each farmer four-



"The loving animals of the farm are safe companions"

"There are bonds of sympathy"

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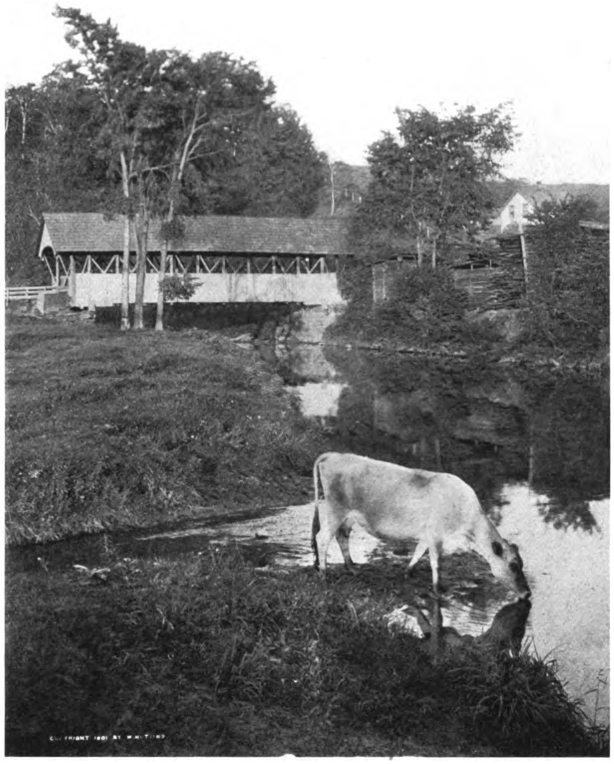
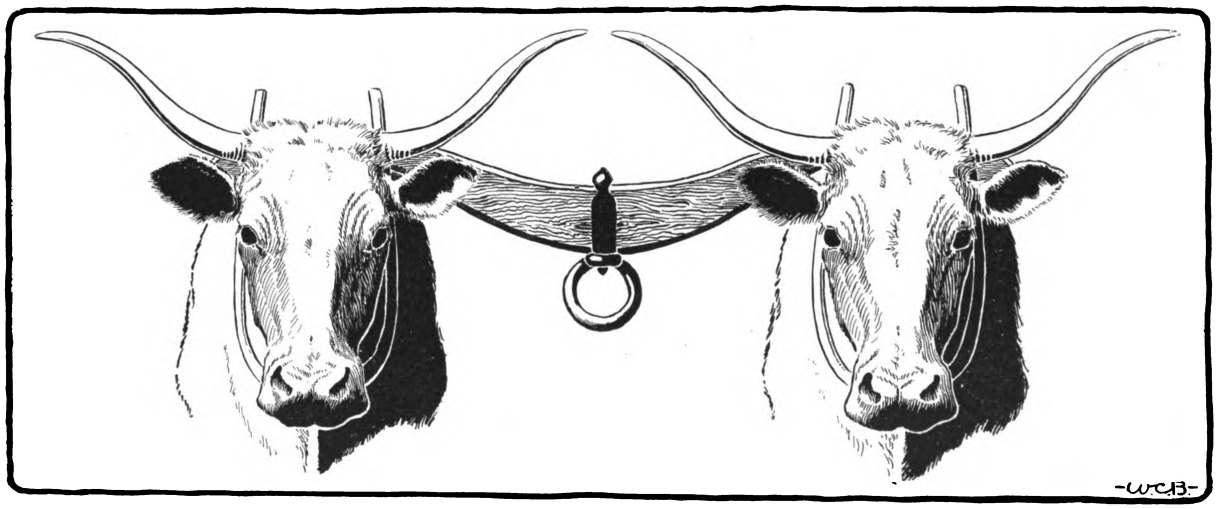
fold, and the demand for sturdy, honest men in manufacturing, internal transportation and commerce more than equals the supply, only a minority can remain permanently on the land. Happily, more and more the tendency grows to return to country life. When the hair whitens and the step becomes less elastic, what fitter ending of a career than to renew youth and live over again the happy boyhood days, with the cattle and sheep and the long soft fields, and to sport with the grandchildren in the same wood and by the same stream from which inspiration and power were received? The fire of youth is cooled. No longer he loves a gun. He has come into sympathy with the animals, which, though dumb, speak to him of things that are deeper than words.



"The bright-eyed Jersey"

There is an intensely practical bearing to all these remarks. One can never care for animals successfully unless he has these sentimental interests in them. Beyond all "balanced rations" and scientific rules and formulæ, are the love and interest bestowed by the care-taker, if any animal is to thrive. It is sometimes said that the breath of the horseman makes the horse. Certain it is that a rough and unsympathetic horseman may ruin a horse in a few weeks, even though the horse retains good bodily health. I sometimes think that bad dispositions are "catching." The more highly bred an animal, the more sensitive it is, and the more quickly it is injured by a careless attendant. With the high breeding of animals must also go the high breeding of men. Well-bred animals have more influence on human beings than most of us are aware.

The horse is not only beautiful and intelligent, but serves in a more marked degree than any other animal to alleviate human toil. According to the census of 1890, there were twenty-five horses in the United States —not counting those in cities—for every one hundred inhabitants. It is probable that the census of 1900 will show that, if the inhabitants and the horses in cities of five thousand and upwards are excluded from the computation, there are fifty horses for every one hundred inhabitants. The recent statistics for Great Britain show that, including the cities, four horses are kept for each one hundred inhabitants. In France there are ten horses, and in the German Empire 7.7 horses for every one hundred inhabitants. When put to work for which it is suited, even a moderately light farm horse is equal to ten men. The labor per day of the man costs twice as much as that of the horse. The American farmer has become skilful enough to substitute horse-hoe tillage for hand tillage. If he hooks two horses together he increases his efficiency more than twenty times. The great prairies are now plowed largely with a team of five horses. One man becomes equal to fifty. Thirty or more horses are hooked to a harvesting machine; four men are required to operate it and their efficiency in gathering the harvests is multiplied, by the use of the horse, five hundred- to a thousand-fold. The four men become a regiment of producers, and are able to raise wheat so cheaply that even the peasants of Europe may have white loaves of fine flour. Because of horse-power, American agriculture is leading the husbandry of the world.



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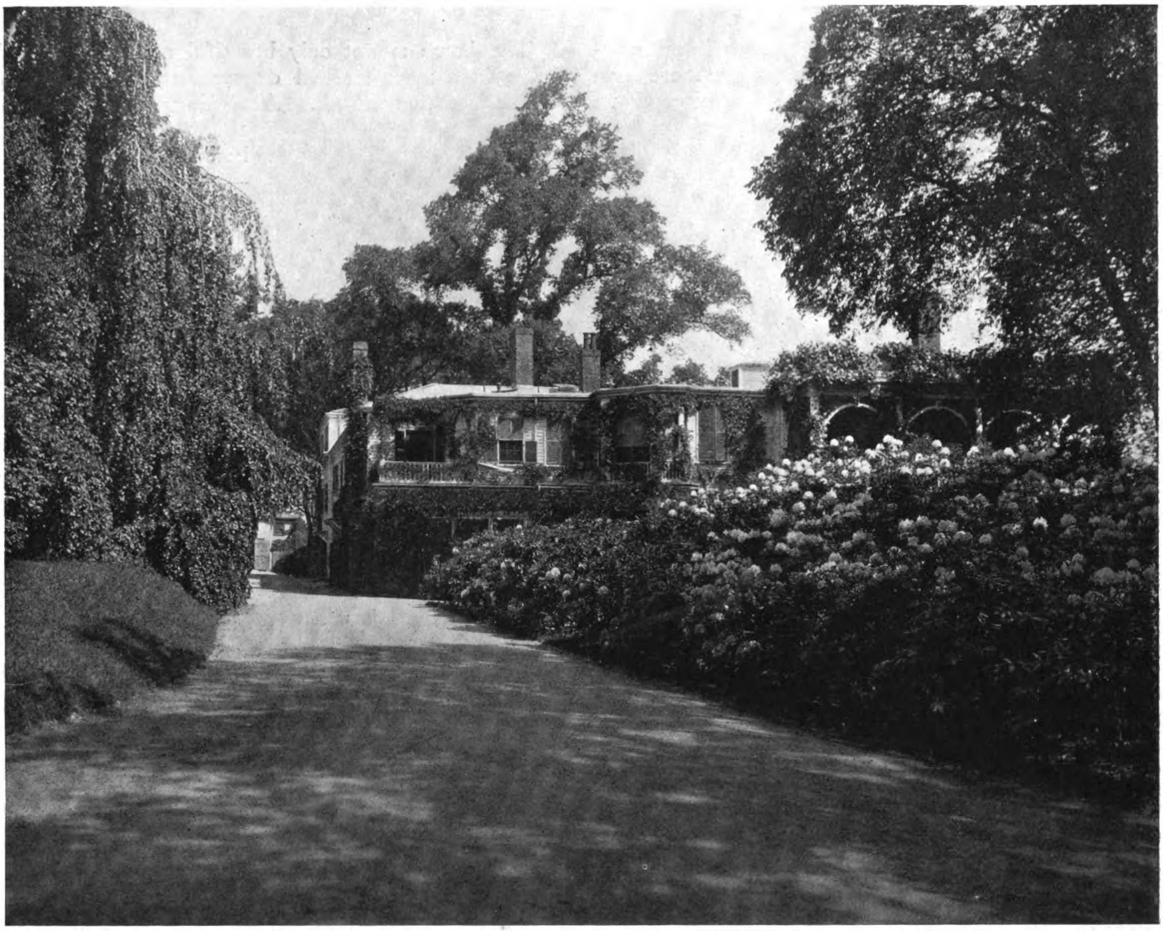

"You approach it by the long-ascending driveway." A mass of rhododendrons on the right

A NEW ENGLAND GARDEN HOME

THE SUMMER SEAT OF MRS. GARDNER—A PIECE OF INDIVIDUALISM IN LANDSCAPE-GARDENING

By BENJAMIN BROOKS

THE broad estate of Mrs. Jack Gardner in Brookline has often been spoken of as one of the best examples of the Italian landscape-garden in this country. Visitors have also looked into her Japanese garden—a cozy, embowered little enclosure within the same grounds,—and regarded it as a true glimpse of the Flowery Kingdom itself. But neither of these is the right point of view from which to fully appreciate her lovely summer home.

When the Italian says "villa," he includes not merely the house, but the flower garden, the terrace, the grove, the fountains and water system as well, regarding them all as parts of one general scheme. In the typical villa, the house, by its broad avenues and stately stairways of marble, should so gracefully wander forth and merge itself in the garden, and the garden, by its approaching trellises and flowering urns, its vines clambering over the cool verandas even to the very doors, so encroach upon the house that all definite division between indoors and outdoors is lost, and one rambles at will from one to the other with perfect and unconscious freedom. The flower garden is for a lovely bit of color and sweet perfume on a glad sunny morning, the grove is for a deep shadowed walk during the hot and drowsy time, and the broad, green, close-cropped terrace with its white marble balustrades is a space for the cool evening breeze to blow and the fountains to splash gaily and make music. So, in reality, the Italian landscape-garden is not a landscape-garden at all, but more properly a "house-garden."

The æsthetic Japanese, however, work on a different principle. For them a garden is a miniature landscape. It need not have a twig in it. It may be acres in extent or confined to the limits of a window shelf; but whatever its size, everything in it must be in proportion—the lakes, the mountains, the trees, the bridges and roads—so that, viewed from the proper point, it looks as nearly as possible like the genuine landscape in miniature—rocky coast, hill country, reedy lake region, or whatever it is arranged to represent.

To neither of these principles does the hospitable domain in question conform. The house, to be sure, as you approach it by the long-ascending driveway, suggests the Italian. It is low and broad, seeming to have spread comfortably over as much ground as it chose.

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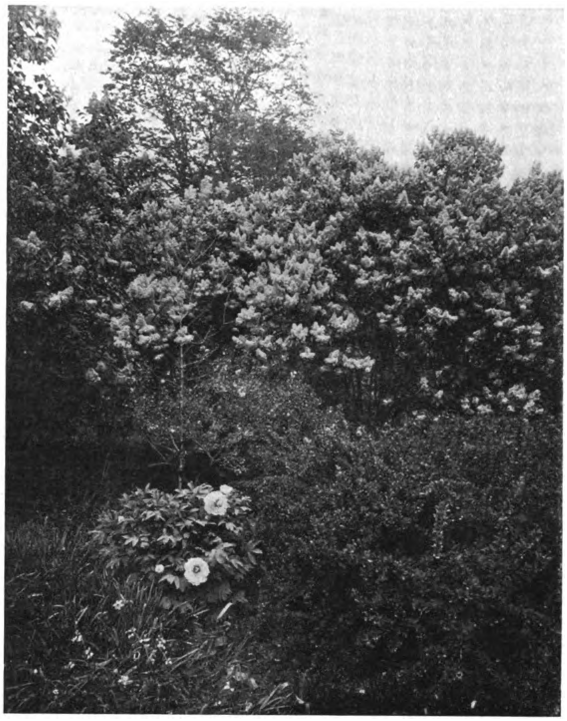
Vines, amply trellised, overrun it on all sides to the height of its two stories and convert its spacious verandas into avenues of shade. But, strictly speaking, between the house and the surroundings there is no logical connection. The place is obviously in New England. The same leafy woods, the same whispering pines still remain as they always were. Beyond is the stable. Up the hill and to the left rise the long, gothic-arched conservatories, crammed to bursting with flowers of every clime, rare and curious,—climbing roses upon each side and a pyramid of ferns, palms, orchids and scarlet-leaved natives of the tropics down the center. Violets, as you may see by passing on further, the owner of these glass palaces need never be without, no matter what the season; and in the little work-room where in winter the potting of seeds and bulbs preparatory to next season goes on, the walls are literally papered with certificates of first prizes won at various flower shows.



A cloud of color in the lilac thicket

Keeping on to the west and over the round of the hill along a gravelly path you come to a most picturesque and beautiful pair of old iron gates, upon which are wrought vines of iron—tendrils, leaves, bunches of grapes and all—with a skill and an art which show them to be of an ancient and foreign make, the very rust upon them lending a quaint charm of its own. This is the entrance to the "Italian Garden." Within is a rectangular enclosure—possibly one hundred and fifty feet square—hemmed in by a high wall and traversed by leafy trellises arching over its paths. In the center of the area, which slopes southward

At the bottom of the garden. A walk bordered with azaleas

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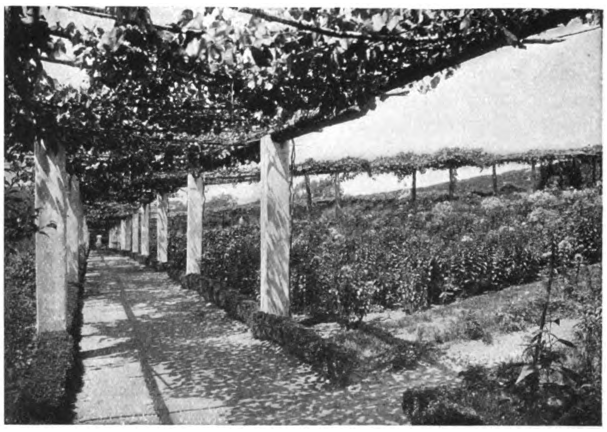
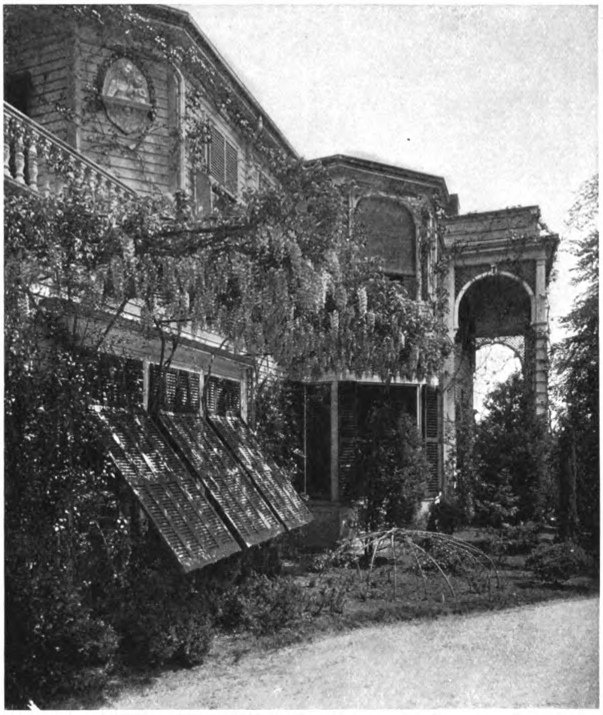
"The little Japanese garden." Dwarfed trees in the foreground, the little summer house behind



"And stroll down the trellised walks." Through the old iron gate toward the west

the better to receive the sun, splashes a fountain—Neptune sporting with his dolphins in the center of a circular basin. In the sunny corners among the stately old-fashioned hollyhocks, contrasting strongly with their brave colors, stand old pieces of sculpture in marble. The hospitable seats—some of them also of old marble—invite you to rest; and the curious fragments of stone carving built here and there into the walls invite you to go on.

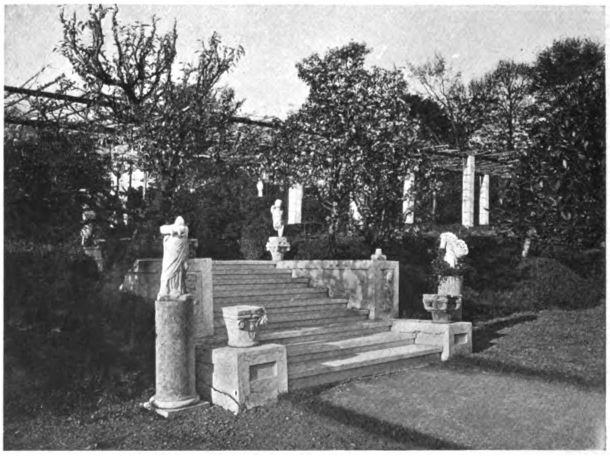
Obviously this is no Italian villa garden in the common acceptance of the term; but it is in reality a great outdoor, fair-weather museum. Should we take the pretty shells we gather at the seashore and place them in a cabinet beside the carved walrus tusk from the Arctic and the spear-head from the Fiji



"Vines overrun it on all sides and convert its spacious verandas into avenues of shade"

islands, they would be nothing more to us than curious. But place them under the picture of the weather-beaten seacoast and each, then, will help the other to convey its full meaning to us. This, in the main, is the idea of the garden at Brookline — to furnish a background, a proper atmosphere for some of the many rare and beautiful things gleaned by its owner during her European wanderings. The rusty iron gates still swing as gates, the statuary still stands as it stood, among nodding flowers in its original gardens; the sculptured fragments look down from their already crumbling walls as they might have done before they left their native lands. So each thing, beside the story and the associations of its own, stands in its true relation

A quiet seat in the Italian garden. The ideal spot for "a book of verses underneath the bough"



In the Italian garden. Up the terrace leading to the fountain

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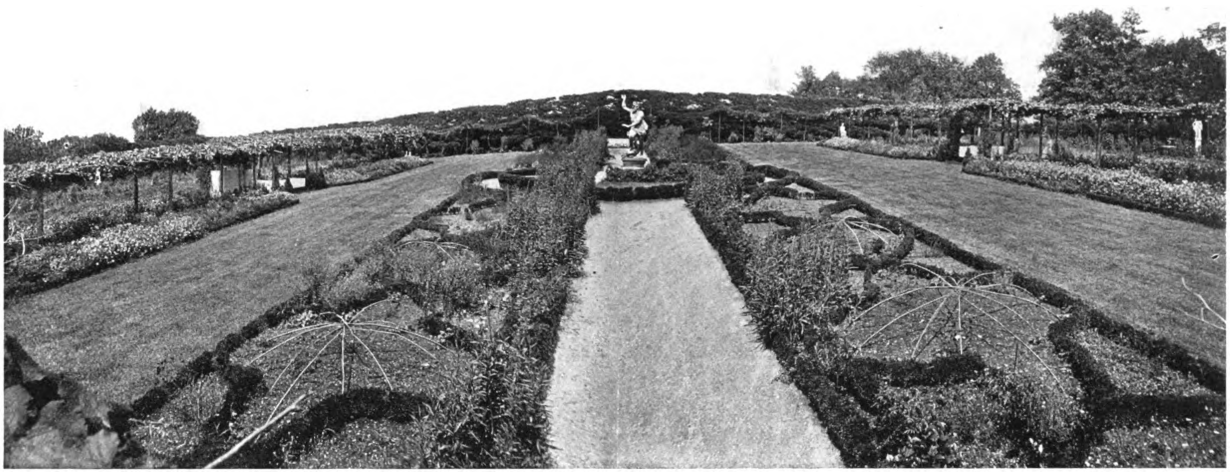

The Italian garden, "hemmed in by a high wall and traversed by leafy trellises arching over its paths. In the center splashes a fountain"

to the others and contributes its share of charm and quaintness to the whole. In this respect, it is truly an unrivaled bit of landscape-gardening, unique, consistent and picturesque.

And it is so pleasant, too! It were hard to imagine a more agreeable way of passing the sultry hours of the day than to take a book and stroll down the trellised walks, dappled green and gold by the sunlight through the thick vines, clear to its western end (for the summer breeze comes out of the west), and there upon the broad bench sit reading to the rustling of the leaves till it is too dark to read longer; then to look out over the deep shadowy valley beneath and watch the pines upon the opposite ridge silhouetted against the evening sky.

A sunny corner grown wild with lilacs. End of the arbor leading toward the greenhouses

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The little Japanese garden—quite apart from the rest—is even less formal and serious in its claims to correct artistic treatment and quite as easily forgiven for its discrepancies. What though its little lakes are not precisely according to the Sunrise Lander's idea of lakes? What of its naïve disregard for the rules and regulations of Japanese proportion? If its little rustic pavilion and the approaches to it are too large, and the boundaries of its two tiny pools—one on each side—are too rectilinear, still any unprejudiced Jap would himself admit that it also had its mood and its hour. To sit in the shelter of its bower upon a summer's evening watching the pretty water fowl swimming among the green rushes in search of croaking toads, with a bright moon tracing shadows on the ground, one would of necessity remember how

> . . . "in such a night as this,
> When the sweet wind did gently kiss the trees,
> And they did make no noise,—in such a night
> Troilus methinks mounted the Trojan walls
> And sigh'd his soul toward the Grecian tents,
> Where Cressid lay."

But the chief charm of this country seat—as was suggested in the beginning—is not that it adheres to any set rule of landscape-gardening or typifies any particular age or school, but more in that it does not. Because it is various, and to a great extent left wild, it has a charm for the true nature lover that he can never feel between prim clipped hedges or rigidly bordered walks. I like it best because it is on a hill—an ample, broad-topped, well-rounded hill—so that, although there are other dwellings near, they are so far below that, with the skilful arrangement of the hedges, one looks in all directions without seeing them, as if he were in a wilderness. There is one spot—though it is doubtful if the owner, on account of her many social interests, ever approaches it at the required hour—but there is one spot where the hill rounds away to the east without other adornment than its green grass, from which you may look far off over Boston, marked by its golden dome, to Charlestown with its tall monument and taller chimneys, to the harbor and even to the blue ocean beyond. And at certain seasons of the year one may see the sun come up from behind its level rim, gilding the heights gloriously, while below the valleys are still dark and misty.

Here, then, is a delightful home in the wilderness where, although the rules and conventions of landscape-gardening and of villa architecture are scattered in confusion to the four winds, there are still, despite their lack of logical, scenic connection, all the elements which the real villas should possess—a setting, a congenial surrounding for each mood, and each part of the day. There are the heights to mount at daybreak, the conservatories for the duller hours, the quiet, walled garden with its shady walks for the heat of afternoon, the group of dark old New England pines under which to sit when the west glows red behind them, the wee, reedy pools drinking the moonlight in the evening.

A transplanted Apollo, who seems none the less at home in New England. One of the features of the Italian garden

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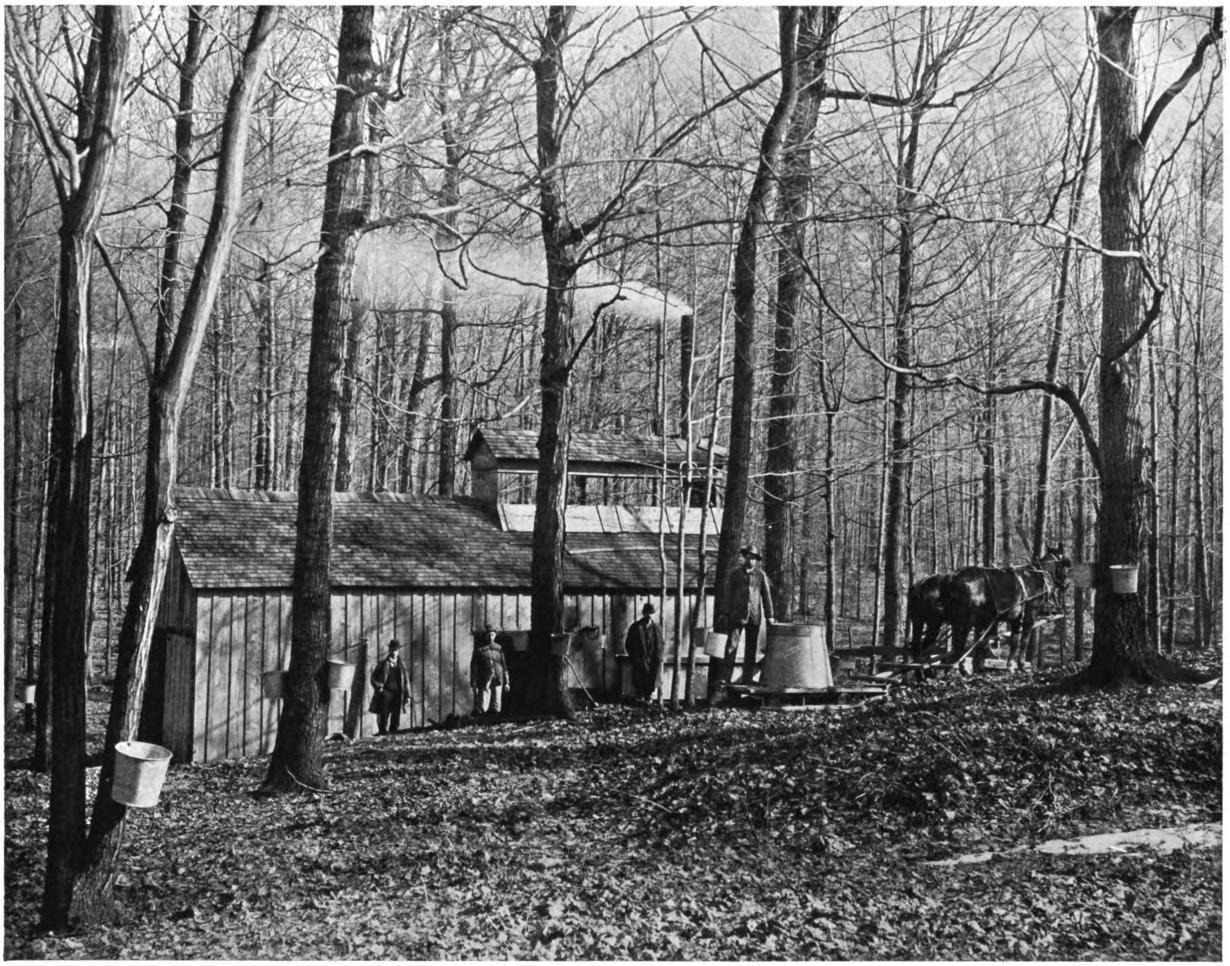

The modern sugar-making in Northern Ohio

THE SUGAR-BUSH

A UNIQUE AMERICAN INDUSTRY—IT MARKS THE OPENING OF THE SPRING—PRESENT-TIME PRACTICES

By W. FRANK McCLURE

MAPLE trees are known in many parts of the world—in Asia and Europe and America—but it is only in North America that the sap yields abundance of fragrant and wholesome sugar. Even of the American maples, only one is known as a sugar maple, and this is the common "hard" or "rock" maple that is so characteristic of our northern scenery and that is so much prized as a street and park tree. In firm, strong lands it grows, widely spread in eastern North America; but it is in the northern states and in Canada that its sap is used for the making of a commercial sugar product.

Early spring is sugar-making time. The maple forests are then alive with busy workers. Smoke curls from the tops of the leafless trees. Little barnlike buildings, which to the superstitious have been the rendezvous of ghosts throughout the cold, bleak winter, resound with cheery voices. The opening of the door of the sugar-house emits steam and sweet odor and the dull noise of boiling sap. The air is just frosty enough to be invigorating to old and young alike, who join in combining the pleasures and business of sugar-making.

The income from the maple product of the United States in a single season has reached $1,250,000. It is impossible for the farmer to make money more rapidly in four to six weeks' time in any other branch of his occupation. Even with 1,000 or 1,500 maple trees he becomes a business man with a big business, bargaining and shipping a high-class product, and feeling as proud as when he sold his autumn crop of wheat. In the case of the production of wheat he tills and fertilizes the soil and sows the seed, then reaps his harvest. In his maple camp he reaps only. His ownership of a sugar-bush makes of him, in a small way, a capitalist.

From a social standpoint, the sugar-making season is also a success. The children play about the crackling fires, drink the sweet sap or vie with each other in efforts to taste the hottest syrup without scorching their tongues. The entire family join in the first outdoor festivities of spring, and when evening comes the "taffy pullings" displace the day's pleasures in the frosty air, as the young people test the "waxing" properties of their syrup by dropping it into a pan of snow or upon cakes of ice.

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The old-time way, when kettles were swung in the open

It is the smile of Old Sol, alternated with the bite of Jack Frost, that causes the sugar-bush to yield its richest product. The farmer who engages in the gathering and appropriating of the maple product, looks to the weather as his index. It communicates to him the time to tap the trees and predicts the quantity of syrup he

"Sugaring-off," by which the syrup is evaporated and the sugar remains

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will gather. At the approach of the maple sugar season, if not before, the sugar-maker and his helpers hie themselves to the woodland, and with ax and cross-cut saw begin the preparation of the wood for the sugar-house fire. The farmer in winter has little else to do than to cut wood and feed the stock. When sugar-making time comes round, plowing is still several weeks off. The creek is covered with ice. The trees are void of bud or leaf.

The prepared wood is hauled to the sugar-house. The door is opened, and the work of cleaning the premises and scalding the sap pails begins. This house with the laborers absent is a desolate-looking place. It is seldom painted. In the sides are many huge cracks. Within, the principal article of furniture or equipment is an evaporating pan supported by an arch of masonry. Under the arch, the fire is built. Both pan and arch are comparatively modern acquirements. Even the sugar-house is, in a sense, modern. Once a tripod built of three limbs supported an ancient kettle beneath the heaven's own canopy. Embers from the fire, together with twigs from the overhanging trees, found their way into the syrup. The sugar-makers were protected from rain by a canvas top supported by poles.

With the sugar-house ready, and alternate thawing and freezing weather, the farmer begins the tapping of the trees. The most primitive method was to notch the trunks with a hatchet. For many years wooden spiles were used, and the sap dripped into troughs hewn from logs. To-day a half-inch auger is employed to bore the tree to a depth of two inches and a metal spile is inserted in the opening. On this spile, a four-gallon tin pail is hung. The farmer, in accomplishing this work, passes all soft maples, and chooses nothing in size smaller than a ten-inch tree. In a tree with a diameter of five feet, four or five holes may be bored; in the average tree but two holes.

The time required for the pails to fill depends upon the weather. Sometimes, the farmer is kept busy throughout the day gathering the sap, while at other times the run will be light. To gather sap, a wagon or sled supporting a gathering tank and drawn usually by two horses, makes the rounds of the bush. When the gathering tank, which holds a hogshead, is full it is hauled to the sugar-house, where the sap drains through a rubber tubing to the storage vat. The old way of gathering sap was crude, indeed. Men with buckets suspended from a yoke about their shoulders made regular trips from the trees to the kettles. Carrying from the trees farthest away was especially laborious, and the work progressed but slowly.

From the storage vat the sap is to-day piped into an evaporating pan within the sugar-house. An automatic feeder shuts off the supply as fast as the pan is filled, and as the evaporating process continues turns it on again. The bottom of the evaporator comprises a succession of ribs, around which the sap passes as the fire burns beneath. Two men are required in connection with the operations, one to keep up the fire and the other to watch the pan and take care of the syrup.

When the thermometer in the evaporator reaches 218 degrees Fahrenheit, a gateway is opened into another compartment. When the liquid reaches this latter division, it there remains until, after sufficient tests, it becomes syrup of the standard make—eleven pounds to the gallon. Besides the thermometer a gravity instrument is used in making tests. The thinner the liquid the deeper the instrument sinks. The syrup is dipped from the latter compartment of the evaporator into a settling vat. Here the sugar sand settles, and through a faucet a little distance from the bottom the pure, clear syrup is drawn off. When maple sugar is to be made the evaporating or boiling is continued until the syrup shall "wax" upon a cake of ice, proof that it is ready to be run into molds. Much less maple sugar is made to-day than in years past, and vastly more syrup. A gallon of syrup makes seven pounds of sugar. The price of sugar above that of syrup usually does not compensate the maker for the extra labor of "sugaring off," as he terms it.

The average yield of a sugar tree is about a gallon of syrup in a season. A tree five feet in diameter, which is an uncommon size, has been known to produce a barrel of sap in twenty-four hours.

Gathering the sap

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Drinking

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THE PASSING OF THE BLACKTAIL

By MINNIE J. REYNOLDS

With illustrations from copyrighted photographs by Mr. and Mrs. A. G. Wallihan, authors of "Camera Shots at Big Game"

IT is up in northwestern Colorado that the Blacktail deer have found one of their few remaining fastnesses. Here, for 150 miles, from the Elkhead mountains and the White River plateau on the east to the plains of Utah on the west, run the old trails, worn straight across the country by the trampling feet of hundreds of generations of deer.

It is a strange, remote world, this land of the Blacktail; a region larger than Massachusetts and Rhode Island combined, though comprising only two out of the sixty counties of Colorado; a land of cattle upon a thousand hills, of deer and antelope in the open uplands, of bear and wildcats in the timbered heights; a land of great, rounded, rolling hills, swathed in the endless gray of the sage-brush, overhung by the marvelous blue of mountain skies, a land unique and delicious in its sense of remoteness, fascinating in its very monotony.

The railroad touches at Rifle, twenty miles from its southern edge. Thence you push on, in company with the leather mail sacks, for this is the home of the "Star Route." On past scattered ranches, and great stretches of uninhabited country, stopping at friendly road-houses over night, till on the third day from Rifle, and a hundred miles from the locomotive, you reach the Wallihans.

Mr. and Mrs. A. G. Wallihan, famous throughout the world of sport and photography for their remarkable series of game pictures, are the only residents of this remote region who have observed it from an objective standpoint. Ranchers for twenty years in Routt county, they have watched its game animals with the eyes of artists, and have preserved their forms and haunts with the camera, to be the delight of future generations, when the wild dwellers of the uplands have followed the buffalo of the plains. Out of the experiences of their twelve years behind the camera, comes this story of the passing of the deer.

Ever since the white man came, and none knows how long before, the deer have made semi-annual migrations between the two ends of Routt and Rio Blanco counties, urged thereto by an instinct as resistless as that which sends the birds southward. It is a fearful migration. It leads them past ranches, near settlements, and across traveled highways. And by every waterhole, by every ancient trail, lurks a messenger of destruction. Pretty Blacktail walks with Death all the way.

About the end of March the deer begin to pass eastward. They are thin and poor. Their coats are rough and ragged. Feed has been scanty in their winter home. They have eaten "browse," the tops of trees and shrubs; the buck brush, the choke-cherries, the service-berries and the cedar. Sometimes they have nibbled at the ranchman's alfalfa stacks,—the only harm poor Blacktail was ever known to do. Occasionally they have been forced to their last resort, the bitter sage-brush. Now and then, when they start on their long journey, they fall from weakness, and die of starvation.

The bucks have shed their horns in February and March, and start eastward as unadorned as their mates. The fawns, thin and lanky, are still running with their mother, although she has had no nourishment for them since February.

Pretty Blacktail finds a paradise in his summer home. On the foothills, above the sage-brush, are quaking asps and scrub-oak brush. Still above, the mountains are heavily wooded with pine and spruce. Rushing spring streams are pouring down on every side. There is luxuriant food. They do not care much for the grass, but there are plenty of wild pea vines, which they dearly love; and the fresh young buds and sprouts of the trees are green and tender.

Master Buck is a very different creature from the lordly monarch of the October trail. He is timid and shy. His head hurts him. His horns are so soft and tender that the blood would run at a pin prick. All the strength of his body has gone into the rushing currents which are building up that stately structure on his head. His fine autumn coat, too, is gone, and his body is covered with thin red hair, beneath which his flesh shows black as coal. Sir Buck says nothing, but secludes himself, well knowing that he is in no trim for others' company. In July comes fly time, and then poor Sir Buck suffers. Flies, flies, everywhere, and villainous mosquitoes! They bite his tender horns, and pierce his thin coat. He gets on the edge of tall cliffs and cañons, where the wind will blow the pests away, and there he stamps and stamps, and fights flies. About August first, his horns are full grown, and covered with soft, brown velvet, as lovely as anything that ever came from the looms of France. Then the buck seeks out the hottest place he can find, and there he lies all day, in the blazing sun, hardening his horns. By September they are hard, and then he rubs them against a tree till the velvet is quite removed. Meanwhile, since his horns got their growth, he has been getting in good condition.

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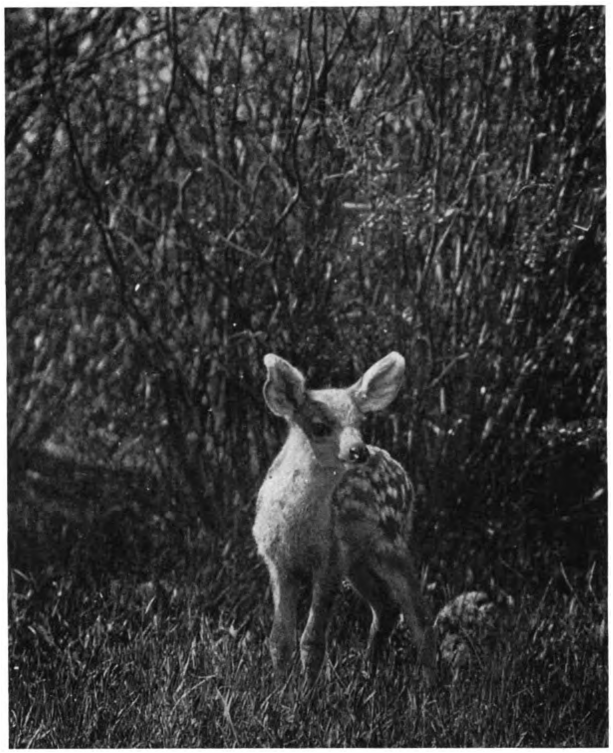
By September first he is "in the blue" again. His winter coat is just the color of the sage-brush, according to that old, old plan of Mother Nature's. The under side of his tail is white, but the tip is of that intense black which gives him his name, in distinction from his "Whitetail" cousin of the Virginia woods. His tall ears, that wave to and fro to catch every sound, and which by their position give every varying shade of expression to his aspect, lend him his common name of Mule deer. And on his head is a branching glory of antlered points, which, in their full spread of forty-four inches, crown him king of all the deer.

And where is his mate? Alas, there has been no chivalry in the breast of Sir Buck all these summer months. He is distinctly not a family man at any time. He has no mate. He is a free lover, pure and simple. His madness of devotion in November is followed by a long year of neglect. He has not even thought of the doe all summer. His head has hurt him too much.

But this has not troubled Madam Doe in the least. She has had other things to occupy her mind. The drain upon her system has been even greater than that upon the buck's. In May she arrived at her summer home, her poor old blue dress ragged and shabby. In June come the new babies, always twins, possibly three at a time, very rarely even four. It is a pretty world into which the little fawns are born. A wilderness of wild flowers clothes the upland parks, so tall that the babies are fairly hidden among them. They play among the flowers, or out in the sage-brush, exactly like lambs, leaping and frolicking in perfect happiness. Their friends, the antelope, who live in the same country, will play extravagantly, long after they are grown up, running dizzily round and round in a figure "8." But the deer are usually very sedate and dignified after passing their first birthday. The chubby yearlings, not understanding what the Ides of June betoken, come around confidently; but what is their surprise to receive a kick from their kind mothers, instead of the loving greeting to which they are accustomed! Their little noses are out of joint; but sometimes they take it all in good part, and when they all start west in the fall, a yearling buck or doe will run with its mother and the babies.



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A fawn

They spend a long, happy summer in the uplands, and when fall comes my Lady Doe is at her best, sleek and graceful, all the delicate lines of her figure rounded and perfect, and full of matronly care and affection for the pretty three-months-old babies at her side. The sun is still bright and glorious in the uplands when that strange instinct begins to stir in her breast. O, Lady Doe! do not make that terrible journey; stay in the mountains, even though the food grow scarce! But straight to the west she turns, up and down steep cañon sides, no way so difficult that she will not keep her path straight across the country by the old trails. The bucks linger behind in the pine and spruce timber, leaving the does to lead the herd and protect the fawns.

The "lead" doe is very wary. The dropping of a pebble, the flutter of a leaf, will startle her, and her signal of alarm is quickly passed to the herd. She can hear and smell wonderfully, and she can see the slightest motion; but, though her eyesight is fine, poor Lady Doe cannot tell an enemy if he does not stir or she does not smell him. She sees, but there is no recognition in her glance. Going across the sage-brush she will notice figures, because they present a contrast to the surrounding level, but if she comes down one side of a stream and on the opposite bank is a group of people with cameras among the boulders, she will look straight at them and never know they are not rocks, if they do not stir, especially if they are dressed in gray and have gray drapery over the cameras; nor will she be able to distinguish them from stumps among the cedar-brush. Her eyes are like those of an infant, which distinguish no difference between a house and a mountain.

Lady Doe leads her herd by night. At twilight they begin their journey, and at sunrise they are still upon the trail, but all day they lie hidden among the brush. Off on the range they will sometimes quietly graze through the day with the cattle and horses. In this fearful gauntlet that the deer must run the range horses and cattle are his friends. They fear everything that Blacktail does, and often give him timely warning. All the rest—all but poor bunny and the queer little prairie dog—are his enemies. The cruel cougar and the prowling coyote, the lynx, the black bear and the fearful timber wolf all lie in wait for Blacktail. And worst of all is man, of whom Blacktail knows four species—the sportsman, the settler, the hide-hunter and the Indian.

And so this is in very truth the passing of poor Blacktail. A few years more and his graceful form will no longer be seen bounding over the uplands. Scarce ten years ago a thousand at a time would pass in kingly procession down the old trails, but with the increase of tourist hunting and the unceasing depredations of the residents, the beginning of the end has come, and soon pretty Blacktail will live only in the photographs and the memories of his lovers.

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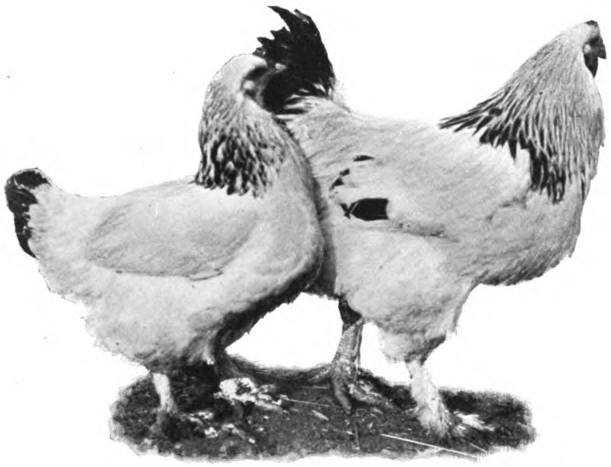
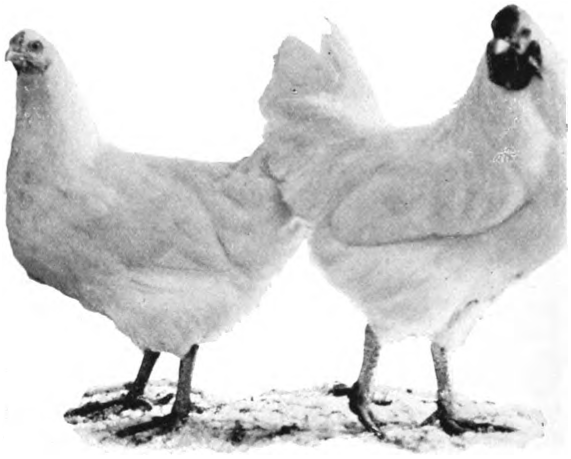


Light Brahmas



White Wyandottes

COMMON SENSE IN THE POULTRY YARD

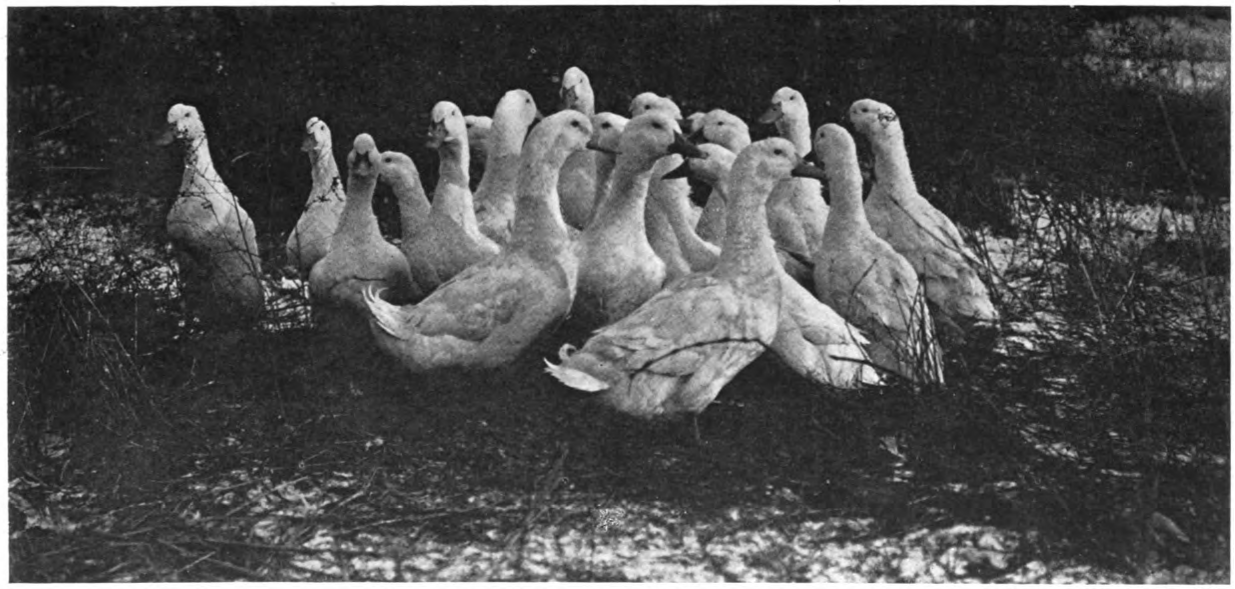
WHAT TO DO WITH FOWLS—PRACTICAL NOTES ON CARE AND MANAGEMENT

By HUGO ERICHSEN

THERE was a time when the breeding of poultry in this country was so little understood that chickens were allowed to shift for themselves, and it was supposed they required no care. In the summer they roosted in the tree-tops and in winter found shelter in the barn. That poultry-raising under such adverse circumstances proved unremunerative need occasion no surprise. But even now, under changed conditions, the query is frequently propounded: Does poultry-breeding pay? Judging by my own experience, I would answer that question most emphatically in the affirmative. Of course it will not do for the beginner to engage in it at once to a large extent, any more than it would be advisable to begin any other venture on a large scale without previous experience. I would counsel the novice to begin with a small flock, and to study this thoroughly before he proceeds to extend the scope of his operations.

No definite plans can be laid down for a poultry-house. The building should be constructed according to the size of the flock. Any one handy with tools can build a structure of this kind that will meet all requirements. If the beginner cannot afford to build it large enough, it is better to reduce the number of chickens than to cut down the space allotted to each. A few birds properly wintered will prove more profitable than a score improperly cared for. A house to accommodate two dozen fowls should not be smaller than 10 x 12, with the rear 6 and the front 8 feet high. Ventilation is one of the most important features and should not be disregarded either in constructing a new building or repairing an old one. The ventilator should be so arranged that the cold air will not strike the chickens—about a foot from the floor will do.

Plenty of light is necessary for the health and comfort of the fowls, as is also a box of dust in one corner. A



Mammoth Pekin ducks

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little sulfur, mixed with the dust, will do much toward keeping down vermin. Feed and water troughs are matters of detail and may be arranged to suit the convenience of the owner. The roosts should all be on the same level, but need not be over three feet from the floor. The nests should be made movable, so they can be removed and cleaned whenever necessary, and placed in a position where they will not catch the droppings. Several wide boards, placed below the roosts, may be used advantageously for the latter purpose. If possible, the floor of the coop should be of sand, or, at any rate, dry earth, which can be removed when necessary. The ground should be well drained, either naturally or artificially. Freedom from dampness is essential.

Care should be taken to provide some safeguard against rats. The rodents are powerful foes—cruel and endlessly greedy. If there is a Satan in the world of poultry, he surely must take the form of Bishop Hatto's executioners. Of course, they can be thwarted, but it is difficult to defeat enemies that are such engineers at sawing and tunneling. They are responsible for many deaths charged to minks, often killing half-grown pullets when hungrier than usual. I know of a case in which fifty baby chicks were taken by rats before they could be protected, and then, after the survivors had been removed to a brooding-house, cats, regarded as allies, got in at the windows and killed twenty more. Fine wire netting affords protection against the rats. A width of it, fastened over the angle where the wall and floor join, is a great safeguard, as that is where they are most likely to gnaw. Brick foundations help in keeping them out of buildings, but the expense is often prohibitive. If possible, the poultry-house should front south, so as to ensure a maximum of sunshine. If means permit, it is well to add a scratching-shed, so constructed as to let the sunshine in and to shelter the fowls from north and west winds.

Keeping house

As to variety, preference should be given to the so-called utility breeds, unless one desires to become a regular fancier (I am, of course, writing for the home breeder rather than the professional). As to the particular variety, that is largely a matter of taste. One will prefer Wyandottes, another Leghorns, and a third Langshans. But, for what our farmer friends call "an all-round" chicken, I believe nothing can surpass the Barred Plymouth Rock. This variety has proved its great adaptability to variable climates, atmospheric changes and unfavorable conditions. Plymouth Rocks have the ability to withstand the heat of summer and cold of winter, neglect and bad usage, uncomfortable quarters and poor food, without showing signs of deterioration. Moreover, they will bear confinement, as they are neither wild nor of a roving disposition. In addition to all these good qualities, they present a pleasing appearance—in fine, embrace more practical merits than any other breed I know of. The Dorking, which is very popular in Great Britain, is not yet appreciated in this country according to its worth. When space is limited the Bantams commend themselves. It pays to purchase well-bred fowls. Mongrels are not cheap at any price.

In selecting the new additions to a flock, much care should be taken to exclude hens that are not in a perfect condition. Smoky plumage, with some straggly and broken feathers, indicates that the bird has not yet moulted. Roup is detected by pressing gently on the nostrils; if there is the slightest discharge, it is safe to conclude that the hens are verging on the disease. In normal fowls the combs are a bright red and the legs clean. In order to be absolutely safe, it is better not to buy any poultry from a yard where cholera or roup has once appeared.

It would be manifestly impossible to give a brief synopsis of the most common difficulties to which chickens are liable, in the limited space at my command. I will confine myself, therefore, to an affliction that is familiar to any one who has ever handled poultry—namely, lice. Somebody truly remarked that lice mean work. I quite agree with him. Once I undertook to clean an old poultry-house that was badly infested. Finally, to prevent a recurrence of the trouble, I cooped up the hens, put on an old suit and proceeded to dust each chicken liberally with insect powder. I cannot recommend this method. It seemed as if all the vermin had been transferred to me, and it took me three days to rid myself of them. In the meantime my

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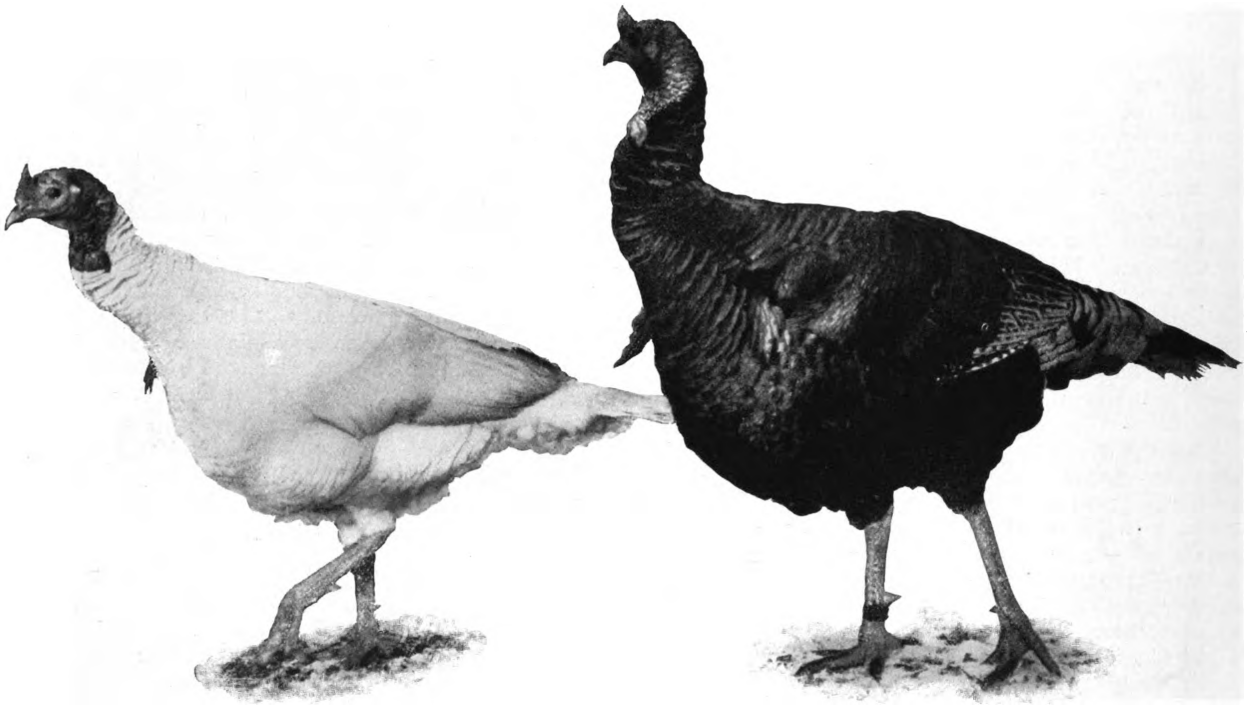
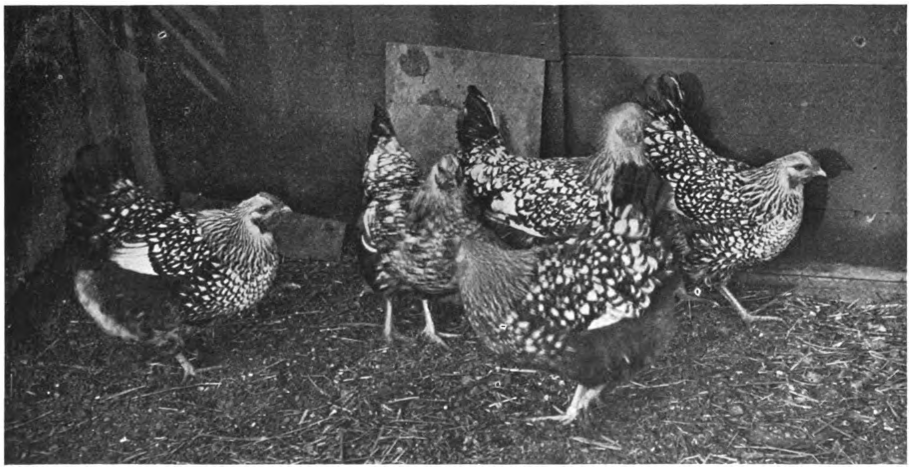


Turkeys, white and bronze

condition was far from enviable. In order to rid a coop of lice, coal oil should be applied liberally to the floor, walls, roosts and ceiling, its use being repeated from time to time. Fresh insect powder and tobacco dust, placed in the nests, will also exterminate the pests. The nests should be cleaned out every week. If the boxes are removable, they should be taken out of doors and burned over. By all means, keep the poultry-house clean; chickens can no more thrive in filth than human beings can.

The feeding of poultry varies with the seasons. Generally speaking, the food should be warm in winter and cool in summer. This refers to the soft food, which is given in the morning, to be followed by grains later on in the day or evening. Whenever possible plenty of green food should also be provided. The same diet should not be adhered to too long, however; a change of food oftentimes is the secret of success in poultry-raising. Plenty of water must be provided at all times and should be placed about the yard in shady places. In order to remain well, hens must have exercise galore, but I do not believe in letting them have the run of the stables and other farm buildings, where they soil everything until it is ultimately too filthy to handle. I would as soon think of confining the cow to the chicken-coop as I would of putting the chickens in the barn.

In conclusion it may be said that success in poultry-raising depends upon pure-bred hens, good intelligent feeding, clean and warm quarters, and last, but not least, good management. If the rearing of poultry is worth doing at all, it is worth doing well. It is the careless man who complains most of diseased and unprofitable fowls.



At home — Wyandottes

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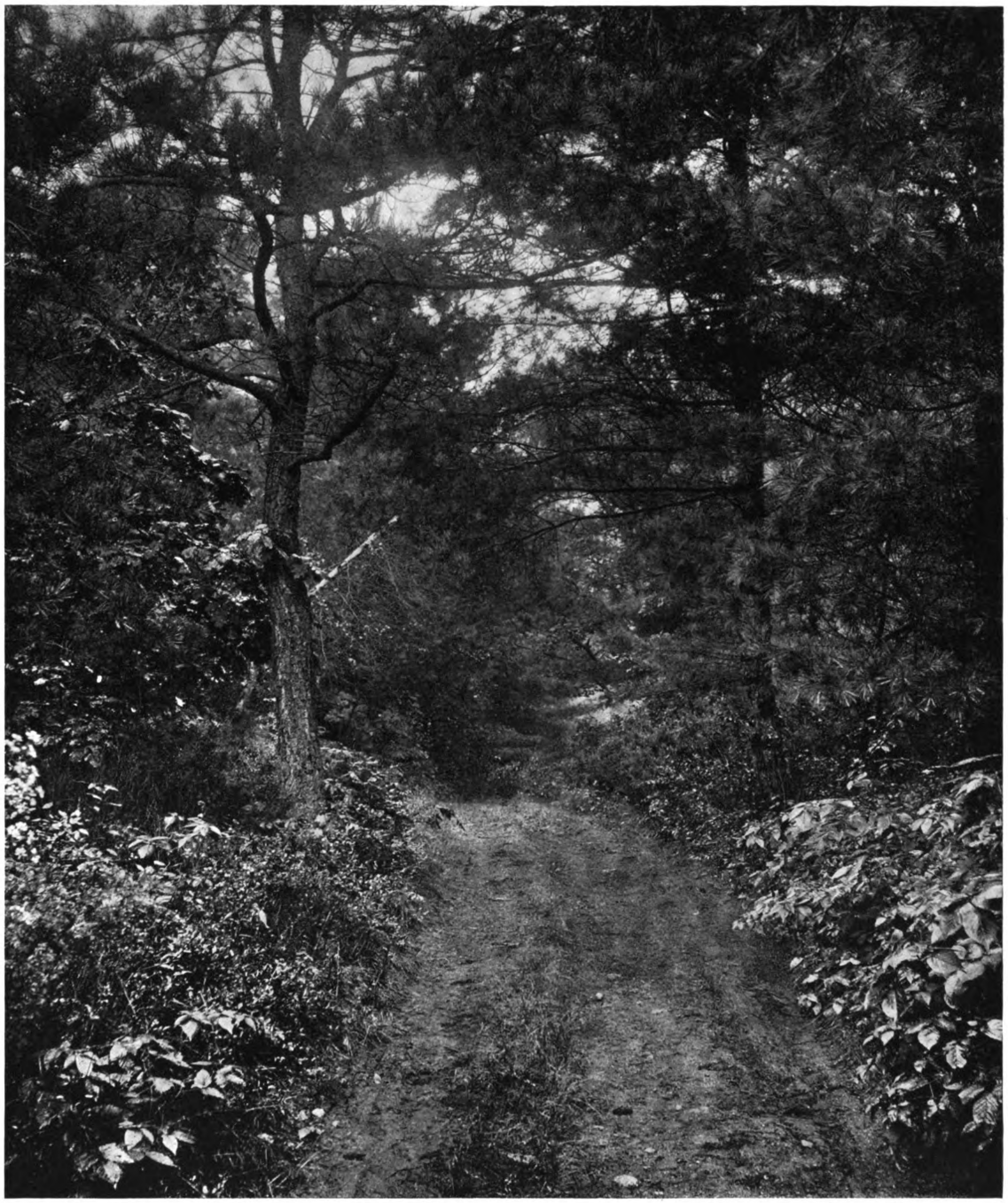

Spring will come again

THE KEY OF THE FIELDS

By CLINTON DANGERFIELD

Oh, who holds the key of the fields, and from whom can I buy it?
It lies in the den of the fox; or the breast of the quail
As she stoops to swift covert, may hide it. Go try and espy it.
Who finds it may take it—who dreams of its purchase shall fail!

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The trapper and his dogs returning at night to the hut, which, during his absence, had been covered with snow

THE LIFE OF THE TRAPPER

THE HARDSHIPS AND REWARDS OF THE FUR-HUNTER IN SNOWY CANADA

By A. RADCLYFFE DUGMORE

With photographic illustrations by the author

WHEN the nights begin to be cold and the maples in the forest show their scarlet danger signals that warn the land of the approach of the awful cold of winter; when the shivering poplars and silver birches throw off their leafy covering that they may the better be able to bear up against the heavy, clinging snow,—then the beavers strengthen their houses and gather their supply of food, and the squirrels collect quantities of nuts and seeds, which they *caché* beneath the trees; then nature clothes all her animals with heavy coats of fur, that they may be protected against the coming cold; then the trapper knows that the time has come when he must repair his log or bark cabins and take in his food supplies, just as the beaver is doing.

Breaking trail for the dogs

Each trapper has his territory wherein he may set his traps, and if his claim be good it is undisputed. He may hold it for life, provided he never leaves it untrapped for three consecutive years. Should any other man place a trap on this land, he who holds the trapping rights springs the trap and hangs it on a bush as a warning to the intruder. A "line" of traps extends over a distance varying from five to fifty or more miles. This line is not a line in the sense that some people imagine, for the traps are placed sometimes a mile or so apart, only the likely-looking situations being chosen, and these usually in the immediate neighborhood of lakes or rivers. As a rule, the trail leading to the traps is blazed, for when the heavy snow falls the appearance of the country is completely changed, and it would be difficult to discover the trap if there were no sign to show its whereabouts.

Before the time for the first snow the trapper has all his traps set, and his cabin is ready for winter. In most cases the cabin is built of hemlock or spruce logs, well chinked with moss or other suitable material. As heat is the all-important thing to be desired, the cabins are made very

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"We can imagine Joe starting out on his rounds, too experienced a trapper to build castles in the air, such as the novice delights in"

Joe, the one-armed trapper, taking a muskrat from a steel trap that was set under a shield of balsam boughs near a hole in the ice

small. The one shown in the illustration belonged to a one-armed trapper who throughout the winter lives in the woods with his two sled dogs—large smooth-coated St. Bernards—as his sole companions. He built it himself. In the winter the diminutive house is so covered with snow that it is scarcely visible to the chance passer-by. The tiny door, scarcely large enough to admit a man, even though he enter on all fours; the one window, not more than nine inches square; the old stove, which had originally been a large tin canister; the solitary small three-legged stool, made from a single piece of hemlock whose branches happened to grow in such a way as to form the legs; the scanty cooking utensils and the bed of saplings with the mattress of balsam boughs;—all these bespoke extreme poverty, yet the man made from $400 to $550 each winter by trapping and supported in comparative comfort his sister and old invalid father, who lived in a cottage near the settlement.

Joe, the sturdy Canadian trapper, could use his one arm, the left, as well as most men can use two. Only when it came to washing his hand did he experience any great difficulty. His line of 200 traps extended over forty-five miles of country, and every two weeks these had to be visited. At intervals along the line small cabins were built, where, if necessary, he could spend the night; for the winter days in the North are very short and traveling on snow-shoes over soft snow is slow work. These outlying huts are, if possible, even more primitive than the one just described.

We can imagine Joe starting out on his rounds, too experienced a trapper to build castles in the air such as the novice delights in, for well does Joe know that those large collections of pelts are taken only from the traps set in the lands of happy imagination. Should the day be fine and the snow in good condition, the task will be comparatively easy, and he will visit the traps in quick succession. Perhaps twenty or thirty traps may be examined and no animals found. In one case the snow may have drifted in and clogged the traps, and from the footprints Joe knows that a mink has walked over the traps, eaten the bait and left satisfied with a full meal easily gained and asking no questions as to whence it came. Then the trapper knows he has lost about four dollars, for that is what a mink skin brings. In many cases the bait has been eaten by the mice or weasels — but by far the greater number show no

The trapper's sled dogs,—two St. Bernards that will draw a load of 700 pounds on good snow

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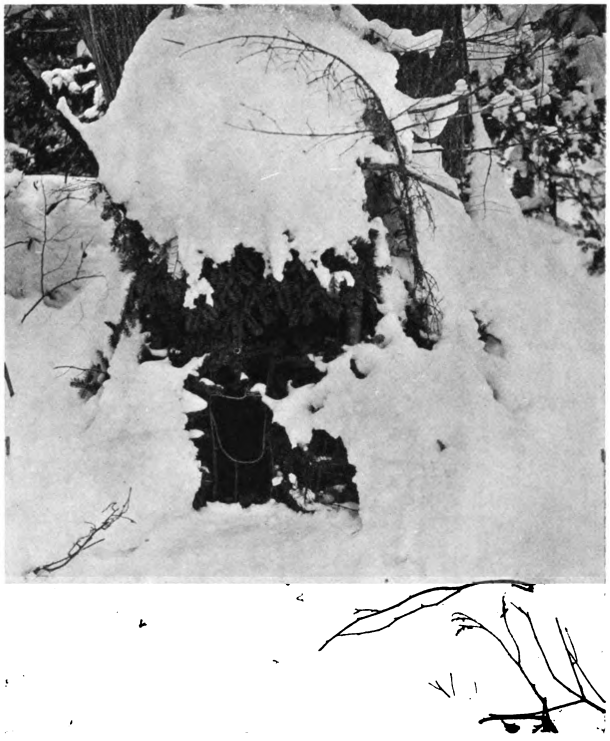
A muskrat caught in a steel trap



A noose trap set for lynx

sign of having been visited by animals. The virgin snow records no sign and the trapper, after a single glance, passes on. Perhaps the result of the first day's work may be but three or four muskrats, whose skins are worth about eighteen cents apiece. Then the man hopes for better luck next day, and as darkness sets in he goes to one of the shanties and after a lonely and frugal meal of pan bread and pork accompanied by very strong tea, he lies down on the floor close to the fire and before his pipe is out has fallen asleep. The morning sees him up long before the sun. His toilet is quickly made, consisting, as it does, in rubbing his eyes, lighting his pipe and perhaps putting on a dry pair of socks. After a few mouthfuls of food he shuffles into his snow-shoes and is off again. This day may not be as fine as the day before had been; perhaps it has snowed all night and is still snowing, with a light wind blowing and a temperature of twenty-five or thirty degrees below zero. If so, his day's work will be a difficult one. But he must tramp on. The sound of the snow-shoes as they touch each other in passing, the moaning of the wind in the tops of the evergreens and the almost imperceptible sound of the falling snow alone break the frightful stillness of the snow-bound country. But in spite of the hardships the day may prove a good one. Once Joe found two large otters, worth $18 apiece, in a single trip over his line; but such luck is unusual and is something to be talked about, almost as much as the catching of a silver fox, which would bring the lucky man anywhere from fifty to two hundred dollars (while the dealer gets from a hundred to two thousand or more dollars). An average trip along the line of traps results in from thirty to forty dollars' worth of pelts, mostly mink. During the trapping season, which lasts from September or October until March or April, the traps must be visited every two weeks. During these bleak months the trapper occasionally drives his dog-sled to the nearest village, where he disposes of his pelts and renews his stock of provisions. The pelts are either sold or exchanged at the general store or they are sold to the traveling fur-buyers who visit all parts of the country, even the most remote settlements, where they can pick up odd furs at very low prices.

Baiting and setting a dead-fall for marten

The season ended, the trapper goes to his farm if he has one; if not, he usually remains in the woods and acts as guide to the stray sportsman who chances to visit the district. Needless to say, a good trapper is usually a good guide, for he is at home in the woods, he knows the weather and

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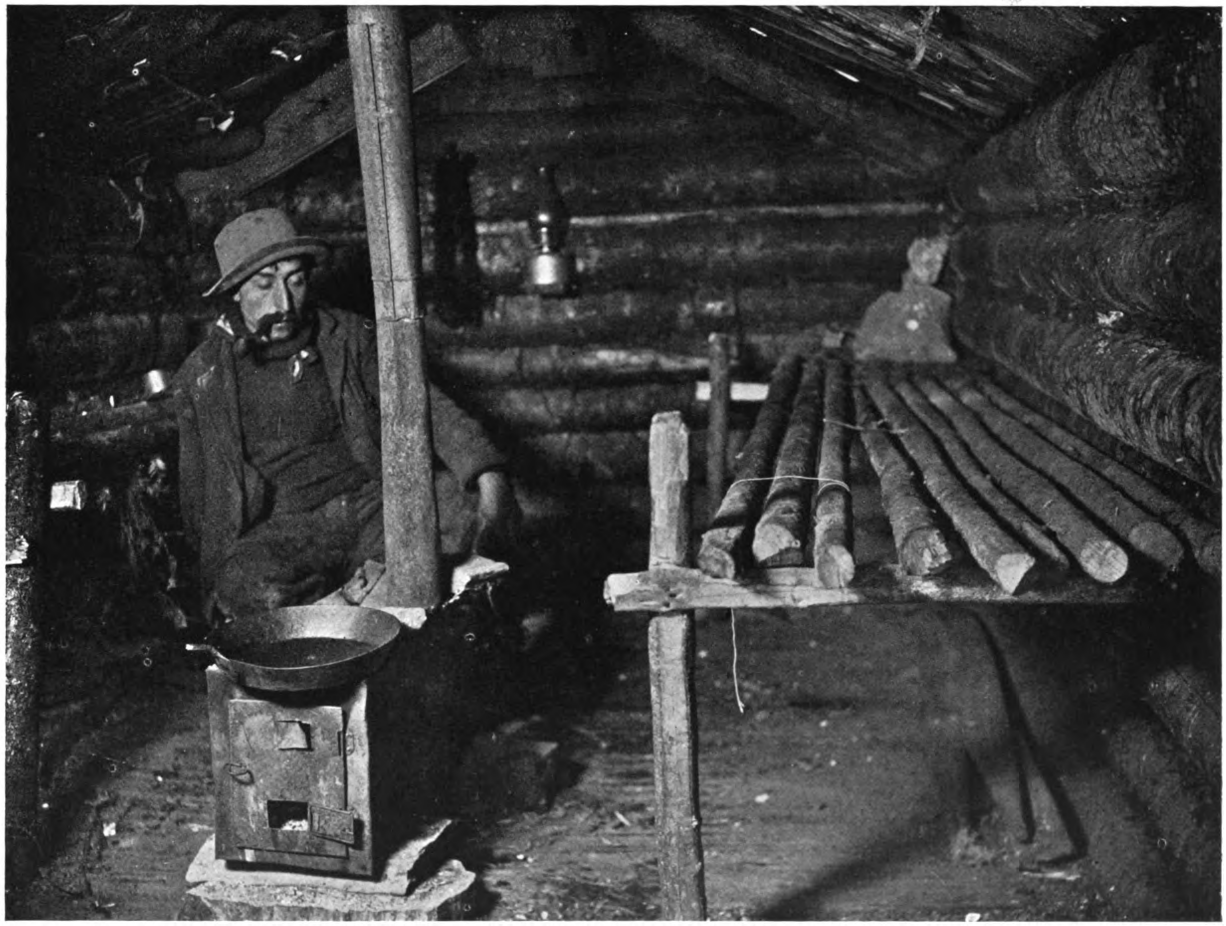
the seasons, and is conversant with the many ways of wild animals.

Of all the methods by which man earns his livelihood, there is probably none that appeals more strongly to the imagination, especially of the growing boy, than the life of the trapper. Most boys at some time or other decide to throw off the yoke of civilization and devote themselves to the life of trapping or hunting. In most cases they know absolutely nothing about it, nothing of the hardships, of the disappointments, of the years of training necessary, and of the unborn knowledge of woodcraft, without which success is not to be found. All they know is that the trapper is one who lives in a wild world of freedom, and whose life is surrounded by a veil of picturesque uncertainty; to be enveloped in this veil is the keenest desire of the boy gifted with that most precious of gifts—a healthy imagination. But the trapper's life is not all beer and skittles, not one long round of pleasure and success. Every pelt that comes to his hand is procured only after a vast amount of work,—work that would make the ordinary laborer shudder. And yet when the fashionable woman selects a garment that suits her fastidious taste, out of the many that are shown her, how little does she realize what that fur may have meant to the man who got it, the man who braved the bitter cold that he might contribute a few pelts to the great marts of the world, and get in exchange a bare livelihood! But, perhaps, after all, the trapper is a man to be envied, especially so if his country is one rich in fur-bearing animals, for then he can make a good living, and, greatest of all luxuries, be his own master. The lives of trappers in different parts of the country are probably very much alike, varying chiefly with the climatic conditions. In Florida, for example, the life is seen in its easiest form—mild climate, and an abundance of food animals;—furs, too, are plentiful, but owing to their thinness they are of much less value than those from the northern countries.

In Canada the furs are thicker and better, but the difficulties are increased because of the climate. The winters are long and snow-bound. There are days together of raging storm. Not only must the trapper know the weather, but he must be prepared to meet it with fortitude, wherever he may be. The country itself is immense in geographical area. The trapper must be self-reliant and know what to do in an emergency. Like the animals he hunts, his native wits become acute.

With the increasing demand for furs and the extravagant demands of fashion which requires that fur garments be of different shape and style each year, the fur-bearing animals in their wild state are becoming scarcer year by year, so it is safe to conjecture that fur farms will in the future supply the markets, and the trapper will be a man of the past. Those who come after us will read of his life and it will be like a fairy tale. As the large Indian birch-bark canoe laden to the gunwale with furs is passing down the quick-flowing rivers of time and civilization, so will the picturesque trapper slowly but surely fade out of existence.



The trapper and his cabin—an 8 x 10 log hut

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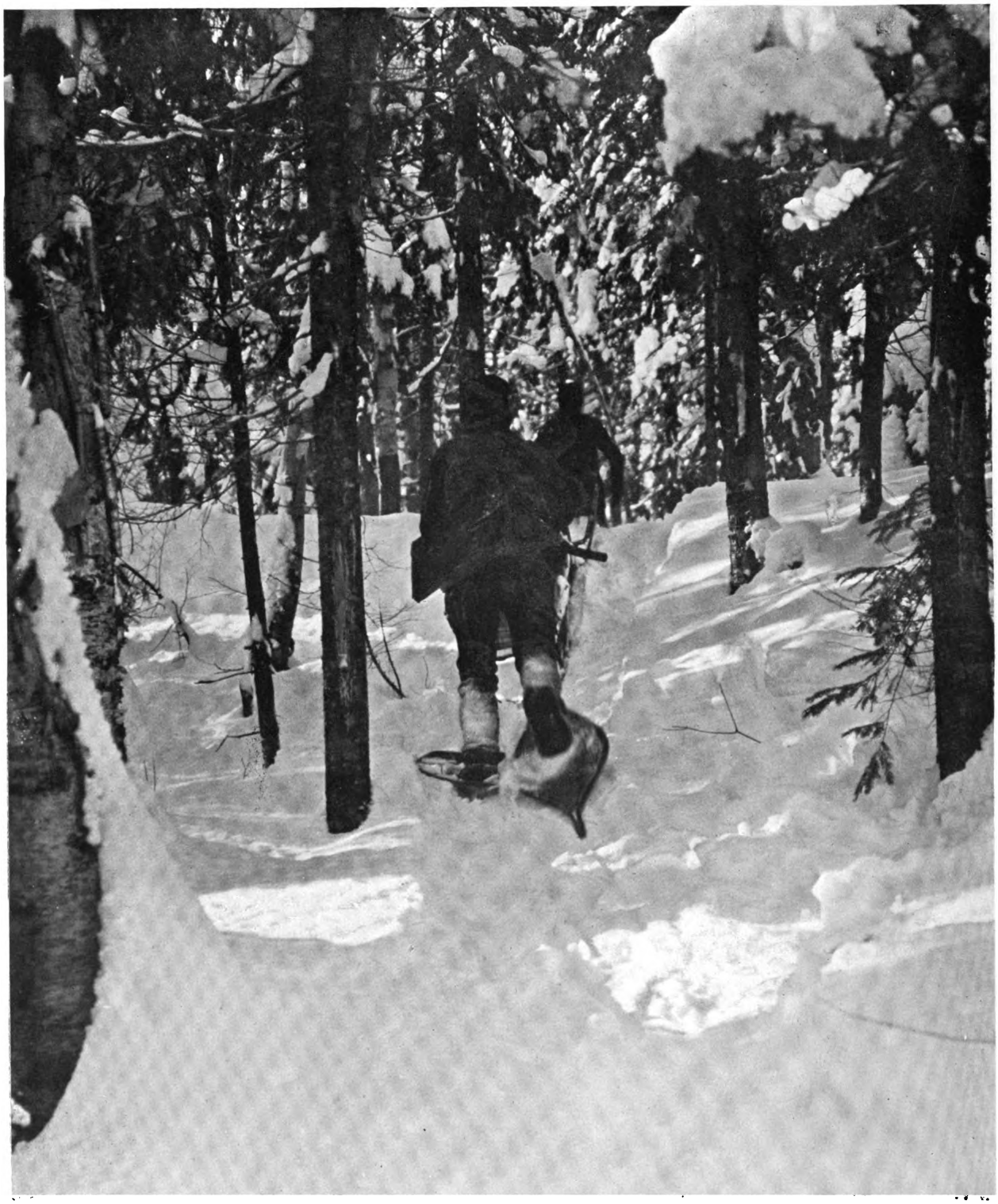

In Canadian woods

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A tragedy in the woods. A mink, caught in a trap, twisted off his foot, and the print of the footless leg is seen in the trail

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THE GREENHOUSE IN THE SNOW

IT is in the dead of winter that the greenhouse is at its best, for then is the contrast of life and death the greatest. Just beyond the living, tender leaf—separated only by the slender film of the pane—is the whiteness and silence of the midwinter. You stand under the arching roof and look away into the bare blue depths where only stars hang their cold, faint lights. The bald outlines of an overhanging tree are projected against the sky with the sharpness of the figures of cut glass. Branches creak and snap as they move stiffly in the wind. White drifts show against the panes. Icicles glisten from the gutters. Bits of ice are hurled from trees and cornice, and they crinkle and tinkle over the frozen snow. In the short sharp days the fences protrude from a waste of drift and riffle, and the dead fretwork of weed-stems suggests a long-lost summer. There, a finger's breadth away, the temperature is far below zero; here, is the warmth and snugness of a nook of summer.

"The fences protrude from a waste of drift and riffle, and the dead fretwork of weed-stems suggests a long-lost summer"

This is the transcendent merit of a greenhouse, — the sense of mastery over the forces of nature. It is an oasis in one's life as well as in the winter. You have dominion.

But this dominion does not stop with the mere satisfaction of a consciousness of power. These tender things, with all their living processes in root and stem and leaf, are dependent wholly on you for their very existence. One minute of carelessness or neglect and all their loveliness collapses in the blackness of death. How often have we seen the farmer pay a visit to the stable at bedtime to see that the animals are snug and warm for the night, stroking each confiding face as it raised at his approach! And how often have we seen the same affectionate care of the gardener who stroked his plants and tenderly turned and shifted the pots, when the night wind hurled the frost against the panes! It is worth the while to have a place for the affection of things that are not human.

"Here is the warmth and snugness of a nook of summer"

Did my reader ever care for a greenhouse in a northern winter? Has he smelled the warm, moist earth when the windows are covered with frost? Has he watched the tiny sprout grow and unfold into leaf and flower? Has he thrust a fragment of the luxuriance of August into the very teeth of winter? Then he knows the joy of a conquest that makes a man stronger and tenderer.

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"These tender things are wholly dependent on you for their very existence"

Greenhouses are of many kinds. There is one kind of the commercial plantsman, and another of the man of means whose conservatory is essential to the architectural completeness of his mansion. Of these we need not speak here, for their necessity is long ago established. But for another kind we wish to plead,—for the quiet, unobtrusive greenhouse as an adjunct to a modest home.

The object of this simple winter garden need not be the mere growing of flowers, although these may be had without trouble. It is worth the while to grow a plant just because it is a plant and because we are human beings. The best plant is the one that has the deepest significance to you, even though it never make a flower. I know a man who has hundreds of plants in expensive greenhouses, and the best plant of all is a little white clover that closes its leaves by night and opens them by day.

Against the background of winter every green and growing plant is emphatic. Against the luxuriant background of summer, a plant twice as good may be overlooked and lost. The simplest and easiest things are best, for it is not well to make the uncommon things too common. A dainty rarity is all the better because it is seen in contrast with the homespun of the geranium and begonia; and the common things perpetuate the continuities and purposiveness of our lives.

Like all effort that is worth the while, the labor of growing plants under glass requires watchful care. This care is its own reward. Many plants, however, are easy to grow, and with these the novice should begin; and with them, also, the very busy man should be content. All of us can grow bulbs. We can lift the roots of petunias and alyssum from the garden when the frost comes. We can start the seeds of many annuals in late summer. We can make cuttings of begonias and coleus and a score of common things. Here and there we can pick up something new. Gradually we add to our store; and in three years' time our winter garden, small or large, becomes an unique collection of old-time friends and of new-time rarities.

"A fragment of the luxuriance of August in the very teeth of winter."—A crop of melons

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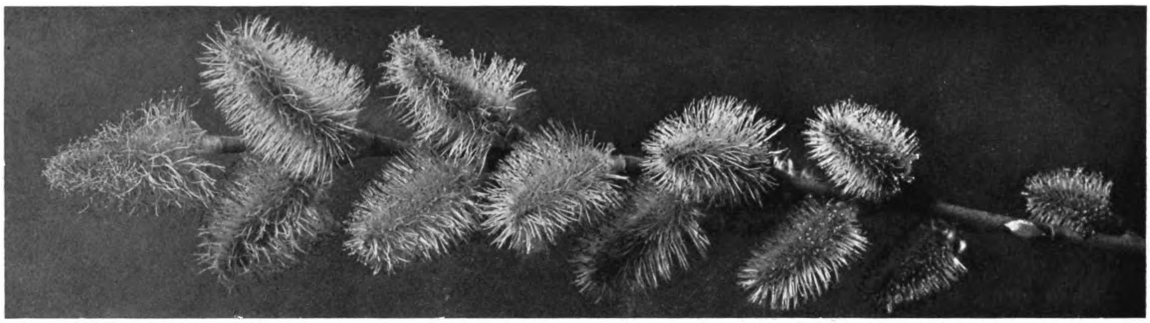

THE RETURN TO THE SOIL

THE first days of spring are days of unrestraint. We long to be up and away. The first spring flowers are the handsomest of the year. There is joy in the resurrection of the earth. There is release in the song of the bird and the first hum of the bee. Every man smells the soil and will be afield or will plant a seed. Agriculture is reborn every spring, and therefore it is always young. Even the city man would make a garden, or he would burst his shackles and fly to the country to buy a farm and make a home.

THE MEANING OF IT The "spring fever" is no trivial whim or passing emotion. It is a genuine awakening. Every man is better for having felt it, even though it bring no tangible result in gardens and lands. It is an inspiration. To many men the opportunity comes to gratify this longing to go natureward. It comes to a greater number every year, notwithstanding the fact that cities are growing. The country has given its best blood to the city. The city is now extending its influence to the country. Movements and tendencies that are parts of the general progress and development of the times cannot be said to be harmful. The concentration of men into cities is one of these world-movements, but the love of the open country is stronger in the hearts of men to-day than it ever was before. There is no danger that it will die out. The very stress of the city and of business life accents the need of repose and release. It is worth while to make a garden, even though the garden does not grow.

WILL IT PAY TO GO TO THE COUNTRY? Whether it is worth while for the city man to go to the country to make himself a home for part or all of the year, depends wholly on the man himself; and yet this question is always asked. Everything depends on the man's outlook, and on his means. The man of abundant means can make things come his way, and therefore he needs no advice from these pages; but there are hundreds of men of small means who would have a suburban home if they thought that the country place could partly or wholly pay for itself. We have many inquiries from city men who desire to go into farming as a business, hoping to find relief from the pressure of town life, but needing, if they make the change, that the land support them. Most of them have read books of rural life or alluring tales of great profits in special industries, or have become interested through summers and holidays spent in the country. They are aware that most farmers do not "make money," yet they reason that farmers often are ignorant, and that the man who is well read and "keeps up with the times" can make a financial success on the farm. Here, as elsewhere, experience is the best guide. Some city men have made the farm pay; very many of them have failed.

THE RISKS Farming is a business. Every good and truthful book and magazine article, and every experiment station bulletin, will help to good results; but if the man does not know the business of farming, he will most likely fail. Nowhere are there so many contingencies and unpredictable factors. Farming is not like keeping store or running a mill, where the business is comprised within four walls and the constituency is a definite and somewhat constant line of consumers. The farm is exposed to every wind that blows, to every frost that falls, to every vagary of sky and rain. These very uncertainties constitute much of the charm of country life to the sensitive mind, but at the same time they add to the difficulties of farming. Only by actual experience can one learn how to meet these difficulties and perhaps overcome them. That is, the man must learn farming. The difficulties of many kinds are so much a part of each particular soil and climate and market and location, that no book can ever expound them or even forewarn. We know of a man who has been a farmer all his life, who is yet struggling with the problem of handling a particular piece of clay land lying shallowly on a bed of sloping rock. He will master the situation if he persists, but in the meantime the land makes no return. Many men live a lifetime before they determine just what is the best series of crops for their particular soil and exposure. If the reader asks our advice as to whether he should go into farming for a living, we ask him two questions: Do you know the business of farming? Do you like it? Both answered in the affirmative, we say unhesitatingly, Go. If either or both are answered in the negative, we say, Wait and learn.

IS THERE AN OPENING IN FARMING? There is undoubtedly an opportunity to make a pleasant and respectable living from a very small investment in land. This is particularly true in much of the eastern country, where the individual and special market can be reached. The special crops are the profitable ones for the small farmer. The intenser and more compact the effort, the greater will be the rewards. The beginner will be likely to buy too much rather than too little land. Yet, the novice is likely to fail in the fancy and very special products, because these things require special skill in the raising. It is best to produce those things for which there is always a good demand, but to secure a better article

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than any one else and then to place it before the best customer. There is never an over-supply of first-class products. It rarely pays the beginner, or in fact the expert, to try to create a demand for any unusual article. In respect to its producing power, land is probably the cheapest of all investments. For two thousand dollars, one can often buy a farm that supports a family year in and year out. But land itself is worth little: the real investment is in the skill and energy that are applied to it.

IT IS NOT DECLINING The past generation has been a difficult time for farmers. This pinch of adversity is the lack of complete adjustment to the times: agriculture has been conservative, while the trades have been wonderfully progressive. But agriculture is catching up. Farm values are slowly increasing. The poorest farmers are being weeded out. There has never been a time when farming has been so well done as now, nor when the profits have been so commensurate with the skill and effort employed. The old régime was one of haphazard: the new is one of definite purpose and accomplishment. Despite all that is said to the contrary, we are convinced that American agriculture has never been uniformly so successful and resourceful as it is to-day. Tremendous educational influences are behind it.

HOW TO BEGIN How shall the city man begin if he is to run a farm? He must first determine whether he wants to run it. If he does, the battle is half won. Then, by some means, he must learn the business. He may spend a year on some good farm, employing his leisure time in reading and in visiting other places. He may then take a course, long or short, in some good agricultural college; or, if he already has a fair amount of practical experience, he may take the course first. Having completed these preliminaries, he will find his ideas to be crystallized and he will develop specific and definite ambitions. Too often the city man goes into farming with vague notions as to what he is to do and to produce; and he fails, as he would in any other independent business under like circumstances. He must remember that he is to be his own boss. This fact may captivate him at first, but it means that he must rely on himself and be the employer. Often it requires an entire change in one's point of view to be transferred from an employe to an employer. It does not follow that because a man is successful when working for another that he is equally successful when working for himself. If the man has limited means and little experience, it is best for him to hold to an uncongenial position rather than to plunge headlong into the country. Perhaps he can buy a place and stock it gradually and economically before he wholly gives up a present livelihood. This gives him an opportunity to gain experience and to study the many questions connected with the farm. However, he must not expect profits from the place until he can himself give the larger part of his time to it. Farming can rarely be done by proxy. If one is to run a farm for profit, it is economy to buy good land, and that which is accessible to markets. Waste land may be best for the suburbanite or summer resident, for in this case scenery is a distinct asset; but in real farming, the best land is none too good.

IT CANNOT BE DONE BY RULE All this means that farming cannot be done by rote or rule. The best farming is founded on a knowledge of principles. Because so many men do not grasp the principles is the reason why they find no intellectual satisfaction in farming. A knowledge of principles alone does not make a good farmer, but it allows him to understand the subject, and it affords a short-cut to all the best practice. This is why we recommend books and college training to every man who would till the soil. We do not believe that it is worth while for the city man to take up farming merely for the living there is in it. If he does not look forward to keen intellectual delight in turning the furrow and in caring for the animals, he would better not make the venture

AFTER ALL After all, would the city man best go to the country permanently? We think not, as a rule. In these times of intense competition, the man who is bred to a business has the greatest chance of commercial success. Very few city men make thoroughly successful business farmers. But we urge every city man to know the country. We want to see the suburban-home idea extended. We believe that it will add immensely to the joy of living and that its reflex influence on the country itself will elevate all the ideals of life

THE OUT-OF-DOORS Those who cannot afford a summer home or who do not care to assume the responsibility and anxiety that such a home may entail, can gratify their longing for the Out-of-doors in camping expeditions by field and stream. We are glad to see this desire increasing year by year, the stream of country seekers ever flowing farther and farther into remote and outlying places. The camp is removed from all taint of fashion and mere conventionality. It takes one into the very spirit of the open country. One has never really felt himself to be a part of the Out-of-doors, kin to bird and beast, until he has slept under the open sky.

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A MARCH GLEE

By JOHN BURROUGHS

I HEAR the wild geese honking
From out the misty night,—
A sound of moving armies
On-sweeping in their might;
The river ice is drifting
Beneath their northward flight.

I hear the bluebird plaintive
From out the morning sky,
Or see his wings a-twinkle
That with the azure vie;
No other bird more welcome,
No more prophetic cry.

I hear the sparrow's ditty
A-near my study door,—
A simple song of gladness
That winter days are o'er;
My heart is singing with him,
I love him more and more.

I hear the starling fluting
His liquid "o-ka-lee;"
I hear the downy drumming
His vernal reveille;
And from out the maple orchard
The nuthatch calls to me.

Oh, Spring is surely coming,
Her couriers fill the air;
Each morn are new arrivals,
Each night her ways prepare;
I scent her fragrant garments,
Her foot is on the stair.

A PROMISE

By BEATRICE E. RICE

BRIGHT shines the sun, and leaf-bare branches trace
On whitened path a web of shadow-lace;
The crystal chains are broken that have bound
The streams; and grasses stir beneath the ground.

Beyond the clouds blue glints the sky as June,
Whilst e'en a robin lilts a merry tune.
Wind-furies whirl away the drifts, and lo!
Close-folded lies a blossom 'neath the snow.

THE END OF WINTER

By DANSKE DANDRIDGE

IN stormy fashion
Ends the dark season;
The wind's in a passion
Out of all reason.
Winter, so loth to go,
Howls, spitting out the snow,
Like froth of madness.
Spring in her covert hides,
Counting the hours she bides,
Awed into sadness.

A Berserker's dying!
Now, as he breathes his last,
See the clouds flying,
Scudding before the blast.
Nature upon her breast
Lulls the old King to rest;
While from the hedge is heard
Softly, the spring's bluebird,
Piping in gladness.

"I'm only wishing to go a-fishing"—*Henry van Dyke, "Little Rivers"*

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GARDEN & FIELD

HOW TO MAKE A GARDEN—THE LAWN

THE UNDERLYING PRINCIPLES, TOGETHER WITH PRACTICAL DIRECTIONS FOR VARIOUS PARTS OF THE COUNTRY

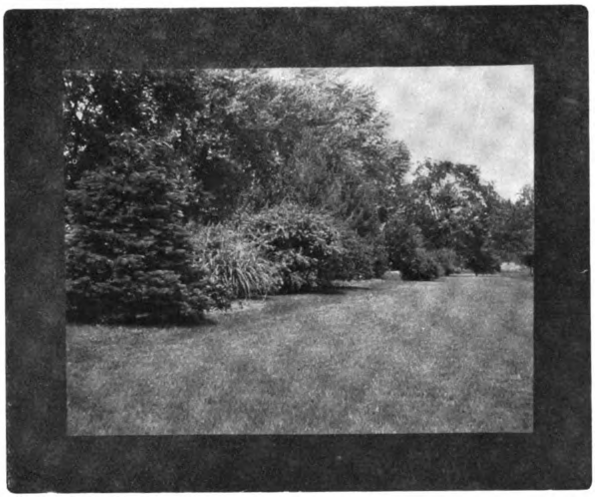
I. SOME OF THE PRINCIPLES EXPLAINED BY A NEW YORK LANDSCAPE GARDENER

LIKE all work in the construction of a country place, the making of a lawn depends largely upon the actual skill displayed in managing the various processes necessary to the proper completion of the work.

The principles involved are comparatively simple. Clean, mellow rich soil, good seed, and frequent weeding and mowing will be sure to produce a satisfactory lawn, if the work of construction be well done. It is not easy to make clean, rich, mellow soil. There will need to be a great deal of plowing, and harrowing, and forking out weeds, and harro- ing again and again, and raking, b fore most soils can be made reasonably clean; and if it be sod ground, plowing throughout an entire season, and even growing a tilled crop of corn or potatoes, may prove to be necessary. Then in order to keep it clean it may be necessary to use only artificial manures, or even no manure at all.

Of the selection of grass seed it may be said that an absolutely clean quality of seed can hardly be found in blue grass, red top, rye grass, or white clover; but the aim should be to get the seed as clean as possible in any case, and to sow it liberally, in order to make a sufficient quantity germinate. The art of sowing grass seed evenly over the ground is a very difficult one. It is a good idea to sow across the lawn and then across again at right angles, and then again diagonally across, so as to be sure to cover every inch of the surface. The mellow ground, moreover, may be advantageously rolled before, and allowed to lie a week or even a month until rain soaks it, and then immediately after seeding it should be rolled again.

SAMUEL PARSONS, JR.



91. The trees and flowers show off well on the margins of a velvet lawn

II. TREATMENT OF AN OLD LAWN, AND OTHER SUGGESTIONS FROM A LANDSCAPE ARCHITECT IN BOSTON

Very often the most serious mistake in lawn-making comes from the destruction of a rough and uneven but strong, well-established turf. Such a turf may be the basis for a less expensive, more durable, attractive and less weedy lawn than can be produced from new seed in a long time. If the depressions in such a lawn are not over an inch in depth they can be filled with soil and the old grass will push through. If much deeper, then remove turf, place soil beneath and resod. Furthermore, much unnecessary expense and destruction of beauty is often caused in making absolutely true and even grades. Certainly abrupt hollows and humps that cannot be run over smoothly with a lawn-mower should be removed. Gentle and gradual undulations, however, give very attractive light and shade to the surface.

The following mixture of the very best recleaned seed has been found to make the most satisfactory permanent lawn under nearly all conditions here in the North, as well as in the South and in California: redtop, 30 lbs.; blue grass, 30 lbs.; white clover, 16 lbs. per acre. In the South and in California the Bermuda grass has more extended use, but while it makes an attractive cushion-like turf it is almost impossible to eradicate it from walks and beds, into which it spreads with the greatest facility.

A great desideratum is a low grass or ground-covering plant that will not require constant cutting. In Japan such a grass is used, but it is not hardy here in the North and not a success so far as tested in the South. *Lysimachia nummularia* is useful in shaded places and will stand some wear. The turfing daisy, *Chrysanthemum Tchihatchewii*, has also been tried, but is not a success in the East. In California, Mesembryanthemum is very generally used, and in shade the California strawberry is admirable. In the East, white clover comes the nearest to meeting the requirements of such a lawn.

WARREN H. MANNING.

92. A simple front lawn, unmolested by bushes and flower-beds, gives the old farmhouse a look of thrift and comfort

III. EXPERIENCE OF A SUBURBANITE NEAR CHICAGO

A hard, compact soil is fatal to a luxuriant growth of grass, and therefore a complete breaking-up of the upper surface is essential. This should be thoroughly done at the start, as access to it afterward is debarred by the presence of the sod. Unlike ordinary crops, the soil for grass is prepared once for all. Nearly all maiden soils are charged with ample nutriment, but it is dormant, and needs the action of the elements to render it available for plant assimilation. Tillage unlocks the dormant fertility. A thorough cultivation opens up the soil to the air and frost, and allows the feeding roots to penetrate deeply beyond the effects of drought.

Manure at the start is not essential, but beneficial as a reserve food, and its decomposition hastens the necessary chemical changes in the soil. Deep plowing or spade-trenching is the best method of cultiva-

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tion. If manure is used, it should be spread evenly over the surface before plowing. When the soil is of a stiff, clayey nature a four-inch coating of sand may be added to the manure. After plowing the land should be harrowed, then leveled and lawn grass seed sown at the rate of four bushels to the acre; then roll the ground well.

I prefer to plow in the fall and let the earth remain rough until spring, as it is greatly benefited by the action of the frost. Harrowing and sowing may then be done in April. A still better plan, if circumstances permit, is to prepare the ground as suggested and grow one or more crops of corn or potatoes, or anything requiring cultivation, for a season. This puts the soil in ideal condition for a lawn.

A five-inch coating of corn-field earth spread over the ground is a most excellent addition to the above proceedings.

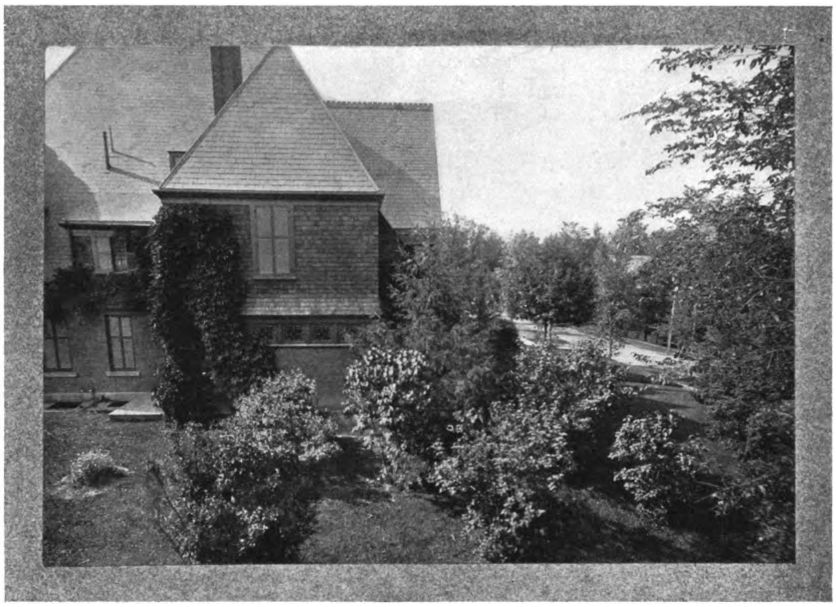
W. C. EGAN.

IV. PERMANENT LAWNS FOR THE SOUTH, BY A NURSERYMAN OF GEORGIA

With few exceptions, and then only in unusually favorable soils and localities where artificial irrigation is possible, hardly any of the excellent kinds of grasses which form the basis of lawns farther north are available for the middle and extreme South.

Of all the exotic grasses which do resist the long, warm summers and the frequent protracted periods of drought which often prevail South, the Bermuda grass, or, as it is known in India, the Doob grass (*Cynodon Dactylon*) is the most desirable for the formation of a permanent lawn. It adapts itself to all soils, but grows more luxuriantly in rich clayey loams. Soils of the latter texture must be made friable by a thorough plowing in the autumn, the surface being left rough. A second plowing should be given in early spring, and then a liberal quantity of stable manure well incorporated with the soil. Sandy lands require only one plowing in the spring, but a larger quantity of manure.

As Bermuda grass roots can be procured in almost all sections of the South, these are more desirable for setting the lawn than seed, which is usually scarce and high-priced, because it has to be imported from foreign countries. Cut the roots in short lengths. Passing them through a hay cutter will make them of regular size. Sow the roots broadcast over the surface, which must be left rough after being plowed; then harrow or rake by hand, making the surface perfectly level. The planting of roots should always be done in early spring, as excessively cold weather may injure all roots not well covered during autumn. If a period of drought should follow the spring planting, the soil should be watered wherever this is practicable. Weeds, which will always spring up, must be eradicated, but the roots of the Bermuda grass will soon cover the ground and choke out weeds after the lawn has once or twice been carefully weeded over. So soon as the new growth has attained a few inches, use a lawn-mower, being careful not to cut too close, especially during dry weather, and repeat the clippings through the summer. Do not let the grass attain the blooming stage. During the late winter months give a top-dressing of bone meal at the rate of 500 pounds per acre, and repeat this during a period of rainy weather in summer.



93. An overcrowded yard, in which a good lawn effect is impossible

After the second or third year it is advisable to scarify the surface in early spring, following this by an application of bone meal, which should be raked by hand or fitted by a smoothing harrow and well rolled. A lawn thus cared for will last for many years, but should noxious grasses, such as "smut" and broom sedge, appear, they must be carefully eradicated.

A short time ago I took a trip to middle Georgia, a section bordering on the Savannah river, and was surprised at the enormous quantities of Bermuda grass which have monopolized the thousands of acres of abandoned plantations, making these old cleared lands better than ever, as a new industry (cattle-raising) is possible.

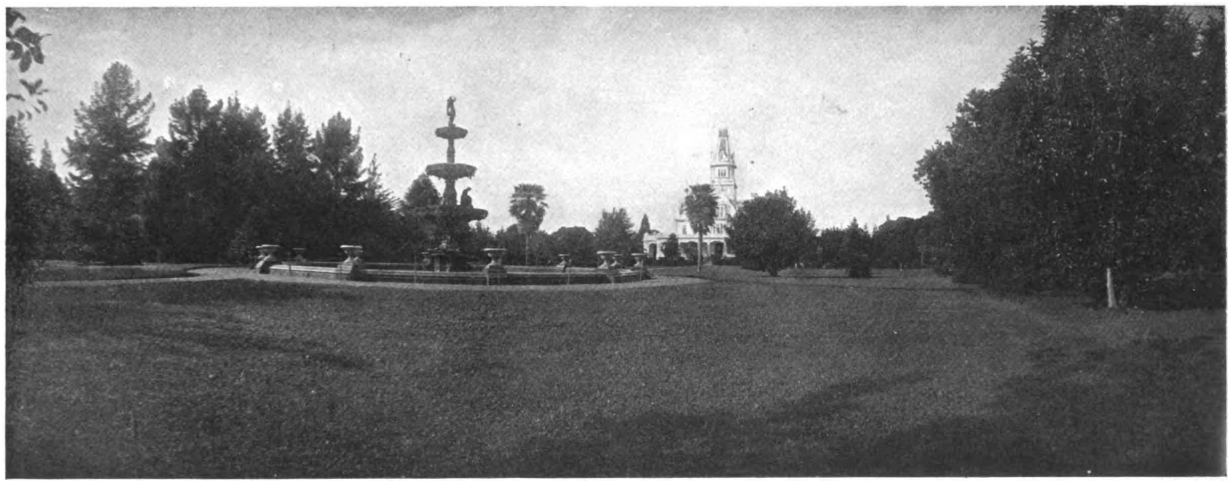
P. J. BERCKMANS.

V. LAWNS AND GOLF GREENS, BY SUPERINTENDENT OF BUREAU OF PARKS, PITTSBURG

A lawn, be it level or rolling, should be perfectly even and smooth, and free from puckers, bumps, pocket-holes or sags, and it should have a thick, clean sole of short, fine grass. A lasting lawn should have good ground deeply worked and well enriched, but with constant attention in the way of frequent mowing and rolling and copious waterings in summer, and weeding and top-dressings of fertilizer. I know of some fine city lawns where the surface soil is only two or three inches deep on a clay bottom.

I prepare the ground for a new lawn in fall by grading it to its right level, then manuring it heavily with short, rotted stable manure, and plowing or digging it over deeply and loosely, keeping the manure well down in the ground. After this I harrow or rake it, and even off the whole surface, filling up every depression or pucker, and thus let it lay open all winter. In spring it will show lots of puckers and inequalities, but I fork the whole surface over lightly and rake it clean and smooth, and then sow the seed and rake it in very lightly and roll with a hand roller.

In digging we do better and quicker work with



94. An open and restful lawn, adding dignity and character to the place. — The Flood estate, Menlo Park, California

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a potato or digging fork than with a spade or shovel, and find wooden tooth rakes better than steel ones for general leveling, and use short-teeth steel ones for finishing off in small lawns. And instead of an ordinary plow we use a side-hill plow because it throws all of its furrows one way, and leaves no rig-furrows to fill or ridges to reduce. In lawn-making a disc harrow is a capital implement; it cuts up and fines the surface soil and packs the manure down into the ground, while an ordinary tine harrow tears it to the surface.

We subsoil all of our new lawns. In small patches we loosen the bottom soil after the fork, with a pick, and leave it in the bottom; in larger plots we run the subsoil plow in the same furrow after the surface plow, but in all cases we are mindful to keep the subsoil in the bottom and the top soil at the top.

Kentucky blue grass gives a fine sod. So does red top. But I like a mixture better. It is a case of the survival of the fittest, and something is sure to grow. The seedsmen's lawn grass mixtures as a rule are good. But I get the grasses separately and we mix them ourselves. For small lawns, golf putting greens and croquet grounds, I use two parts in bulk of Kentucky blue, two of red top, and one, sometimes two, of Rhode Island bent grass; for fields or broad lawns the same mixture, with one and one-half or two parts of English rye grass seed. The use of white clover in lawn seed is purely a matter of like or dislike. We use it in our broad lawns, but never use red clover or yellow clover. And do not use any rank grass like timothy or any tufted one like orchard grass; indeed the last named is one of the commonest and worst weeds in new lawns. Do not sow grain, as rye or oats, with your lawn grass. If you sift some ordinary moist loam and mix your grass seed into it, you can sow it more evenly than when the seed is alone and with less danger of blowing in drifts by wind.

In the case of clay lands and those of bleak exposure, to ensure an even germination I spread a very thin scattering of light, short, chaffy manure on the ground after sowing to prevent baking or overdrying, and it does much good.

As soon as the grass is well up and before it begins to thicken in patches, run the mowing machine over it, but not too close, and never let the grass get so long that it will show in white mats after being cut. From this time on, mow continuously all summer, say once a week or ten days according to growth and weather, till late in October. Never leave thick mowings on the ground with the idea that this mulching is benefiting the grass, but rake them off clean and the denser will be your sod.

95. Nature's lawn. An open glade on the border of the woodland

With the young grass on every lawn will come up a crop of weeds. The seeds were dormant in the soil, and many are contained in the manure. While the repeated mowings will kill off most of the annual weeds, perennial ones like dandelions, plantains and docks and the tufted grasses must be hand-picked, if you intend to have a first-class lawn. Crab grass in late summer or fall is almost ineradicable. Raking it up and mowing it often, and encouraging the growth of the sod grass, keeps it in check. No weed-killing dressing we may put on the ground will kill the weeds and spare the grass. Friend and foe must die alike. Therefore, do not use it.

The more copiously we water our lawns in summer, the better grass we shall have. Let the hose play any time of the day or night. Roll the lawns frequently in summer and always when the ground is a little moist, so as to make the surface smooth.

In fall do not think that a heavy beard of grass is necessary to the safety of the sod over winter. While it should never be skin-bare, it should never be heavy enough to harbor field mice, or need burning off in late winter.

Most people top-dress their lawns over winter with manure. This has advantages and disadvantages. No doubt it helps the grass and enriches the ground, and if it be raked off early, it gives the sod an extra beautiful cast in spring. But it is unsightly, and, worse still, it is likely to be full of the seeds of weeds which are sure to grow, and in this respect cow manure is the worst of all. A capital winter lawn dressing consists of spent hops or tobacco stems. In earliest spring and at intervals of a few weeks a light dressing of nitrate of soda sown over the ground gives pronounced results, or safer still, a heavier dressing of "complete fertilizer."

It is a pointed fact that our golf putting greens are our finest pieces of lawns. Their sod is the shortest, greenest, densest and most even, and they are the most frequent and closest mown, early and late, of all of our grass patches, but there is no saving of water or top-dressing in summer, and they are rolled every week.

WM. FALCONER.

Corollary to the making of a lawn is the arrangement of the planting. Both things should be done simultaneously. It is well to avoid cutting up the lawn space with scattered and meaningless planting. The pictures illustrate good lawn conceptions, except Fig. 93, which shows a yard too full of shrubs. These bushes in Fig. 93 could have been placed in borders, leaving an open area for lawn effect.

96. An open lawn space in a country home—a Bungalow in the North woods. The property of Mr. E. P. Swenson, Saranac Lake, in the Adirondacks. W. H. Symonds, architect

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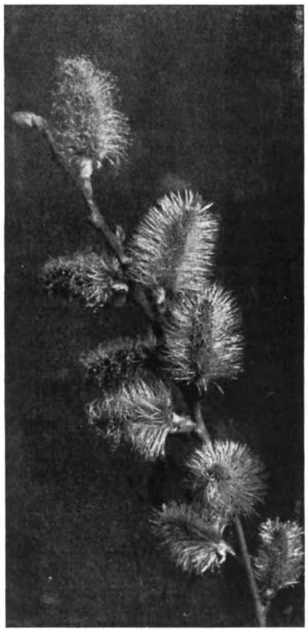
THE COMING OF SPRING

NOTES ON THINGS TO SEE AND THINGS TO DO—SUGGESTIONS FOR THOSE WHO WOULD BE FOREHANDED AND WHO WOULD GET THE MOST FROM THE SUMMER



97. "Pussy willow flaunts her gray banner in triumph over the retreating forces of winter"

THIS calendar has a distinct and definite purpose—to suggest what to do out-of-doors and when to do it for the best results. Its special mission is to that great and constantly increasing class for whom Nature has but just thrown wide her doors, and who, entering her wonderful domain with eager eyes, know not where to look or what to look for; longing to hear, know not when and for what to listen; seeking knowledge, do not possess the key which will enable them to read understandingly. It is also intended for those who, having taken up one or more branches of outdoor life, desire some record which will enable them to pursue their hobbies month by month intelligently. It is to furnish suggestions for the nature student, the sportsman, the farmer, the suburban homesteader, and city folk dropping for a day the strenuous rush of the business world for the life-giving breath of woodland and fields. It is to be suggestive rather than specific; to tell when, what and where to do, rather than how to do.

So varied are the topography and climate of this great country that it must be apparent how futile would be the endeavor to crowd within the limits of these columns a complete record of outdoor pursuits for each distinct locality. There is no such attempt; but in the belief that the interests of the greatest number will be best served thus, the latitude of New York is taken as a basis for the suggestions, except when otherwise specifically stated. It has been found that the onward march of the seasons is at a uniform average rate of about twenty miles a day. Bearing this in mind, the application of the hints and suggestions herein to specified localities north or south of the latitude of New York resolves itself into a proposition in addition or subtraction, as the case may be. The reader must also determine what are the game laws of his State before following the suggestions given here.

MARCH

PART I. WORK

March 1–10. News of Spring

The first bluebird whistles softly, albeit a bit tremulously, in the naked orchard and the hopeful challenge of the early robin draws all eyes to the top of the stark bare elm. From all sides comes the music of new-born rivulets. Above the swelling stream in gentle bravery the pussy willow flaunts her gray banner in triumph over the retreating forces of the winter. By these signs know all men of the approach of spring. The rest months are over and the challenge of labor rings from every side. This is the beginning of activities. Farmer, orchardist, poultryman, the man with a small place beyond the turmoil of the city, aye, and the city man himself, feel it in every breath of the south wind. Though frost still has Mother Earth in fetters of iron, emancipation is not far distant; it may be no farther away than the middle of the month. Busy indeed these first ten days for him who would be prepared!

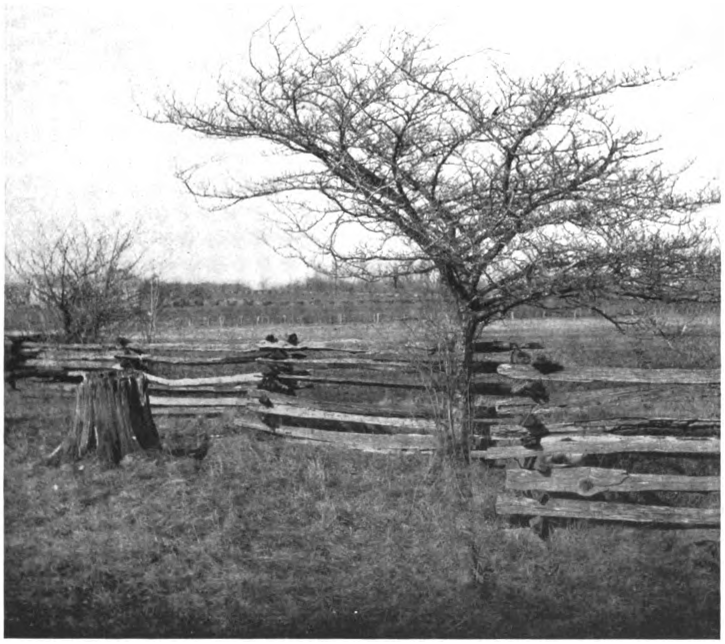
Forced Vegetables.—In greenhouse or forcing house, large or small, the season is already on. This is the month of highest prices for lettuce and in the large houses of the market-gardeners the crop is being harvested. The radishes and beets sown now will be at their best when in greatest demand. Growers of cucumbers under glass are planting that this luscious spring vegetable may come into market when the fresh crispness of the hothouse crop will command double the price of the product from the South. Many often sow another crop of lettuce at this time. A corner of the house is also given up to the starting of plants, both vegetable and flower, for transplanting out-of-doors when the weather permits.

Hotbeds, Coldframes and Window-boxes.—For the man who has no greenhouse, this is the time, if ever, to build a hotbed that it may be in condition for planting by the middle of the month. It is the common custom for the owner of a small garden to buy his cabbage, cauliflower, pepper and tomato plants when he is ready to set them out. Alas! that he should so cheat himself of a great pleasure which might be his at no very great outlay of time or money. There is a delight in seeing the first green things break the brown mold and in feeling that a garden is your own from its very inception. A hotbed, be it ever so tiny, should be an adjunct of every garden, large or small. The possessor of a coldframe may at this time sow cabbage, cauliflower, lettuce and radish.

98. "However, there is a fascination in tramping through woodland and meadow"

This, too, is the time to prepare window-boxes if neither hotbed nor coldframe is to be available. One having but a small garden plot can easily raise in these boxes as many plants as he will require and at the same time get a vast amount of pleasure in watching the fresh tender green life while yet the dreariness of winter reigns without.

Farm Work.—Labor is the burden of the spring song, and there is no lack of it these early March days. In this time of preparation, often unsuspected, lies the balance between profit and loss. The overhauling of the farm machinery and the wagons, the oiling and mending of the harnesses and the repairing of the garden tools before the season of rush, when time and tools can ill be spared, will save vexation of spirit. The hours so spent may well be entered on the credit side of the ledger, whereas later the entry would be under loss. The good general makes careful preparation for the battle. There will never be so good a time to haul out manure to convenient places and build compost heaps for later distribution. Those who believe in the practice will spread it ready for plowing in and will credit their accounts with a clear gain of time. The hoarse croak of yon crow from his lookout on the pasture fence carries with it a suggestion. Why not a day or two of fence viewing and making repairs before the frost is out, against the not distant turning of the cattle to the fields? There will be no better time to engage the season's help. Later the best men will have found employment.



99. "In the open country." A wild thorn-apple tree

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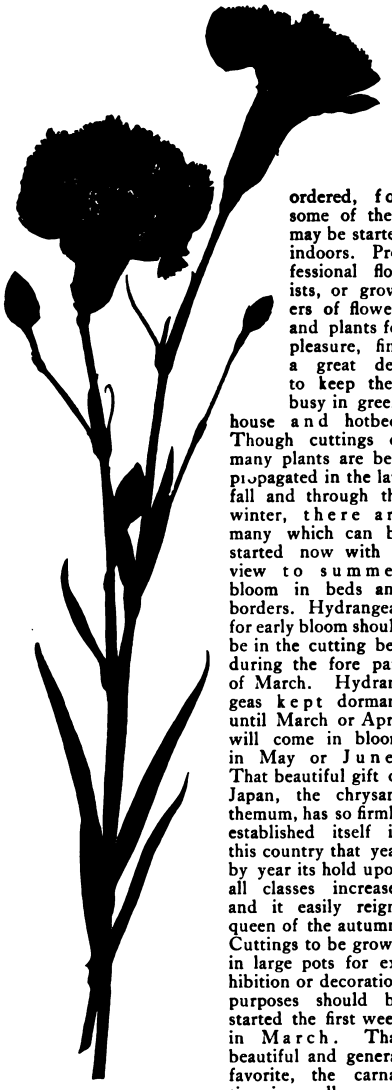
Maple Sugar.—Down in the sugar orchards with every warm sunny day there is a drip of silver drops from the tips of squirrel-bitten branches, which warns that the buckets should be in place and the evaporator ready, for no man may say when the run will begin or how long it will last.

Floriculture.—Year by year, there is greater interest in flowers. The attractive seed catalogues have had their effect. These catalogues should now be studied diligently. Seeds should be ordered, for some of them may be started indoors. Professional florists, or growers of flowers and plants for pleasure, find a great deal to keep them busy in greenhouse and hotbed. Though cuttings of many plants are best propagated in the late fall and through the winter, there are many which can be started now with a view to summer bloom in beds and borders. Hydrangeas for early bloom should be in the cutting bed during the fore part of March. Hydrangeas kept dormant until March or April will come in bloom in May or June. That beautiful gift of Japan, the chrysanthemum, has so firmly established itself in this country that year by year its hold upon all classes increases and it easily reigns queen of the autumn. Cuttings to be grown in large pots for exhibition or decoration purposes should be started the first week in March. That beautiful and general favorite, the carnation, is usually propagated from cuttings as early as November, but cuttings struck as late as March will produce strong, healthy plants by the latter part of August. Young plants to be removed to the coldframe early in April for hardening off should be established in boxes by the first of this month. This is also the time to start gloxinias and tuberous begonias. Caladiums may be potted off, and the cyclamen started in September will be demanding attention and repotting. It is not too late to plant smilax, which will be ready to transplant in July. Cuttings of the old-fashioned cytisus started now can be set in the open in May.



100. "That beautiful and general favorite, the carnation"

The Lawn and Meadow.—This is the time for top-dressing the lawn. Those who have not spread manure on the meadows, as made through the winter, can do so now to advantage. Not a few consider this the most opportune time of the whole year for sowing clover seed, even sowing on the snow if such chance to linger.

Animal Industry.—Those who have extremely early or so-called "hothouse" lambs of course prepared for them early in the winter, but on the majority of farms the lambing season will begin the latter part of this month. Now is the time to make preparations, to see that warm, comfortable quarters are provided for the ewes and to build a "creep" for the lambs. Comfortable quarters should also be provided for the sows to farrow this month. Inattention to matters of this kind now may mean the loss of a litter of pigs. This is the beginning of the active season for poultrymen who are raising early chicks. Brooders should be in readiness, and it is also a good time to go over the outside runs and stop all holes which may appear. Those who still stick to Mother Nature's good old method will have their hands full in setting hens. Comparatively few breeders of Belgian hares and pet stock want the care involved by winter litters, but now with the advent of spring and the approach of warm weather, the breeding season opens and preparations should be made accordingly. Not a few take this time to break young colts to harness. Dairymen are still following the winter routine, as the change to pasture can hardly be made for a month yet.

March 11–20. Mid-March

Hotbed and window-boxes are ready for sowing. Tomatoes, peppers and lettuce started now will make good stocky plants for transplanting out of doors in due season. It is time to harden off early cabbage and cauliflower wintered over in coldframes. Early started lettuce plants can be taken in flats from the hotbed to the coldframe and there hardened off. These vegetables properly hardened can be set in the open much earlier than the amateur is inclined to think possible. In many of the warmer sheltered spots the frost is out and the earth fairly dry. In such places beds of sea kale, asparagus, artichokes and rhubarb may safely be prepared. Doubtless some of the old beds are already showing a suspicious stirring of the soil. These may be top-dressed to advantage at this time.

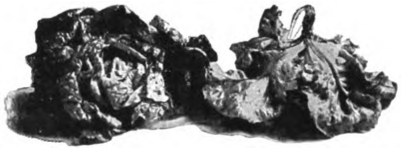
Flowers.—Asters for early blooming should be sown in coldframe or window-boxes. Pansies for summer bloom should also be sown. The scarlet or horseshoe geranium, more properly the pelargonium, so much used for bedding, started under glass at this time will show flowers in August and September, supplementing the winter-started plants, which bloom in June and July. A corner should be found to sow ageratum, cosmos, morning-glory, mignonette, pink, salvia, stocks, snapdragon and verbena, or such of them as are desired for the beds and borders. If you are in a hurry for early bloom, nasturtiums can be started and also the Chinese primrose for the fall or early winter. In fact, most of the tender annuals will give earlier bloom and make stronger, healthier plants if sown under glass now or in window-boxes and given a good start before transplanting to the open. Dahlias can be started to good advantage, although they cannot go in the open ground until May.

101. "In the large houses of the market-gardeners the crop is being harvested"

Care of Trees.—Some but not all of the shade trees should come in for a share of attention. The elm, oak, ash and similar trees can be trimmed and the work done now will be clear gain of time. A last round of the trees and careful inspection for the tussock moth and other insects will go far to save the trees later on.

March 21-31. Spring Work Begins

Outdoor work has fairly begun, and on dry land plow and harrow are busy. On warm dry soils such hardy vegetables as lettuce, radishes, onions, horse-radish, cabbage, spinach, turnips, can often be planted or sown. Peas also can be planted. Sweet peas, which of late years have found a corner in almost every garden, should be planted now, for they will stand a surprising amount of cold. This, too, is the time to top-dress the lawn and the meadows, if not already done, and to prepare the flower beds against the time when they may safely be planted.



102. "This is the month of highest prices for lettuce"

Fruit-Growing.—Orchards demand attention all through the month of March. Pruning and cutting out of all dead wood should be done as early as possible. While the trees are thoroughly dormant is the time to spray with Bordeaux mixture in peach orchards for the control of leaf-curl, monilia or rot, and other fungous diseases. Trees may be scraped and the trunks treated to a coat of whitewash or lye made from hardwood ashes. By the latter part of the month preparations for early cultivating should be made. Thorough inspection and proper care and treatment of the orchard

103. "In swamps, the skunk-cabbage is marshaling its hosts"

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104. "The buckets should be in place"

in March will quite likely prove the most potent factor in the fall crop. The value of early and thorough spraying is becoming more and more recognized by fruit-growers. Time was when the fruit trees received the least attention of any crop on the farm, but even those who have but a few trees are coming to realize how much greater the returns will be when proper care and treatment are administered.

PART II. RECREATION

March 1–10. "When the spring stirs my blood"

Even as deep in the earth, far below the line of the fettering frost, the life pulse of the maple begins to quicken in each tiny rootlet and to mount upward in defiance of winter's failing grip, so in man there is born an unrest, a fever of impatience, a desire to break the bars, to escape from the office and the counting-room and to feel within himself the recreation with which all nature is athrill. Yet what does March offer of inducements to be abroad? Not as much as other months, perhaps, but rough-and-bluff and give-and-take fellow that he is, he will still afford many a day of sport and recreation which are his alone to give.

105. "While a spray of arbutus, the Mayflower of New England, is worth a whole day's tramp"

Ducks are flying! From the far south the great web-footed hosts are steadily moving north, actuated by the same irresistible impulse which drives the sap upward in the maple and sets man to longing to be out of doors. Already the guns of the spring shooters are busy and the slaughter of the innocents has begun. In the vanguard come the black or dusky duck, keeping just below the ice line and dropping into the small ponds and the setbacks as fast as they are freed of ice and into the open waters of the marshes. Swift of wing and wary, he circles against the fading orange of the western sky and as the black shadows creep out from the shores drops into the feeding grounds. Rare sport where wit and skill are matched against a quickened instinct and alertness is afforded by the spring hunting of this early duck. A few weeks later the great body of ducks will be along and sport will be at its height.

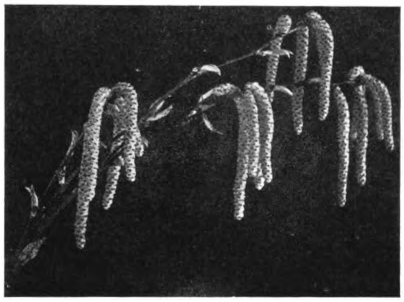
Spring Shooting.—Often the spring shooting is better than the fall shooting, and the desire for a day or two with the birds is hard to deny. Yet there is a growing sentiment among true sportsmen that the practice must be stopped. The rapid decrease in the number of migrating waterfowl has become alarming. In most of the states where duck shooting amounts to anything movements are afoot to secure legislation which shall stop spring shooting or at least so shorten the open season that the same end will be attained. Spring shooting still finds plenty of strenuous advocates, but the consensus of opinion among careful observers appears to be that the birds must be allowed to wend their ways undisturbed to the breeding grounds if the present supply is to be maintained. Therefore, while spring duck shooting may be calendared now it is not to be commended, and it probably is only a matter of a few years when in most states it will be stricken from the list of spring sports.

Snow-shoeing.—On the mountains the snow is still deep, and in the northern sections a last outing on the snow-shoes may be enjoyed. There is a wonderful fascination in mountain climbing at this season of the year and noting how clear and well defined is the dividing line between winter and spring on the mountain side.

March 11-20. When the Sap Rises

"Pray for a night with nip in the air;
Pray for a day that's warm and fair;
Pray that a northwest wind may blow
And be on hand with a pail of snow!
Sing hi-diddy-day!
Sing hi-diddy do!
And be on hand with a pail of snow!"

In the Sugar-Bush.—And have you never heard the song of the sugar-makers to the wood-smothered accompaniment of swollen rushing brooks and the silver tinkle of dripping sap? Then indeed have you something for which to live. A more delightful outing than a day or two in a sugar camp can hardly be imagined. Usually by this time good runs of sap are assured and there is almost a certainty of finding the sugar-makers in every orchard. In northern New York, Vermont and New Hampshire, deep snows are likely to prevail still in the deep woods, and preparations must be made accordingly. But in the southern sections of the maple sugar belt the snow remains in patches only. It is usually an easy matter to secure permission from the owner of a sugar-bush to spend a day and night in camp, and not a few city folk take a run into the country for this express purpose. It affords an outing at once novel and delightful and the experience will not soon be forgotten. It is in truth getting in touch with Mother Nature, and prosaic indeed must be the temperament of him whose imagination will not be quickened by the simple charm of his unusual surroundings.



106. "Perhaps in some favored region you will find the graceful sweet-birch hanging out her slender catkins"

Novel Sport.—The bird student and collector will find much of interest in the migrating bird life, particularly the birds of prey. In this connection the knowledge of a peculiar fact in natural history will furnish the basis of a rather novel sport—namely, hawk-shooting. Hawks at this season congregate on the meadows where food is plentiful, and whoever has tried to stalk one in the open appreciates fully the depth of meaning in the saying "as far-sighted as a hawk." Afoot it is well-nigh impossible to get within gunshot of these feathered sharks. But it is not in hawk nature to suspect any animal other than of the genus homo. And it appears that a horse is a horse and the fact that a carriage is attached to him may be puzzling, but it is not a cause for serious suspicion. Therefore hawks can be stalked by means of a horse and buggy with a reasonable certainty of success. So long as you do not drive directly towards the bird but rather as if you would merely pass near him, he will maintain his perch and the chances are that you will drive to within easy gunshot. There is an excitement of anticipation in the stalking and a satisfaction in the bagging of the prize coupled with the novelty of shooting over a horse, which lends a fascination to the hunt.

Foxes have not yet lost their good coats, so that a day with gun and the hounds still offers sport to lovers of this method of circumventing Sir Reynard.

March 21-31. The Time of Spring Freshets

Behold the floods! The brook has become a river; the river has become a lake. Sorry days have fallen upon the muskrat or, as Eben Holden would have called him, the "mushrat." The waters backing up have filled all his burrows and he has need of his robe of fur, for now is his eviction certain, and he may not even sleep upon his own doorstep. On floating logs, on lower branches of half submerged trees or on some tussock not yet covered, he is to be seen along the setbacks or on the flooded meadows. A 22-caliber rifle, a boat, or better still, a well-handled canoe, and an afternoon of leisure are all that are essential to a sport afforded in no other month of the whole year. And if the eye be true and the hand steady it will not be unprofitable, for these little chaps in brown are in good fur.

Fish-Shooting.—On waters frequented by pickerel, pike and muskallonge, canoe and rifle will be of service in another novel sport—fish-shooting. In the shallows of the meadows and in the setbacks the big fish are often to be found near the surface. Stalking them in a canoe is by no means devoid of excitement. In the brooks the suckers are beginning to run up to the spawning grounds and the spearsmen are busy.

Hunting for Arrowheads.—Within recent years interest in archæology, particularly as relating to the North American Indian, has shown a marked growth. There are now many private collections of Indian relics, some of them of considerable value. Wherever the red man dwelt, there he left a record of his ways, his prosperity and his position in the scale of development. It is recorded in the stone implements of the chase, war, and the peaceful pursuits of village life which he has left behind him. All through the East these implements are to be found. It requires a trained eye to detect them among littered stones of the field, but once the eye has become trained the hobby, if you please to call it such, is likely to be ridden hard. The latter part of March is, perhaps, the most favorable time in the year to prosecute the search. The action of the frost has thrown many deeply buried pieces to the surface, and the farmer's plow turns up many more. Often a field picked clean in the fall will yield many a rare prize in the spring.

The Fisherman Prepares.—Oh, ye true brothers—of the angle! Is not this the sweet season of preparation and dreaming? Of overhauling and rewinding the precious rods? Of testing the old line and selecting the new? Of refilling the fly-book and in the incense of the pipe living again through each battle of the victorious, scarred old warriors which have found a final resting place of honor in the back of the book? Of

107. "Hepatica will also sometimes reward the patient searcher"

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108. "The gray squirrel eyeing you as he nibbles a nut"

dreaming of old days and days to come on running brooks? Of wondering which pool will hold the biggest trout for you this season? In many states the hand of the law is lifted on All-fools' day; and who to his folly so surely wed as the angler? So in these latter days of March will the preparations be made.

PART III. NATURE-STUDY

"Phœbe! See me!" pleads Tom Titmouse so softly and so tenderly that if Phœbe will not, she is indeed hard of heart, or mayhap she but exercises those privileges and artifices which are hers by virtue of her sex. At all events, when the companionable little chickadee begins to rehearse his sweet, plaintive little love song of two notes, it is time the bird student was afield to note the spring arrivals. All of the old friends of the winter are still with us—the crow; blue-jay; that cheerful little fellow who comes down from the north in the late fall, the tree sparrow; that busy hail-fellow-well-met little chap, the chickadee; the downy and hairy woodpeckers, whose persistent rapping has echoed through woodland and orchard since winter's door first closed; the brown creeper, the white-bellied nuthatch and his red-bellied brother; that fine gentleman of the summer, the goldfinch, who has exchanged his brilliant coat of black and gold for one of very sober hue; the rough-leg and red-shouldered hawks and the short-eared owl on the meadows; in the stubble that cheery whistler, Bob White, and in the thickets, the ruffed grouse.

But the first of March is almost sure to bring three or four other old friends. In the apple orchard there flashes a glimpse of heaven's own blue, and even the busy farmer stops for a moment to hearken to the bluebird's gentle, rather plaintive greeting. From the thickets and the tangle above the brooks rises the sweetest of all the early songs, the joyous outpouring of the song sparrow. This, too, is the time to watch out for that handsome fellow of color who sharpens his saw with a rusty file in the tops of the evergreen trees and walks about the meadow with such ridiculous stateliness and self-importance, the grackle or crow-blackbird. In the open country the marsh hawk is due to arrive. But a few days behind these, if indeed he has not been a fellow traveler with the grackle and bluebird, comes the robin, who from the topmost twig of the tallest elm heralds his arrival to all the world. In warm, sheltered swamps that fine fellow of good voice, the red-shouldered blackbird, may be found any time from March 1st to 15th. From the 5th to the 15th he of the white tail feathers and splendid vest, the meadow-lark, is due to arrive. In the early morning of a clear day he delights to pour forth the joy that is within him in glorious melody, which rings far across the meadows to the as yet almost silent uplands. From the 10th to the 20th the fox sparrow arrives, and his cousin, the savanna sparrow, is but five days to a week behind him. Both seek the seclusion and warmth of the least exposed thickets. With the floods of the latter part of March, the broad-winged fisherman, the osprey, puts in his appearance, for living is good on the flooded lowlands.

These are the more common birds the student is likely to find, all of them easily distinguished by their conspicuous characteristics. Other birds the careful observer is almost sure to see, especially some of those who, being irregular visitors, are forever unexpectedly greeting the ornithologist. The meeting with these is one of the most delightful surprises which makes bird life the fascinating study that it is. Among these uncertain visitors are the shore lark, the snow bunting, the pine grosbeak, those funny little northern parrots the American and white-winged crossbills, the redpoll and the siskin.

Perhaps you will find squirrels in woods and fields. You may see the gray squirrel eyeing you as he nibbles a nut. He's a charming little fellow.

It is an excellent plan to make a round of copse and thicket in March to make note of the deserted nests, for many a hint as to the habits of the birds and likely neighborhoods for bird homes in the approaching nesting season may be thus obtained. The old hawks' nests should be noted

109. "He's a charming little fellow"

with especial care, for in not a few cases the builders will return. If they have been undisturbed in the past they are almost sure to set up housekeeping at the old stand. In an old crow's nest, especially in a thick pine, it is not unusual to find a squatter, the long-eared owl, who sets up housekeeping in the latter part of March.

March brings little to the botanist beyond pleasant anticipations of the active season so close at hand. However, there is a fascination in tramping through woodland and meadow, watching for some impatient sturdy bloom which shall have taken the challenge of the spring and bravely burst into a dreary world long before others of its kind. The finding of such an unexpected treasure is one of those delightful incidents which memory treasures through all the changing years, while matters of greater weight slip past unrecorded. The pussy willow has donned her gown of gray velvet, for this is her reception month. In the swamps the skunk cabbage is marshaling its hosts in the brave array of Robin Hood's true green. It is the first flower of the year, but its spotted hood is now decaying. In New Jersey and farther south the pyxie or flowering moss is in bloom in the sandy pine woods. In the latter end of March an over-valiant spice-bush will occasionally unfurl his banner of yellow in some warm, sheltered spot of moist woodland. Hepatica (the liver-wort or liver-leaf) will also sometimes reward the patient searcher, while a spray of arbutus, the mayflower of New England, is worth a whole day's tramp. These are about all the flower folk whose advent may be hoped for to brighten March days. Perhaps in some favored region you will find the graceful sweet-birch hanging out her slender catkins.

W. B. THORNTON.

A CROP OF LETTUCE

LETTUCE IS AN EXCELLENT PLANT WITH WHICH TO LEARN HOW TO MAKE A GARDEN—IT TEACHES THE LESSON OF GOOD TILLAGE

THERE is no vegetable better suited to a first attempt at city gardening than lettuce. A small area, even one of ten to twenty feet square, may be made to produce an abundant supply for an ordinary family. Its requirements are few and easily learned. It comes into usable condition quickly. It can be started under glass in March [see instructions on page 177], or in the open at any time in spring. It is comparatively free from danger from disease and insect enemies. Perhaps its greatest recommendation is that to be at its best lettuce must come to the table in a fresher condition than it can usually be obtained from the market, so that a perfectly fresh supply from one's own garden is more satisfactory than the possibly better grown but necessarily more or less wilted product of the market-gardener's skill.

The chief requisites for the best development of lettuce are friable, mellow soil and abundant and easily available plant-food, and the secret of its successful cultivation is a thoroughly prepared and well-enriched soil. The ground of most city and even village yards is in the poorest possible condition for the growing of any crop, and particularly so for lettuce, and success will usually depend more upon the care and thoroughness with which the soil is prepared and enriched than upon any other factor.

110. Prizehead Lettuce

111. Marvel, or Red Besson Lettuce

It will be of great advantage if the spot selected can be spaded in the fall, but in any case this should be done as early in the spring as the soil is dry enough to handle; but then and always care should be taken not to disturb it while wet. When a handful of soil taken from four to eight

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112. New White Russian, Deacon and Silver Ball Lettuces

inches below the surface and pressed with the hand into a ball is at all sticky and cannot be readily crumbled into fine earth, it is too wet to handle, and spading or otherwise disturbing it will do more harm than good. After the first spring spading the ground should stand for a week or ten days, and it would be better were it well soaked with rain and again become dry enough to work. It should then be spaded over again, taking pains to make it as fine as possible.

We must now look about for fertilizer. If it can be easily obtained, some fine horse manure comparatively free from straw or other bedding is excellent. It should be evenly spread over the surface at the rate of from one-half to a full bushel to the square yard, according to its freedom from coarse bedding. In lieu of this, one might use about one-half the bulk of manure from a hen roost or pigeon loft; and if no natural manures are easily available one can obtain from the local seed-stores commercial fertilizer, of which about one-half pound to the square yard is sufficient. Whatever fertilizer is used, great pains should be taken to scatter it evenly over the surface and then to mix it with the surface-soil with a hoe or the point of the spade, as much of its efficacy will depend upon the degree to which it is mixed and evenly diffused through the earth. After applying the fertilizer the bed should be again spaded, taking great care to make the soil as fine as possible. These three spring spadings, if well done, will put most soils into fair condition, but if, after the bed has been spaded thrice, it is still at all lumpy or the manure not evenly diffused it should be gone over again and if necessary again, and yet again, bearing in mind that success depends more upon this preliminary fining and even enriching of the soil than upon any other condition or effort. After the last spading, the surface should be still further fined and made as smooth as possible with a garden rake, and our bed will be ready for planting.

It is important to our success that we use not only good seed but that of the right varieties. Lettuces may be divided into two classes, in accordance with their fitness for use in different ways. In the thin-leaved sorts, which are best suited for cutting up with vinegar and sugar, merit depends upon tenderness and sweet and delicate flavor. They are well represented by the Curled Silesia, Prizehead and Mignonette, but these sorts are so tender and wilt so quickly that it is quite impracticable to grow them for the market, for which purpose varieties like Grand Rapids and Black-seeded Simpson, which, while thin-leaved are much coarser in texture and show the effect of wilting less, have been developed. The thick-leaved sorts are best suited for use with prepared dressing, oil or butter, and with them merit depends upon thick, brittle leaves and rich nut-like flavor, generally best developed in the blanched inner leaves of the cabbage-like heads. Of these Tennisball, Salamander and Deacon are good representatives; and there is less difference in quality between the sorts best suited for the market and for the home garden, though in a few kinds other qualities have been sacrificed for the sake of ability to stand the heat of a forcing house. There are a great many more or less distinct varieties in cultivation and the list of no two seedsmen are alike, but these varietal differences are generally unimportant, and an order to any reputable dealer stating what is wanted will bring seed of varieties well suited to your purpose.

It is never time to plant until the bed has been put in the best possible condition, but that work should be so timed that the first sowing can be made as soon as danger of severe freezing is past.

113. Self-folding Cos Lettuce

A light frost will do no damage. Then, the surface having been freshly stirred with a garden rake, make a mark or drill not over an inch deep and in it scatter the seed evenly at the rate of from 75 to 150 to the foot, covering them with not to exceed three-fourths of an inch of fine earth patted down smoothly with the hand or the back of a hoe. A second row may be put in about two feet from the first and then others, but it is much better to plant only a part of the bed at first and the balance when the plants of the first sowing are well above the surface. If there should be rain, followed by bright sunshine, before the plants are up it will be well to break the crust which will be formed by gently striking it with the teeth of a garden rake, but in such a way as not to disturb the starting plants. As soon as these are well above the surface of the soil it should be stirred with a garden rake or hoe, and this stirring of the surface should be repeated every day or two until the growing plants fully occupy the ground, but it should never be done when the soil is wet.

When the young plants have leaves about an inch long they should be thinned to ten or twelve to the foot, and when those left are about three inches tall they should be thinned to five or six to the foot, and as the plants grow they may be thinned for use until at maturity the standing plants are about sixteen inches apart. Lettuce plants seem to do much better if the seed is sown thickly and the plants thinned out as they need room, than when the young plants are given the room needed by mature ones. There are many niceties of cultivation which might be written, but I have given directions which I think are most necessary for the beginner.

WILL W. TRACY.

TRANSPLANTING TREES AND BUSHES

AS soon as the ground is dry enough to be dug with ease, trees and shrubs may be removed. Plant them as early as possible, in order that they may secure a good root-hold before the trying times of drought and heat come. But take your time to plant each one, for upon the care taken in transplanting depends much of the future satisfaction and success. This care-taking is of two kinds,—that which has to do with the preparation of the soil, and that associated with the manipulation of the tree itself.

The richer and mellower the soil, the more likely is the plant to grow and the surer is its subsequent thrift. Do not be stingy with the holes. Make them larger than the mere extent of the roots, especially if the soil is hard and stubborn. In many cases it is well to remove some of the earth and to replace it with fine top soil. Be sure to spade up the earth and make it fine in the bottom of the hole, for this enables the roots to grow downward to a constant moisture supply. Be sure, also, that the earth is firmly placed about all the roots. Air spaces cause the roots to dry out. It is well to set the plant a little deeper than it stood originally.

The less the plant is mutilated in removal the better. In spite of all one can do, much of the root system will be left in the ground. This means that the top must be cut back in proportion. In fact, it is well to shorten-in the top more than the root, because the root-system has lost its connection with the soil and must re-establish itself before active growth can begin. A large top, under such conditions, transpires more moisture than the roots can supply and the plant dwindles and dies.

114. Salamander and Black-seeded Tennisball Lettuces

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THE FLIGHT OF THE OSPREY

NESTING SCENES OF THE ATLANTIC FISH-HAWK

THE osprey, more commonly known as the fish-hawk, makes its appearance along the Jersey coast with the vernal equinox. It seems to be the most punctual of all the migratory birds. It takes its departure about the 21st of September, although I have seen a few birds remain a week or two later.

115. "Just as the osprey was about to alight"

Ospreys build in isolated trees some eighteen or twenty feet from the ground, and, strange to say, the same birds occupy the nest year after year. The nest somewhat resembles that of a stork, being built of short, rough twigs. Occasionally cornstalks are utilized in the structure. I have known two pairs of ospreys that built on chimney tops, stork-fashion, and after their nests were broken up they came back again and again to the work of rebuilding. The trees in which ospreys build always seem to be dying, which fact I presume is due to the salty saliva of the birds.

Owing to the great breadth of wing the flight of the osprey is unlike that of the goshawk, which soars about in circles, hovering over its prey. The osprey's momentum is maintained by continual flapping of the wings. The harsh, piercing cry of the osprey can be heard for nearly a quarter of a mile. The osprey's food consists of fish and eels, which it takes from near the surface of the ocean with its great talons. Along the Florida coast the bird is called the "gray sea eagle."

Like the offspring of most other large birds, the young ospreys have a very ungainly look when they first fall out of the nest. I once saw a pair of young ospreys of several weeks' growth that measured four feet from tip to tip. An effort was made to domesticate this particular pair, but they proved too troublesome, and they were finally given their liberty after a few weeks' domicile.

It is a fine sight to watch an osprey hundreds of feet above one's head, carrying a struggling fish. Occasionally I have seen the fish wriggle out of the bird's talons and fall, only to be caught again before it reached the earth. One day last summer I saw a fight between two fish-hawks for an eel which had been taken out of the Shrewsbury river. Unfortunately my camera was not adjusted in time for the fight, but a few moments later I caught the victorious bird resting on the edge of the nest and looking down at the eel inside. Fig. 116.

This nest was very difficult of approach. It was situated on the boundary of the Seabright Golf Links, along the famous Rumson Road. I made several attempts there last summer to secure this bird on the wing. The one puzzling question after locating the camera was "when and how is the bird going to fly?" After waiting more than an hour, I made a snap-shot, aided by the finder of the instrument, and obtained the accompanying picture of the female bird on the nest with outstretched wings. She was about to join her mate in a distant tree. Fig. 121.

In another case I had only a short time to wait, as the camera was concealed behind a low hedge. I secured a photograph just as the osprey was about to alight. Fig. 115. It was a memorable day when I succeeded in getting near an osprey nest when both the old birds were at home. One parent bird remained on the nest. The other was just starting off toward the ocean when I secured the oval picture that illustrates this article. Fig. 119.

After drawing a focus on a hawk's nest I have waited hours for an opportunity to release the spring of the shutter, when the finder should denote the flight to be within the scope of the plate. The finder must be as true as the sight on a rifle, for once the bird is out of range it's no telling when he will be back. The force with which these birds move would knock a child over. The strong upward throw of the osprey's wings can well be imagined, after seeing one of the photographs with this article. Fig. 118. One day a male bird rose above the

116. "The victorious bird resting on the edge of the nest and looking down at the eel inside"

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nest and I was fortunate enough to catch the mighty downward fling of the pinions, as he rushed away. Fig. 120.

Sometimes one sees several fish-hawks together. On one occasion I saw for one fleeting instant a glorious bit of bird play against a background of fleecy cloud. Sporting in the air, the four birds showed for a moment every possible attitude of flight. Fig. 117.

In photographing birds as they fly, the best results are obtained by the telephoto instrument or else a rectilinear lens of about 34-inch focus; this latter tube will probably be better than a telephoto, as its front combination glass reversed in the camera will increase the size of the image twice that of the combined glasses, which will be almost the same size as that of the telephoto picture with much better definition and latitude in exposure.

The best time of the year to go bird-hunting with a camera is about the first breeding season. Then the feathered tribe are not so likely to be disturbed during the movements of the operator. The flight of a pigeon on the wing is more rapid than the new compound locomotive at full speed, and the quickest automatic shutter often fails to photograph the birds without movement in the photographic plate when flying across the field of the lens.

117. "Sporting in the air, the four birds showed for a moment every possible attitude of flight"

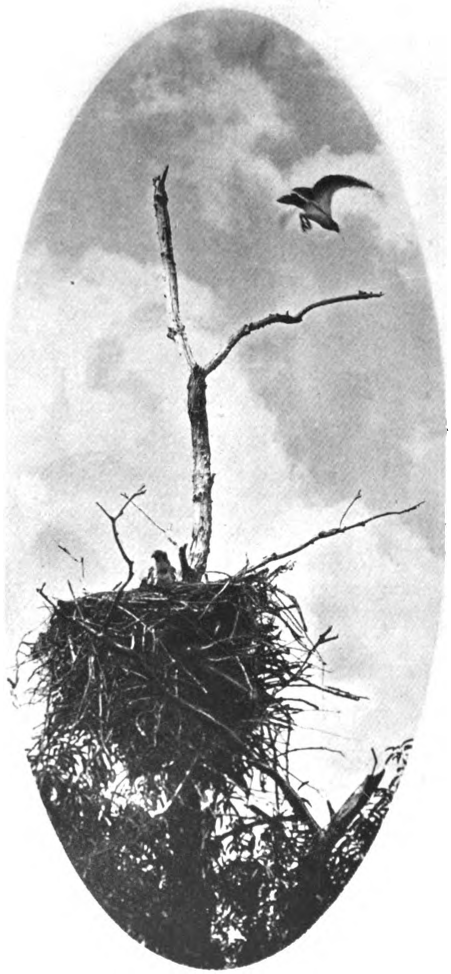
Thrushes, quail, partridge and other birds of mottled plumage make very good subjects, when one can snap them against the clear sky with full sunlight directly on them, but if taken in the dense woodland it is next to impossible to obtain any results without long exposures, which are possible only when one can sight the bird on the nest.

The photographing of water fowl is done very much after the manner of duck-hunting, concealing the camera behind low shrubbery, with the lens pushed clear of foliage. The fowl can easily be tempted to within range by distributing a few decoys, and the strong light on the water with the contrasting green of the marsh makes fine relief for the picture. ALFRED J. MEYER.

IS THE GILA MONSTER POISONOUS?

AN article by E. C. Vick on the Gila monster (*Heloderma suspectum*) that appeared in "Country Life in America" for January, 1902, has inclined me to offer a few words touching the scientific and literary side of this famous reptile's history. There are two species of helodermas in America, and the late Professor E. D. Cope, in his great work recently published on the reptilia, said therein that the "*Heloderma horridum* has been brought from western Mexico, from Presidio on the north to as far south as the Isthmus of Tehuantepec. It has not been brought from eastern Mexico, so far as I am aware. The *H. suspectum* is restricted to southern Arizona and

118. "The strong upward throw of the Osprey's wings"



119. "One parent bird remained on the nest. The other was just starting off toward the ocean"

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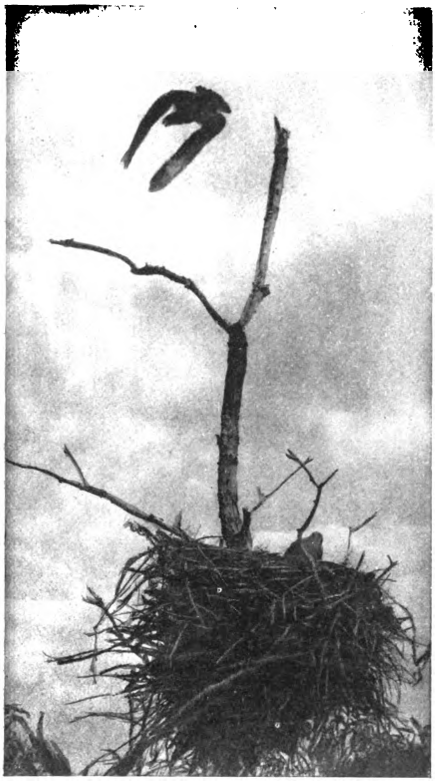


120. "The mighty downward fling of the pinions as he rushed away"

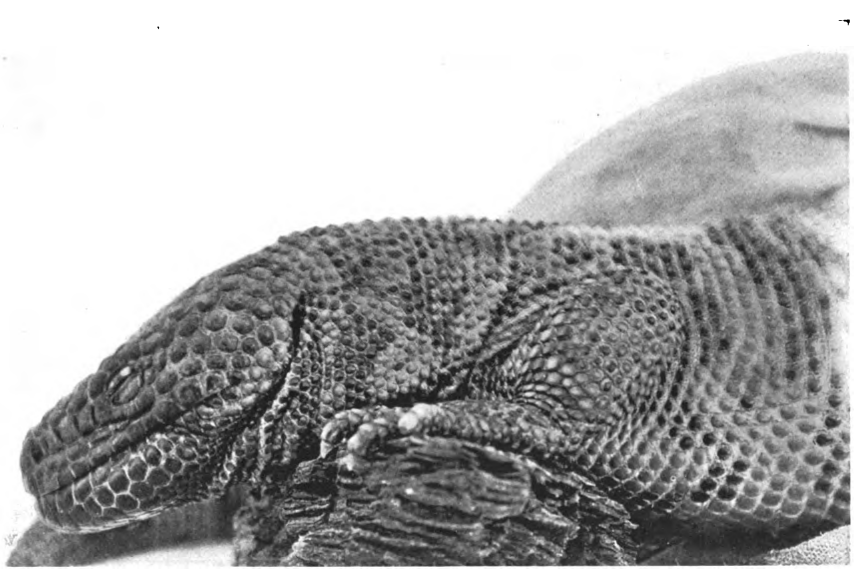
New Mexico, so that a wide interval intervenes between the ranges of the two species." From this it will be seen that but two species of heloderma are known to science,—a Mexican form and a United States form. For a good many years past popular natural history has had added to it from many quarters all sorts of accounts regarding the habits, particular characteristics and figures of the Gila monster of New Mexico and Arizona. Of these I shall have nothing to say here, as I have published elsewhere not a little along similar lines. It is my intention only briefly to refer to what science has done in the matter of the history of helodermas, and how they are regarded by scientists. The genus heloderma was first established by Wiegmann in 1829, and the family was created by Cope (the Helodermatidæ) in 1864. Since the time of Wiegmann, many scientists have had their attention drawn toward this remarkable reptile, and we find its name identified with such classifiers as Dumeril and Bibron, Gray, Wagler, Cope, Bocourt, Gill, Boulenger and many others. A study of the effects of the bite of a heloderma has likewise been investigated by not a few other researchers, as B. J. D. Irwin, surgeon U. S. Army, who asserted that the reptile was harmless; by Drs. S. Weir Mitchell and Edward F. Reichert of the University of Pennsylvania, who showed "that the saliva injected into the body is speedily fatal to pigeons and fowls;" and by the present writer, who has not only been severely bitten himself by a heloderma, but has summed up all the opinions of authorities on the subject. Professor Samuel Garman, of the Museum of Comparative Anatomy of Harvard College, has also investigated the matter, as did long ago Sir Joseph Fayrer, of London. The former failed to prove the venomous nature of the bite of a heloderma, when kittens were the animals experimented upon, while the latter was convinced of the poisonous nature of the saliva of this reptile. Not a few scientists have studied also the anatomical structure of the helodermas, as Max Fübringer of Germany; Stewart of London; and Cope and Shufeldt of this country.

When serving in the capacity of a voluntary aid in the department of reptiles of the Smithsonian Institution at Washington, D. C., some twenty years ago, I was bitten by a very large and active heloderma that was in the living collection there. The bite was followed by no very serious consequences, and I published a full account of it in the "American Naturalist" at the time (Nov., 1882, p. 907), and a shorter one in "Nature" of London (Dec. 14, 1882, p. 154).

Since then I have published several articles on this reptile, in the endeavor to keep the information up to date. In 1897 I published my "Chapters on the Natural History of the United States." This was a book of some five hundred pages, with many full page plates and text cuts. Part of Chapter VIII is devoted to the helodermas. In it is a reduced figure of a very large photograph of my two New Mexican specimens and a Douglass horned toad made for me by Mr. Benjamin Wittick at Fort Wingate. The larger specimen in that figure is the same as the one shown in Figure 73 of Mr. Vick's article in "Country Life in America" referred to above, and of which he says in the text that it is "from a photograph made from a specimen in Arizona before capture." This is incorrect. The animal was photographed after capture. That the saliva of a heloderma possesses venomous qualities I now have no doubt, especially since the experiments of Denburgh and Wight, at the Johns Hopkins University at Baltimore, a little over a year ago. It is strange how persistently the stories of the awful venom of this creature persist in the popular mind.

R. W. SHUFELDT

121. "She was about to join her mate in a distant tree"



122. Gila monster. Large heloderma (H. suspectum). Natural size

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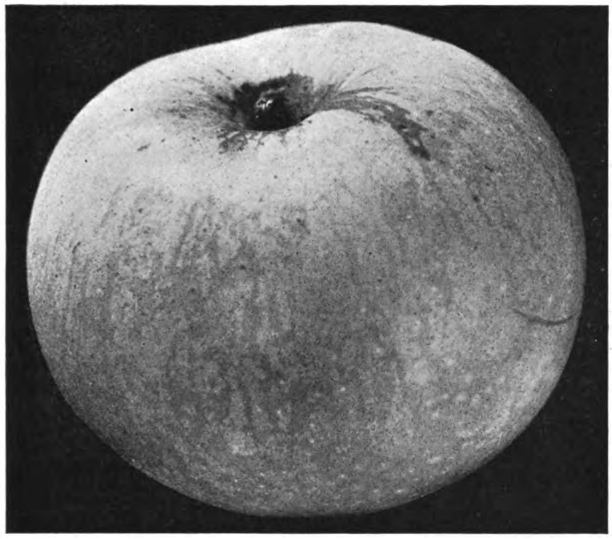
THE NEWTOWN PIPPIN

ONE OF THE FAMOUS OLD-TIME APPLES, STILL CAPABLE OF BEING GROWN IN REGIONS THAT ARE SPECIALLY CONGENIAL TO IT

THE far-famed Newtown Pippin, which when perfectly matured is considered to be one of the finest apples ever produced in this country, was the spontaneous production of a seed dropped near a swamp in Newtown, Long Island, nearly two centuries ago. This tree stood on the estate of Gershom Moore, and for a long time went by the name of the "Gershom Moore pippin."



123. The Yellow Newtown Pippin of the present time. Natural size

After enduring for more than one hundred years, this tree died about the year 1805 from excessive cuttings and exhaustion. Its cions were in great request by all the principal amateurs and orchardists of the day, and engrafted trees of it are still to be met in neighboring towns, and which have stood beyond the memory of man.

The first fruits known to have crossed the Atlantic went to Benjamin Franklin, then in London, and were of the crop of 1758. It was the sight and taste of these that brought John Bartram an order for cions from Franklin's friend Collinson. Subsequently, a considerable trade must have resulted, for in 1773, when the English apple crop had failed, it was stated by the younger Collinson that the American apples had been found an admirable substitute, but they were too expensive for common eating, being sold as high as four pence an apple. He also added that their flavor was far superior to that of English apples and even better than the apples of Italy.

In 1845 it is stated that Newtown Pippins from the orchards of Robert Pell, Ulster county, New York, sold in London at $21 a barrel. The nobility bought them at a guinea a dozen, or 42 cents an apple. Mr. Pell's orchard of 20,000 trees of Yellow and Green Pippins became famous on account of the high prices received for the fruit, and in consequence the varieties mentioned were planted and grafted throughout the apple regions of the country. They did not prove successful elsewhere, except in the Piedmont and mountain regions of Virginia and North Carolina.

As early as 1768 the Newtown Pippin was cultivated in the Brompton Park Nursery, England, under the name of the "Newtown Pippin of New York." It is probable that the large apple exports of 1773 included large quantities of the Newtown Pippin, for at that time it was quite generally distributed through the apple-growing districts of the Atlantic slope.

Thomas Jefferson recorded in his Garden Book that in March, 1778, grafts of Newtown Pippins were received from Mordecai Debnarre, at Sandy Point, and in March, 1778, he noted that grafted trees were set out at Monticello.

After the revolution, 1,100 barrels was the daily shipment from Newtown. Prior to 1803 Forsyth said of the variety in England: "The Newtown Pippin is a fine apple in season, but seldom ripens with us." McMahon in 1806 included Newtown Pippins in his select list of long-keeping apples for the United States, and in the list of "cyder apples."

In the early time there is no record that more than one type of the Newtown was recognized, but Coxe, whose work appeared in 1817, described as distinct varieties the Large Yellow Newtown Pippin and the Green Newtown Pippin, characterizing the latter as a variety of the Yellow Pippin. Since the time of Coxe the two types have been recognized as distinct by most American pomologists, though fruit-growers are by no means unanimous on this point. The Yellow Pippin has for many years been considered the better apple for exportation, and in commercial orchards has almost superseded the Green Newtown, on account of its larger size, brighter color and better keeping quality. Both sorts are exceedingly variable and susceptible to the influence of soil, climate and elevation above sea-level.

Newtowns are successfully grown in but few parts of the apple-producing area of the United States at the present time; the principal localities being the lower portion of the Hudson river valley in New York, the Piedmont and mountain regions of Virginia and North Carolina, and portions of California, Oregon and Washington. The excellent quality of the fruit grown in the Potomac counties of Virginia was noted as early as the time of Coxe. In Albemarle county, Virginia, where it reached a high degree of perfection, it became known as the "Albemarle Pippin" at an early date, and was for many years considered to be a distinct variety of local origin.

The following statement has been furnished by Samuel B. Woods, a prominent citizen and fruit-grower of Charlottesville, Virginia: "As far back as 1765 there was a tree noted for its fine fruit standing in a mountain hollow in the North Garden neighborhood. No one knows how the tree came there, but tradition has it that it was a seedling, and from its stock came Albemarle Pippins. Another account, and more authentic, is that which fixes the earliest introduction of the Pippin at the time of Braddock's defeat. Dr. Thomas Walker, of Castle Hill, Albemarle county, was with Braddock when the troops went into winter quarters at Philadelphia. Dr. Walker returned carrying in his saddle bags cuttings of apple trees. These were grafted at Castle Hill, and became the famous Albemarle Pippin. The two accounts are connected in a curious way: The land on which the tree in the North Garden neighborhood stood was entered in the land office in 1741 in the name of Mildred Meriwether. This Mildred Meriwether was a step-daughter of Dr. Thomas Walker, and the old tree on his land was probably one of the Walker grafts. There is little doubt that the first appearance of the Albemarle Pippin was at Castle Hill from the grafts brought home by Dr. Walker in 1755."

RUTH TITUS.

124. Relic of the past. A Newtown Pippin apple tree now standing at Newtown on Long Island, and 150 years old

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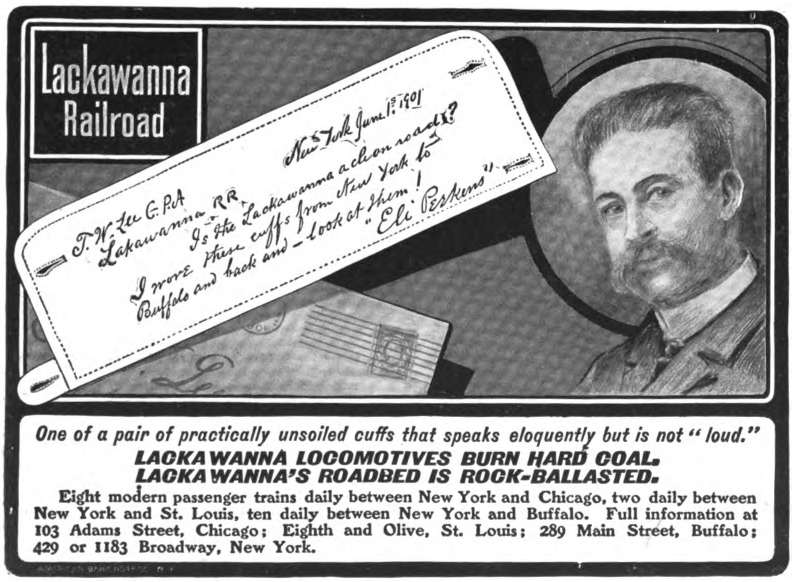

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NOTES ON VARIOUS TOPICS

Our Native Sparrows

While the English sparrow is often a nuisance, our native sparrows are unrivaled destroyers of weed seeds. They have long been known as seed eaters, but it is only lately that their precise relation to agriculture has been demonstrated. The native sparrows are the most abundant and widely distributed of the small birds inhabiting the rural districts of the United States. As a group they are constantly present on cultivated land, for although many of them retire to the South during the winter, their places are taken by other species from the North. In a garden within two months they will sometimes destroy ninety per cent of such weeds as pigeon grass and ragweed. Weed seeds form more than half of their food for the entire year, and during the colder months of the year it constitutes about four-fifths of the food of many species. Moreover, twenty-five per cent of their food consists of insect pests, which is no mean showing for a graminivorous group, especially when compared with the crow blackbird, cowbird, catbird and red-winged blackbird, which range from ten to twenty per cent. The Department studies embrace a knowledge of over four thousand birds. The number of species of our native sparrows is surprising—twenty-two kinds. These facts are taken from a recent bulletin of the Division of Biological Survey.

Food of Nestling Birds

This is the subject of comment in the last Year-book of the U. S. Department of Agriculture. It seems that the young of all birds, except doves and pigeons, are fed at first almost exclusively on an animal diet, and that later the diet is gradually changed so as to include vegetable materials. The parent birds frequently carry insect food to the young, while their own diet is chiefly vegetable. The article is illustrated by several charming half-tones of young birds in the nests, and numerous circular diagrams illustrating the proportions eaten of beetles, ants, and other classes of insects, as well as the proportion of fruit and grain eaten by the adults. A novel feature of some of these diagrams is the use of pictures in segments of the circle instead of the mere words, "ants," "spiders," "grasshoppers," "drone honey bee," or "cutworm," as the case may be. Moreover, these pictures have a certain diminutive prettiness, which renders the subject highly attractive, thereby marking an advance over the days when the large and crude figures of caterpillars and worms acted as a repellent in many cases to popular interest in insect life.

Where the Cocoanut Came From.

The origin of the cocoanut has always been a peculiar and fascinating problem. The new light shed upon the discussion by the research of O. F. Cook reveals some great surprises, chief among which is the probability of an American nativity. The Asiatic theory has scarcely been questioned since De Candolle set forth ten reasons for it in his "Origin of Cultivated Plants." But no other genus or species of palms is native both to America and to Asia or the Polynesian Islands. The eleven other species of Cocos are clearly South American. The existence of the cocoanut in great abundance in Central America in the early years of the sixteenth century is established by the extended and circumstantial record of Oviedo, supported by the testimony of three other contemporary Spanish historians, all of whom evidently considered it indigenous to America.

The cocoanut is of far greater importance to man in the East than in the West. Most of the horticultural varieties are the result of selection in the Malayan Islands. However, the nuts shipped from Cartagena in Colombia are far superior to others produced in America, and apparently they also exceed those of the East Indies in thickness and quality of flesh, so that they are greatly preferred for confectionery purposes. This fact suggests the possibility that the cocoanut may be not only an inland species, but that it may actually have suffered deterioration through long cultivation in an unfavorable habitat. "Though romance and poetry have always linked together reef and palm," says Hedley, "yet

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truth to tell, the cocoanut does not attain its greatest luxuriance upon the low reef islands." "The thicker meat of the Colombian nuts," says Cook, "is a suggestion in the direction of having the kernel fill the shell, the normal condition in all related palms. In fact, it is very difficult to understand why the cocoanut should have carried the development of the shell so far beyond the needs of the kernel. If the wild ancestral type of the cocoanut still exists in the mountains of Colombia we may find that its flesh, if not solid, is at least thicker and more highly flavored than that of any coast-grown nuts, and that the seed for new plantations should be obtained from the wild, instead of from the too-long domesticated stock."

The original habitat of the cocoa palm is to be sought in South America, probably in the alkaline regions of the Andes of Colombia, where it has been reported by Cieza de Leon and Humboldt, in valleys remote from the sea. Such an elevation would moderate and equalize the temperature, and the volcanic soil would furnish the alkalinity which the species apparently finds congenial on the seashore, and which it is unable to obtain in inland localities having a heavy rainfall.

The popular idea that the cocoanut is exclusively a sea-level or shore-loving species is not borne out by the facts. The poetic theory of the cocoanut palm dropping its fruits into the sea to float away to barren islands and prepare them for human habitation is not good science, though it is excellent material for song and story. This time-honored fancy is not supported by direct evidence. The seed of the cocoanut is delicate and short-lived, and special conditions and care are required for successful germination and the growth of vigorous seedlings.

It is greatly to be hoped that an expedition to Colombia will be undertaken in search of the wild prototype of the cocoanut. Its discovery will throw important light upon several sciences, notably anthropology and botany, and the practical horticultural value alone would justify the expense of a government exploration.

Those who wish more light on why, when and by whom the cocoanut was taken from America to Asia, and not *vice versa*, may consult Vol. 7, No. 2 of Contributions from the U. S. National Herbarium, a pamphlet of 36 pages, by O. F. Cook of the Division of Botany of the U. S. Department of Agriculture.

Further Notes on 'Possums. (See the articles in the February issue.

Opossums are very prolific, having two or three litters a year, each litter composed of six to thirteen, and in rare instances as many as fourteen or fifteen. The young remain with the mother about two months, and at times a brood of sucklings may be found in the pouch, while a second brood, the size of rats, may be seen on her back, clinging to her fur by their hands and steadying themselves by winding their tails around her tail and legs.

The strength of the young is surprising. Mr. E. W. Nelson tells me that he once placed a dead animal within reach of a naked baby opossum whose eyes were not yet open. The tiny creature grasped the fur with its hand and lifted the dead animal from its support and held it up, apparently without effort, although the body weighed at least twelve times as much as itself.

The 'possum is said to resemble the pig in his long flexible snout, small black eyes, and black erect ears; but he resembles the pig much more in his fondness for eating and in the great variety of food he finds to his liking. In fact, it is no exaggeration to say that so far as his opportunities go he is as omnivorous as man. His principal diet consists of insects, wild fruits, nuts and berries, varied with roots, reptiles, crayfish, carrion, eggs, small birds, and rats and mice, with the occasional addition of poultry, corn, and other farm-yard delicacies. He is charged with the destruction of quail and their eggs, to which charge he pleads guilty, at the same time filing a protest to the effect that quail is not his regular diet, but, as in the case of his accusers, a luxury indulged in only on special occasions. As an offset, he pleads the value of his services in continually preying upon beetles, grasshoppers, grubs, cutworms, maggots and other noxious insects, and on rats and mice, which he is said

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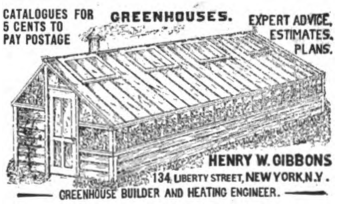

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to drive away from premises on which he takes up his abode. He is the natural enemy of the cotton rat, a destructive rodent living in vast numbers in the seaboard marshes of the southern states, and is fond also of young rabbits, of which he devours entire broods when he finds them in their forms.

If all the food eaten by a 'possum during a year were divided into two piles according to its economic status in relation to the interests of mankind, there can be little doubt that the pile containing the matter, animate and inanimate, whose destruction is an advantage to us, would be notably the larger.

C. HART MERRIAM.

Improving the Spitzenburgh

One of the best of all the old apples is the Esopus Spitzenburgh. It is not grown much in recent years. People say that it has run out. Several years ago I began on a line of work to improve this good old apple. In the orchard were two rows of trees of the Spitzenburgh variety that were twenty years of age, and in a declining condition.

The trees were diseased and dying, the foliage would nearly all fall by September, while the fruit would remain on the trees half grown, poorly colored and worthless. The orchard was in sod, but the Spitzenburgh trees were given an extra application of stable manure during the winter of 1888.

The following spring they were sprayed twice with Bordeaux mixture, and also twice with Paris green. A decided improvement was made in the foliage that season, the leaves, instead of being curled and brown, and very small, were larger, greener, and remained on the trees much longer, while there was equal improvement in the size of the apples.

The following winter the trees were again liberally top dressed with stable manure, sprayed three times with further improvement made in both foliage and fruit. During the past few years the orchard has been under thorough tillage, and crimson clover has been used for a cover crop, and to further improve the soil conditions. Two tons wood ashes per acre were applied once in 1894.

The most marked improvement has been made under the tillage practice with the clover cover-crop. During ten years, the trees have made an abundance of new wood growth, the foliage has more than doubled in the size of leaves, while nine successive crops of excellent apples have been obtained.

There is a limit beyond which it is not wise to go in the use of clover. If too much nitrogen is supplied it will affect both the color and flavor of the fruit. The color will be changed from the deep, rich red to lighter or pale shades, while the flavor will be milder and less spicy, and these are very fine qualities in the Spitzenburgh we can not afford to lose. In addition, a too liberal supply of nitrogen will cause a luxuriant growth of wood, later maturity and poorer keeping quality in the fruit. By an analysis of the soil, when three successive crops of crimson clover had been grown and plowed in, it was found that I had added 1,350 pounds of nitrogen per acre, after which rye was used for the cover-crop. The tillage was frequent cultivating or harrowing of the soil from early spring to July 10 or 15, after which ten to twelve pounds of clover seed were sown and lightly covered.

The tenth crop was well set in 1898, but excessive rainfall during the entire period of bloom, and for two weeks following, made spraying ineffective, and impracticable. Apple scab again developed and the fruit went off. While the foliage was considerably affected by scab, from three to four feet of wood have been made and with a good development of fruit buds. This very choice and valuable apple can again be produced at its highest standard of excellence, if the grower understands that it must receive better care than most varieties, and this will include more frequent spraying, liberal feeding, particularly with potash and nitrogen, and annual tillage.

GEO. T. POWELL.

Prunes in Europe

Prune culture in western Europe has been studied with special reference to the Pacific northwest by Edward R. Lake, his report being re-

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cently published by the Division of Pomology of the U. S. Department of Agriculture. The prune industry of Oregon, Washington and Idaho is valued at twenty millions, including land, equipment, evaporators and packing plants. The yearly output is worth about two and one-half millions. About eighty per cent of the northwestern prunes are of the Italian variety. The early autumn rains begin, in one section or another, before the prune crop is more than half harvested, resulting in the loss of much fruit by bursting, retarding the work of harvesting and increasing the cost of evaporating. The Italian is a rather shy bearer, taking one year with another. Certain markets object to the cured fruit of this variety on account of the tough skin, tart flavor and large pit. A similar variety improved along the lines indicated seems to be the greatest desideratum in the Pacific northwest, and with this end chiefly in view Mr. Lake went to Europe to study prunes and prune-growing. The result is the introduction of eight varieties that will probably ripen in the Willamette valley in Oregon about the last week of August. Forty-four others which have one or more desirable qualities have been introduced with a view toward plant-breeding.

Pineapples

Pineapple-growing is the subject of a notable bulletin by P. H. Rolfs, which may be obtained by any one without cost from the U. S. Department of Agriculture. To one who contemplates commercial pineapple culture this bulletin is indispensable, and is of interest to the housewife because of a number of excellent recipes for preparing this delightful fruit. Pineapples are in the market all the year round; but the main shipping season is from the middle of April to the middle of July. At other times they are a luxury. Florida produced about three million pineapples in 1895, and the production has largely increased since then. The Hawaiian Islands exported over $14,000 worth in 1897, much of which went to California. Southern California has some land that will produce pineapples profitably. The West Indies contribute to the pineapple supply of the United States, and Porto Rico is thought to be especially well adapted for the location of canneries.

Considerable capital is required for the most intelligent and profitable type of commercial pineapple culture. Nevertheless there is a chance for the poor man. The willing laborer may become a pineapple-grower. The absolute outlay may be reduced to the cost of plants, fertilizer and land, making the first year's cost about $50. To carry this forward to the ripening of the first crop about $20 more should be added. The one great drawback to the average man's succeeding is that the returns come in at one time and during a short period. The greater number of pineapple-growers have to depend on this crop alone.

An excellent quality of fiber has been extracted from the pineapple by a government specialist. The invention of an economical machine would start a new industry. With such a valuable by-product the pineapple industry in Florida should grow rapidly.

The main item of expense in pineapple culture is the shed, which costs $325 to $600 an acre. On the Keys and in Porto Rico no shed is necessary.

ROOFING A HILL—A CONTRIBUTION TO THE RURAL WATER QUESTION

ONE of the objections made to life in the country is the lack of water for fire protection. The country house, whether standing alone or placed near others in a village, is invariably built of wood, in whole or in part. Once fairly on fire it almost always burns to the ground, simply because there is not enough water in reach and the little at hand is in a well, cistern, pond or stream. There are no fire engines, no hydrants and no pressure. The rural fire department in such small communities consists often of a small chemical apparatus and a few fire tools, and nothing more.

Not only is the detached house in serious want of water in case of fire, but such houses are often very poorly supplied with water for the daily

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use of the household. With the cheap plumbing of to-day, single households and the families dwelling in small villages could have all the comforts and conveniences of the city householder—if they had the water.

The one source of all available water is the rainfall. Wells, streams and ponds are but the reservoirs of rain water. It is said that in many parts of our country the rain and snow falling on the roof of a house will give, if it is all saved, enough water in a year to supply the family living in the house. That there is a very large supply of rain water collected from roofs is proved by the windmills we see everywhere pumping rain water out of domestic cisterns. Many a country house has been saved from total destruction by its rain water cistern.

The rain water cistern suggests a method of obtaining water for village fire protection that may be worthy of examination. A small house, 20 feet square, has a roof surface of 400 square feet. Two square feet of this surface would be equal to 288 square inches. An inch of rainfall on two square feet of surface would, if it were all saved, give 288 cubic inches of water. A gallon of water contains 231 cubic inches of water and, in theory at least, an inch of rainfall should give nearly one and a quarter gallons of water. In practice it may be less, but with a water-tight surface, like glass, placed at an angle to cause the rainfall to flow into some form of reservoir, it is safe to say that two square feet of roof surface would collect one gallon of water for one inch of rainfall. Then, for such a roof, an inch of rainfall should collect 200 gallons of water. The annual rainfall varies greatly in different parts of our country. Calling it forty inches, such a roof should collect in a year 8,000 gallons or nearly 22 gallons a day. For a family of five this would be a trifle over 4 gallons each per day. The allowance of water for a city family having baths, laundry, closets, etc., is far in excess of this, for such families often use or waste from 10 to 50 gallons per head every day in the year. Many country families are obliged to get along with less than 4 gallons per head, but the average consumption with good wells is probably not less than 5 gallons per day per head, and is often very much greater. However, the main point is that the 8,000 gallons kept stored in a cistern ready for an emergency would, in many cases, save the house from destruction. This is based upon the supposition that the roof be absolutely water-tight and smooth, so that all the water that falls would at once run off before it could evaporate, and that the snow be collected before it evaporates while melting.

Cities are supplied with water that falls over a large area of country, farms, roads, forests, etc., and called the watershed. The rain falling on such a watershed is apparently all lost as it sinks into the ground and disappears. It sinks downward until it meets the rocky skin of the planet and then flows away into streams and ponds. The actual available water collected in streams and ponds represents only a part of the rainfall, plants and particularly trees and the soil itself having absorbed or retained the larger part of the total rainfall; and still another portion escapes deep in the ground to distant places out of reach. Besides all this, the soil loses a large percentage of water by direct evaporation.

We have in many parts of our country poor, stony, gravelly hills of little or no value and in easy piping distance of villages and groups of detached houses. Why not clear and smooth off the steep sides or crown of such a hill and roof it over water-tight and use it as a rain water collector? An acre of such a roofed hill would contain 43,560 square feet of surface. At an estimate of two square feet of surface for one gallon of water for an inch of rainfall such a hill-roof should collect 21,780 gallons. To allow a still greater margin for loss it may be estimated at 20,000. At an annual rainfall of 40 inches such a roof should collect 800,000 gallons of rain and snow water. Eight hundred thousand gallons of water stored in a reservoir upon a hill a hundred feet above a town would be, if piped through hydrants and hose, a most satisfactory town asset in case of fire. Such a roofed-over hill, removed from the neighborhood of chimneys and roads, and properly fenced to keep out animals and trespassers, would collect clean, pure rain and snow water practically free from germs of disease.

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A case of this kind is illustrated by Mrs. E. Kelly, 233-8th Ave., Newark, N. J., who says: "I have been ailing for about eight years with bilious trouble and indigestion. Every doctor told me to give up coffee. I laughed at the idea of coffee hurting me, until about three years ago I was taken very bad and had to have a doctor attend me regularly.

"The doctor refused to let me have coffee, but prescribed Postum Food Coffee. I soon got to making it so well that I could not tell the difference in taste between Postum and the common coffee.

"I began to improve right away, and have never had a bilious spell since giving up coffee and taking on Postum. When I started I weighed 109 pounds; now I weigh 130. My friends ask what has made the change, and, of course, I tell them it was leaving off coffee and taking up Postum.

"I know husband will never go back to the old-fashioned coffee again. You can use my name if you print this letter, for I am not ashamed to have the public know just what I have to say about Postum and what it has done for me."

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There is a story that some ingenious citizen of New England once tried some such idea. Having a rocky hill back of his house, he scraped off the thin soil till he came to bare, clean rock, and constructed surface drains to lead the water into a cistern in his back yard. It worked too well, for the first heavy storm swamped his garden, overflowed his cistern and flooded his cellar. Whether the story be true or not, the fact remains that such a watershed hill would deliver in a smart shower enough water to fill a dozen domestic cisterns.

Could it be done and would it pay? It certainly could be done. It would not be difficult to cover a hillside with asphalt precisely as streets are covered, or with concrete as used for walks. At 20 cents a square foot, the ordinary price for concrete work, this would be about $8,700 for the acre, or at 15 cents, $6,500. There is no doubt, however, that were there a demand for such a roofing for a hillside it could be furnished for much less. There would also be the cost of the storage reservoir, which should be small, but deep, to expose less surface to evaporation. Place the entire cost (except piping) at $10,000, and such a rain collector and reservoir would be worth all it cost in case of a fire. If it save one life or one house it would be a good investment. The cost of maintenance and interest should not exceed $600 a year and at this figure the annual water rate would be, when divided among a community of from ten to one hundred families, very small indeed. Could our inventors and manufacturers place on the market some cheap form of roofing to be laid on the ground, say at a cost of one or two thousand dollars an acre, the matter of roofing a hill would certainly be worthy serious consideration. CHARLES BARNARD.

OVER THE SNOW

WE who love the country in all its phases have, many a time and oft, felt an exultant glow when the first snow of the winter has come. It may have been in a howling blast, when the wind-swept rocks aided the gale "to leave not a wrack behind:" or it may have been on a day when the moisture-laden air had hung long in the balance, 'twixt rain and snow, until at last the vagrant flakes, large of size and erratic of movement, had, with the shades of evening, finally settled into a definite winter's triumph, and justified the old carol:

"Good King Wencelot last looked down
Upon the feast of Stephen,
When the snow lay on the ground
White and wide and even."

To how many of us has it occurred to consider how manifold and ever-varying are the conditions of locomotion, suddenly imposed, when all the earth thus lies mantled in her winter's pall of ermine? And how ingenious are the provisions of nature and of man to meet these conditions?

On the morrow of the first real deep snow, what a transformation has taken place! In lieu of the sure footing, and the landmarks so familiar throughout the rest of the year, are broad stretches, gently undulating, wherein the figurative language of the scriptures has been fulfilled: "Every valley is exalted and every hill laid low." Nothing is left but broad stretches, where the almost undistinguishable gradations of color indicate aforetime meadows, deep covered, or ridges on which the snow has barely held its own.

How shall we maintain our capacity of locomotion under these new conditions? was a question that puzzled the brains of Mother Nature, thousands of years, æons indeed, before man had to meet the problem. And Mother Nature, wiser than man ever will be, answered the question variously. To the summer warbler of the northern woods, and to arctic waders who had brought off their young in the north, but whose waters with the advent of frost would be adamant, she said: "Flee ye south on untiring pinion, cleaving the air with swift and unerring wing; and await the signal to return!" To the tenderer of the deer she said: "Get you gradually from the high peaks and the erewhile blizzard-swept heights, down into the sheltered parklands of the foothills," and they have gone thither for generations. To the hare she added a fluffier coat, and a wider hair-covered foot, and said, "Stay ye here." To the grouse's toes she added

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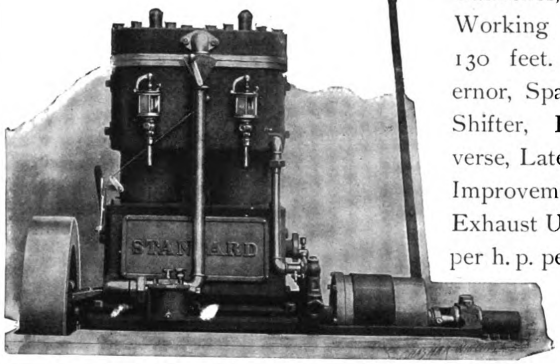

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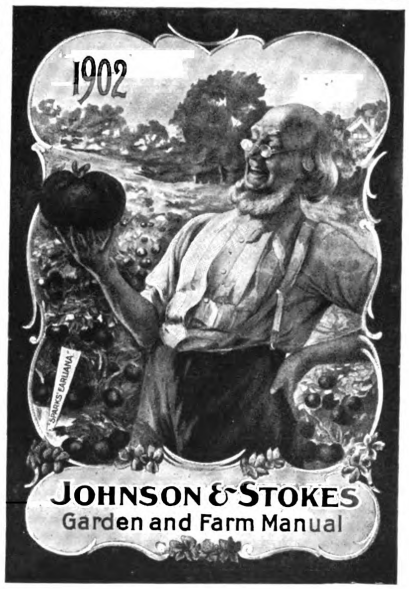

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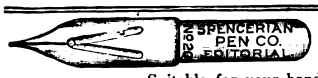

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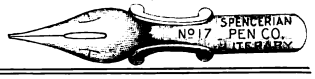

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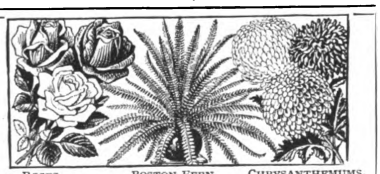

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AMERICAN ORNITHOLOGY
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the protruding feathers, which enables that hardy bird to bear itself, even on the surface of the fluffy snow, when occasion may arise, and gather its food beneath the snow-covered brush.

Man, in whom it has been necessary, in the divine cycle, for reason to take the place of instinct, has observed, and, observing, has adopted the principles of the foot of the hare, and of the feathered-toed grouse; and as becomes his superior position in the scale of progress, he has improved upon the lessons of the beast of the field and the birds of the air (over whom he was given dominion) and produced, for his own locomotion, four distinct methods of progression over the snow, all excellent and effective.

It is not necessary to prove any order of precedence in them — for this is an idyl of country life and not a scholastic exercise — yet one may fairly, and safely, say that the ski of the Scandinavian, now so largely used in the northwestern states of America, was first in point of evolution. It is simplicity itself. A long, straight lath of wood, some six feet long by six inches broad, and a strap for the foot, is all there is of it. Yet, on it men, aye, and women too, can go in the deepest snow, not only wherever they could in summer; but, in addition, can climb up to and go over precipices, and across valleys, which in other seasons would mean certain death. It is only necessary to mention, in this regard, that the postal service over the Andes of South America is, in the winter, carried by a special corps of imported ski-men from Norway; and to add the wonderful feats of the ski-ers, professional and social, in the neighborhood of Christiana, to prove the claims of the efficacy of the simple ski as a method of locomotion over the snow, within the reach of all. Nor need we go abroad for examples. Its pleasure-giving command over the rigors of the snow is amply testified in our own northwestern states. Its efficacy and popularity there should ensure its more general adoption in the East, where it would in many places prove a veritable boon.

But America was not without her own method of overmastering the conditions of a wide and deep snow; and here, too, man not only mastered nature's lesson but improved upon it; for where the moose flounders, and the fox must go slow, man glides, and on his wattle-netted snow-shoes, skims over the face of winter with a facility that mocks obstacles and evokes a zest that other seasons cannot approach. What can compare with the glow of triumph and the flow of health eventuating from a two-hours' breasting of the wintry air on snow-shoes? Especially when, by the moonlight of midwinter, couple after couple rendezvous at either end of the cross-country run, and at each end there is a hospitality characteristic of the best side of country life in the winter? I would commend, especially to our eastern states, these two aids to locomotion in winter, both easy and both effectual, but yet, at present, far too restricted to Canada and our northwestern states respectively. Snow-shoes and skis occupy no great space when not in use, and they well repay the outlay of time to master. Each is a survival of the fittest, and each is capable of bringing an added pleasure to winter's healthful exercises.

The third national winter pastime, skating, is of necessity "cribbed, cabined and confined" by many geographical reasons, but let it not be in abeyance wherever it is possible of exercise; for it adds one of the most graceful and exhilarating accomplishments in zones where, to use a Shakespearean phrase, winters are "frosty but kindly."

The fourth, sleighing, should never be resorted to by youth or lusty manhood, where the other and more robust sports are available; but let me not be considered to decry it. It is without a peer in glow and comfort for those whose halcyon days of physical activity are past, but whose hearts are yet, happily, open to the glories of nature in winter, and still beat in sympathy at the glorious sheen.

"When nature sleeps: a vestal virgin clad
In purest robes, for peace and silence glad,
And sound is muffled, only coming night
Kisses her garments with prophetic light.

"Each flake its facets to the sunset turns,
And with a mimic fire all glittering burns,
With prismal hues the swelling hilltops glow,
And roseate floods enwrap the ermine snow."

CHARLES QUINCY TURNER.

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COUNTRY LIFE AND POULTRY

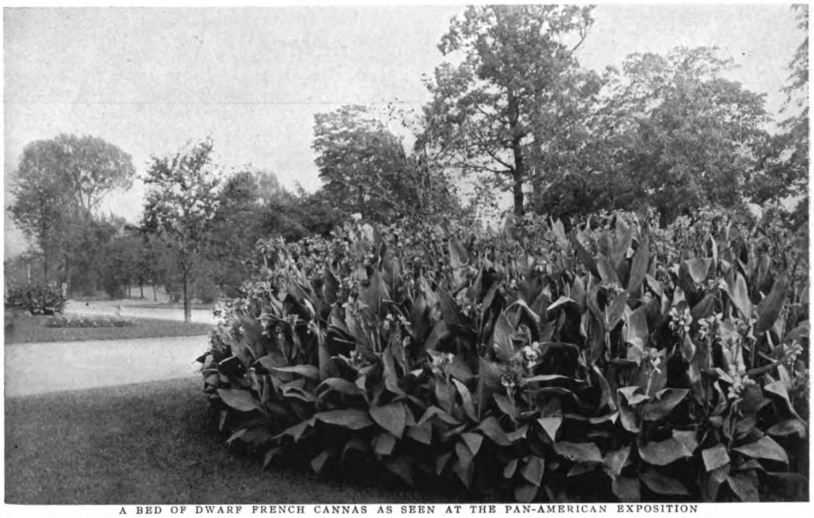
NO farm would be complete without poultry. One of the pleasures of farm life is the young animals. The colt, calf or lamb receives a royal welcome, and is at once established as a favorite of the children. Even the baby pig is considered a thing of beauty and regarded as a pet, despite its destiny. But it is when the broods of chicks, ducklings, goslings, and young turkeys appear that the farm becomes full of life and spring seems to have driven cold winter away. It is the young stock that attaches the boy to the farm and makes him happy and contented.

It is said, however, that there are as many fowls produced on suburban locations as on the farms. This may not be verified, but the fowl finds a place whenever opportunity occurs. Not only is the fowl made a favorite for profit but also for pleasure. Men of wealth take delight in the production of choice specimens of the pure bred birds, while the laborer, on his return to his home after his day's work, finds time to enjoy himself with a flock, which not only interests him but also assists in providing eggs of better quality and at less cost than he could otherwise procure.

Poultry keeping, like other pursuits, has advanced and kept in line in the march of progress. Today, with the incubator and brooder, we can hatch and rear thousands of chicks where before they came from the shells in dozens. Nor is the work of the breeder of poultry less important than that of the pioneers in other lines of stock, for he has classified the breeds in such a manner as to adapt each for some particular purpose. While all are useful in various ways, yet each breed has been given only one dominant characteristic in which it excels. The breeder has taken the Brahma and limited its power of flight, giving it prominence as a breed of large size but incapable of flying over a fence, and with a disposition which renders it contented in confinement. The Leghorn has been changed into an active forager, capable of securing its own subsistence, its propensity for sitting and for hatching broods being almost obliterated. The Plymouth Rock and Wyandotte have been bred for hardiness and market qualities, and the Games for delicacy of flesh. The subvarieties have their elegant and distinctive badges of purity of plumage, and each breed possesses royal colors that designate it as entitled to a high position among the aristocracy of fowls. The ornamental breeds, though also useful, are wonderful evidences of skill in breeding. The beautiful crests of the Polish, the georgeous spangles and pencilings of the Hamburgs, and the peculiar feathering of the Cochins, have resulted from years of care and selection. The majestic Bronze Turkey, of enormous size, the Pekin duck that thrives without a pond, and the large-bodied Toulouse and Embden geese, may also be added to the list. Man has even separated the breeds into sitters and non-sitters, and each has its special duties to perform.

Strange to state, though the fowl is familiar to all, yet more errors result in the management of poultry than with larger stock. This is due, perhaps, to the fact that each individual fowl is of less value than a large animal. As a flock is composed of many individuals, each having its peculiar characteristics, success can be attained only by giving more attention to individuals rather than to the flock as a whole. But many improvements have been made in the keeping of poultry. On well regulated farms the fowls no longer roost on tree limbs, warm quarters being provided, while corn and wheat have ceased to hold a monopoly as foods, the "balanced ration" being now considered as essential for poultry as for cattle, sheep or swine. Meat, vegetables and milk rival the grains in supplying the elements for egg-production.

Estimates are very unreliable, as individual fowls differ, but a flock of a dozen hens should produce about 1,500 eggs per year, and the cost of the food should not exceed one dollar per hen. Small flocks are more profitable than large numbers, as they receive more care, consume much waste material, and entail no cost for labor of management, while large numbers demand a considerable outlay for labor. Suburban residents will find much enjoyment in using the pure breeds, and a single breed will be less troublesome to manage than two. A poultry house should not contain more than ten fowls for every ten square feet of floor space, and the yards should not be less than



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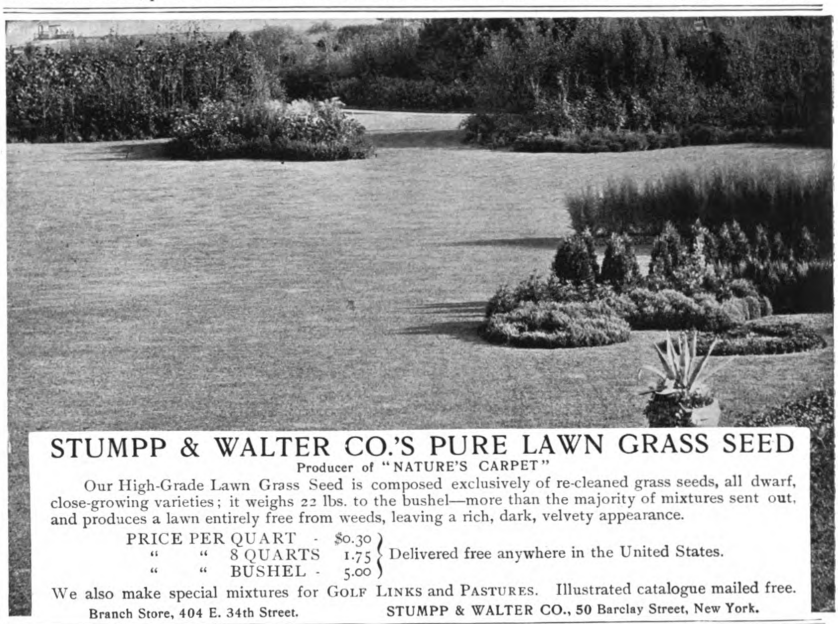

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ten times the area of the floor space of the poultry house. The decimal system is therefore an excellent one to keep in view. Never crowd the birds, as more eggs will be derived from a small flock with ample room than from a larger number not so fortunate.

Details of feeding could not well be given in an article such as this, but there is one fact that should not be overlooked—no matter which breed may be selected, or how well it may be provided for, success depends entirely upon the one who manages the flock, as skill, care and attention are necessary in all pursuits. P. H. JACOBS.

THE CHIHUAHUA DOG

THE fabulous prices offered by Eastern buyers for specimens of this pretty and engaging breed may ere long prove fruitless, for the genuine Chihuahua is growing scarce. As, however, the majority of purchasers and owners, East and West, cherish the erroneous belief that small size is the sole desideratum in the breed, mongrels may satisfy their desires.

The competent judge of the Chihuahua demands something more than a mere pocket edition of a dog. The Mexican from Old Mexico, for instance, the ancestral home of the breed, is quick

A St. Bernard and a Chihuahua dog

to discern the value of a specimen which, from the average American point of view, is hopelessly disqualified by a weight of perhaps eight to ten pounds, and will often adapt his superior acumen to strictly personal uses; the dog, in short, disappears.

The competent judge, then, whether American or Mexican, looks apparently first for points, second for size. The dog may be long-haired, short-haired or—bare! The last mentioned is commonly brindled or mouse-colored; the two former varieties of almost any solid color; but the short-haired variety with which we are now dealing, whether white with tan, black or lemon points, or all combined, is judged almost as severely by the adjustment of these markings as if he were a fox or black-and-tan terrier. Symmetry also counts for much, but he may be either stocky or slim. The dog here portayed is considered an excellent specimen of the breed, although standing nearly eight inches at the shoulder. His sire was a very handsome dog with, it is said, nearly faultless points, but over-large; the sire's mother won the Blue Ribbon at the St. Louis exposition. The knowing men assure us that the true Chihuahua is high and narrow at the hind-quarters, low and strong at the shoulder, the chest broad and deep, breastbone markedly prominent, body long, the forelegs short and somewhat knock-kneed, the claws, especially the dew-claws, extremely long; he may be pointed or dish-faced, but his eyes must be big and soft, his mouth small, his ears rather large and capable of much movement and expression, his tail thin and more or less pig-like in its curl. The very tiny specimens are not only hard to raise but come too often in litters of two or even one; the Chihuahua faults of delicacy and sensitiveness are usually exaggerated in them and they are seldom symmetrical. They are likely to be the result of in-breeding, or under-feeding, and too little exercise. When perfect, however, they are practically priceless.

Legend has it that the breed was started by a Frenchman, now deceased, in Mexico, and that it originated in a cross between the prairie-dog and some small terrier. The absurdity of this assertion loses its force after long acquaintance with the Chihuahua. In a breeding-establishment, now unfortunately broken up, there was one female who, although a producer of valuable pups, had a

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prairie-dog's tail. The dog I now own has feet with preternaturally long toes, bearing a striking resemblance to those of the digging animal, his reputed ancestor. Most specimens of the breed sit up readily, and their attitude, with the quaint little forepaws hanging down, is precisely similar to that of the prairie-dog sitting at the mouth of his burrow. Their exaggerated timidity, too, with strangers of the human species—some of them absolutely shrieking with terror when handled, however gently, by a stranger—is another point in favor of the wild-animal theory; especially as in pluck and grit in other respects they leave nothing to be desired. They are, nevertheless, if possible more sensitive than other varieties of small dog, concentrate their affections more intensely, and guide their actions even more scrupulously, not merely by the words but by the facial expression of those they love. It follows, consequently, that they are very easily trained to obedience and the performance of tricks. They are also often good mousers, and even occasionally evince strong sporting tendencies. A horror of mud and water they share with other little dogs, but their manner of using their forepaws is not wholly canine. These answer the purpose of hands, with which they touch everything, arching the toes and pressing their long claws gently into the object desired, whether that be inanimate or the hand of a human friend, in order to draw it toward them. A person's face they will softly turn toward their own in the same fashion, crouching as close to the owner as they conveniently can, and making queer little crooning noises, almost like those of a child. They are very active, and play much as kittens do. If not too tiny they are, given ordinary care, healthy, although requiring warmth. In the climate of Old and New Mexico they bask outdoors in the winter sun, even if the air be sharp; but in the East would probably need a coat, as they seem to be somewhat susceptible to dampness.

EDITH M. NICHOLL.

NEW IDEA IN CORN CULTURE

THE breeding of corn is to be taken upon a new basis and on a commercial scale. Hitherto, the sugar beet has been the principal plant improved by man along chemical lines, instead of being selected in accordance with the common tests that appeal to the senses, such as flavor, size, color, earliness and the like. The improvement of corn will now be undertaken along two divergent lines; on the one hand for the oil and protein element which is of value for feed and glucose; and on the other hand for the starch content which is in special demand for making commercial starch and corn flour. The alliance of chemistry and commerce has within a century raised the average sugar content of the beet from five or six per cent. to fourteen or fifteen. Prof. R. O. Graham is now fitting up a laboratory at Illinois Wesleyan University for corn analysis, his services having been secured by the Funk Brothers Seed Co., of Bloomington, Ill. This company owns 25,000 acres of land, and proposes to use 9,000 acres this year in growing the best corn obtainable. The scheme of plant breeding involves many trial plots of small area, as well as laboratory experiments and is designed to cover a long period of years. The general plans are said to be in accord with the ideas of the Illinois Corn Growers' Association, and the Illinois Seed Corn Breeders' Association.

Gideon Memorial Fund

The Minnesota State Horticultural Society is raising a fund of $1,000 to be known as the Peter M. Gideon Memorial Fund in honor of the man who originated the Wealthy apple which has done so much for Northwestern fruit-growers. The interest is to be used for a horticultural scholarship. An illustrate monograph is in preparation which will be sent to those who contribute a dollar or more. A portrait will be sent to those who contribute less. The committee invites a gift of one cent for each apple tree in orchard or garden. We heartily commend the effort both on its merits and also as a fine example of enlightened methods of raising money for disinterested purposes. No gift is invited except upon a basis of value received. A tasteful souvenir of this project was issued as a supplement to the December number of the Minnesota "Horticulturist," and copies may be had for the asking.

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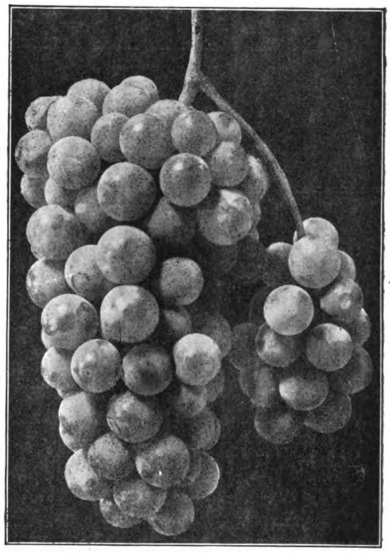

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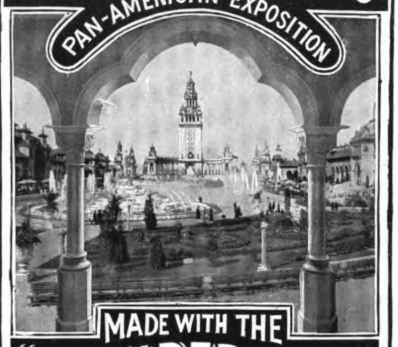
THE BEAUTIFUL LAWNS AT THE PAN-AMERICAN EXPOSITION



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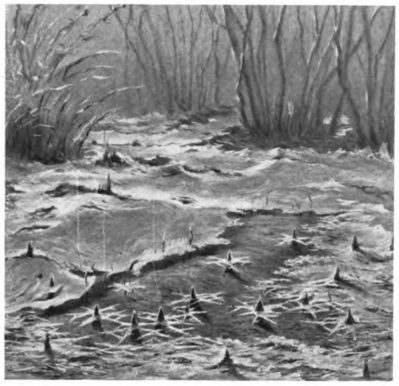
THE ANNALS OF THE SWAMP-CABBAGE

THE skunk-cabbage has so long been dismissed with slight notice by the botanist and poet alike that Hawthorne's words seem peculiarly applicable to it. "Each humblest weed stands there to express some thought or mood of ours and yet how long it stands in vain!" For this plant is indeed of peculiar significance; and, in the country-side of Long Island, it so often arouses my interest and admiration in bud, in flower, or in full maturity, that I record here some of the varied phases of its life.

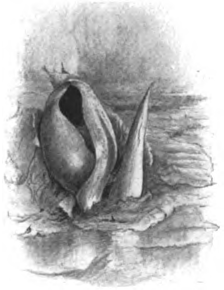
Even in October it is possible to find signs of renewing life along the creek shore, where the upland meets the marsh. Putting aside the wet



"The thin ice has clustered in star-like forms about its lifted spires, crowning each with a circle of crystal spars."

leaves and all the drifted slag of autumn, we find the large leaves of the skunk-cabbage withering on their stalks; but, at the root, the new bud is already lifting. Even as early as the middle of September this bud rises faithfully above the ground, giving promise of another spring, whatever autumn may show of dissolution and decay. Thoreau speaks of first seeing these buds on the thirty-first of October, but on Long Island they have advanced by the first of November to the height of several inches above the soil and are enfolded by scale-leaves of purple and green. The buds spring from a large rootstock, six inches or more beneath the ground; and, if you lift aside the outer scales, you will find the crimson flower an inch in length, and beside it, folded by themselves, the true plant leaves of fresh yellow green. Each leaf tightly enwraps the one beneath, and they can be separated, one by one, a dozen or more, down to the last, a minute yellow shoot a quarter of an inch long. So they await the rigors of winter.

In December, examination of the cabbage buds will now show that they are still growing, and, if the season be considered, growing well, for they



"A few days more of February and another visit will be rewarded by the sight of the hood fully open."

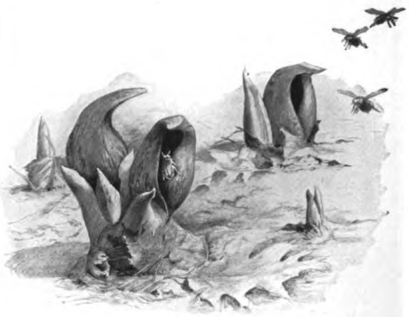
have added a quarter of an inch to their height in the last two months. A brave showing, surely.

After the "January thaw" comes a period of intense cold, when the cabbage buds cease growing and hoard all their strength. The landscape is desolate, but the swamp still yields signs of life. For see! The thin ice, forming before the waters receded at night and covering the ground with a fragile garment, has clustered in star-like forms about the lifted spires of the skunk-cabbage, crowning each with a circle of crystal spars. The midday sun soon thaws these ice-forms, but, as the waters rise again and again through the winter, so these crystals gather about the purple bud. Then, the snow may bury them all for weeks, but when the warmer days invite us out-of-doors, the buds are found piercing the edge of some drift.

What is the first sign of spring? It is in mid-February that the outer scale-leaf of the skunk-cabbage, which has protected the bud through the winter, is even now severed at the base and hangs, cap-like, upon the bud; or, in some cases, lifted off by the wind, it lies upon the ground near by. The first green leaves, still tightly folded, are now exposed at the tip and the crimson flower spathe, although unopened, lifts itself into the air.

A few days more, and another visit will be rewarded by the sight of several flowers with the hood fully open. As the spathes stand all about, lifted above the black earth and ranging in color from deep purple, through crimson to scarlet and orange, they cannot be lightly dismissed; for have they not a certain beauty, as much as their austere habit of life will allow? Come, when the low sun of late afternoon shines upon the ruddy globe-like hoods: they glow like lighted lamps upon the dead leaves.

In the warm March noonday, faint crepitant sounds, hardly perceptible, accompany the slow loosening of the leaves as they dry and lift, lobe by lobe, from one another. It is like the noise of a book's leaves, softly and carefully turned to avoid waking one who is sleeping. This preparation is made that delicate buds may find passage



"As the bees crowd within and find this plenitude of pollen, a contented buzzing issues as from a hive."

and bloom in their appointed time. The skunk-cabbage flower has lifted aside all obstacles, and the pollen from the overflowing anthers is eagerly sought for by the honey-bees. Within the hood, the small flowers are blooming, closely crowded on the upraised spadix. Each little star-shaped flower, with its four sepals, is provided with four stamens from which an immense amount of pollen is discharged; not only to fall upon the flowers, but to collect in great quantities at the base of the stalk; and, as the bees crowd within and find this plenitude, a contented buzzing issues as from a hive.

The hood of the skunk-cabbage bends forward, not only to protect the pollen from snow and wind, but in the later flowers which are now appearing, without scale-leaves to aid their progress upward, it serves as a dull wedge to open the way. They lift aside the earth and rend small roots as they push above the surface. The hoods vary greatly in form, as well as in color and markings. I sometimes find double hoods formed on one stalk. The openings of the hoods face each other and the larger one almost entirely encloses the smaller, which contains the perfectly developed flowers on its spadix.

By the middle of March heavy rains fall, until the ground is thoroughly moistened. Then the sun comes out with a grateful warmth; and the tightly folded bundle of cabbage-leaves lifts itself above the flowers. As it arises, the outer leaf disengages itself from the others and slowly unfurls. How welcome is the sight of this lusty green foliage, appearing even before the grass has asserted its dominion in the fields!

In April the farmers set fire to the stubble and the flames reach the swamp. The burning of the

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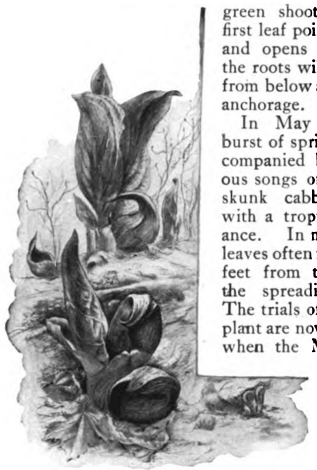
dried leaves and grasses has exposed the cabbage seeds where they lie upon the ground or half buried within it. These seeds fell from the disintegrating spadix in October; and, having lain dormant on the ground all winter, or been carried hither and thither by the rising and falling waters, now find a resting-plase on some sand-bar or sheltered bank. About the middle of June the outer coat of the seed will be broken by a slender green shoot. As this first leaf points upward and opens to the air, the roots will reach out from below and gain an anchorage.



"As it arises, the outer leaf disengages itself from the others and slowly unfurls. How welcome is the sight of this lusty green foliage, appearing even before the grass has asserted its dominion in the fields!"

In May comes the burst of spring, and accompanied by the joyous songs of birds, the skunk cabbage grows with a tropical luxuriance. In maturity the leaves often measure six feet from the tips of the spreading leaves. The trials of the brave plant are now over, and when the May woods are brightened by this exuberant growth, hould not we rejoice with these slowly waving leaves, where, softly touching or overlapping, they clothe the entire woodland floor; or, overhanging the brook, dip their green banners in the current? The overarching leaves form an impenetrable canopy, beneath which the wild creatures seek protection, for the leaves of trees and shrubs are still too young to afford shelter. The musk-rats can now safely leave the stream at evening to search for food along these banks. The small birds, also, follow these secret ways, and the rabbit grows less fearful when he gains the covert here.

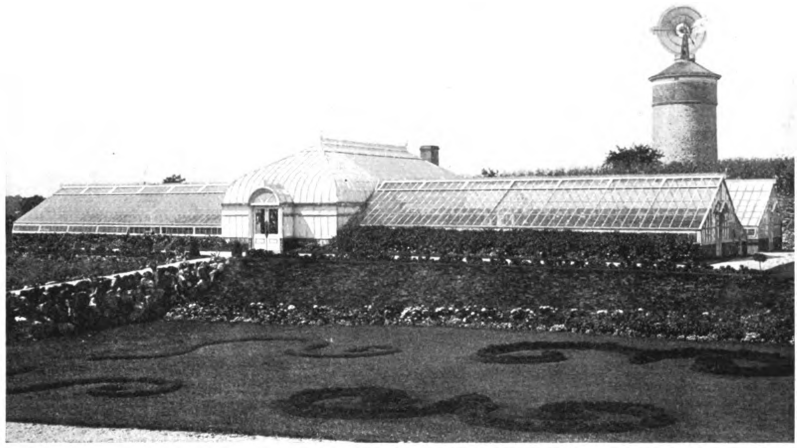
"In May comes the burst of spring and the skunk-cabbage grows with a tropical luxuriance. Should we not rejoice with these slowly waving leaves?"

While we have watched, other flowers have gathered—the marigold, hepatica, anemone and bloodroot; but the skunk-cabbage loses nothing, even though clad in its suit of sober green; for, when all these flowers have faded and fallen, far into the autumn season, these broad leaves will spread their palms to the sun.

HOWARD J. SHANNON.

Protection of Wild Flowers

A "Society for the Protection of Native Plants" has been organized, which proposes to issue leaflets to school teachers, village improvement societies and others. Further information may be had from Miss Maria E. Carter, Curator of Herbarium, Boston Society of Natural History, Boston, Mass. A note on "Saving the Wild Flowers" appeared in our January issue.



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transplant even more successfully than small ones. They have greater reserve force. The roots may be preserved, and the tree transported on our patent tree-mover which, by means of a hinged cradle, loads and carries it without injury to any part.

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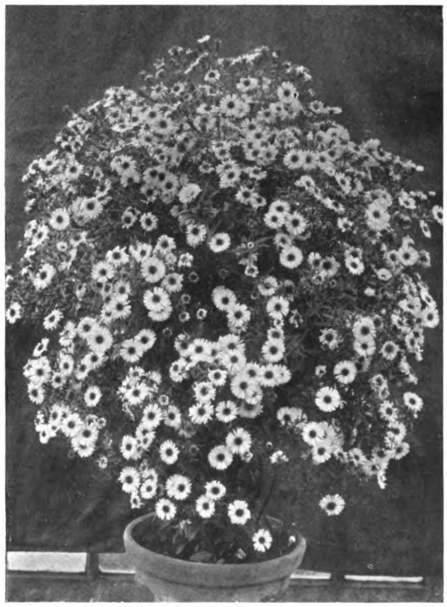

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$100 In Cash Prizes for Beautiful Photographs

COUNTRY LIFE IN AMERICA offers the following prizes for photographs helping to illustrate the important series of articles on Making a Country Home which begins in the April issue. The following conditions govern all the competitions, the closing dates of which are a month apart:

1. The judges will be the editor and publishers.
2. The points considered will be:
   (*a*) The success with which the photographs illustrate the special subject and the general idea of the country and of country life.
   (*b*) The pictorial excellence.
3. Each competitor may submit either a single picture or a series.
4. All prints must be not smaller than 4 x 5. Each must be accompanied with full particulars on the back of the photograph with the photographer's name and address, and stamps if the photographs are to be returned.
5. Pictures submitted must be unpublished and either the work or the property of the competitor.
6. The contests will close as noted below and the awards will be made and paid as soon as possible thereafter.
7. Any competitor may send as many series as he desires.
8. The publishers reserve the right to purchase any of the pictures submitted, but not awarded prizes, at a fair valuation.
9. All rights in the prize-winning sets shall belong to the publishers.

THE SIX PRIZES ARE AS FOLLOWS

Contest closes	For the best photograph or series of	Prize offered	Contest closes	For the best photograph or series of	Prize offered
1. April 1	A SOUTHERN HOME	$20	4. April 1	A WINDOW GARDEN	$10
2. May 1	A WESTERN HOME	$20	5. July 1	LAWNS AND LAWN EFFECTS	$15
3. June 1	AN EASTERN HOME	$20	6. Aug. 1	AN OLD-FASHIONED GARDEN	$15

PROOFS OF ILLUSTRATIONS FROM COUNTRY LIFE IN AMERICA

We have had so many requests for proofs of some of the best large pictures printed in COUNTRY LIFE IN AMERICA that we have decided to publish a collection of eight of the finest each month. These eight, printed on heavy paper and with wide margins suitable for framing, will be sent to any address for 25 cents. The selections for the first series are:

The Coming of Spring	In Garb of White	The Framework of the Trees	In Canadian Woods
Winter Under Glass	A Seat in Mrs. Gardner's Grounds	Animals of the Farm	A Tragedy of the Forest

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This collection of COUNTRY LIFE IN AMERICA pictures and another similar one made from THE WORLD'S WORK will be sent on a special offer to libraries and schools postpaid, for only 30 cents. Sixteen superb engravings of beautiful and timely subjects.

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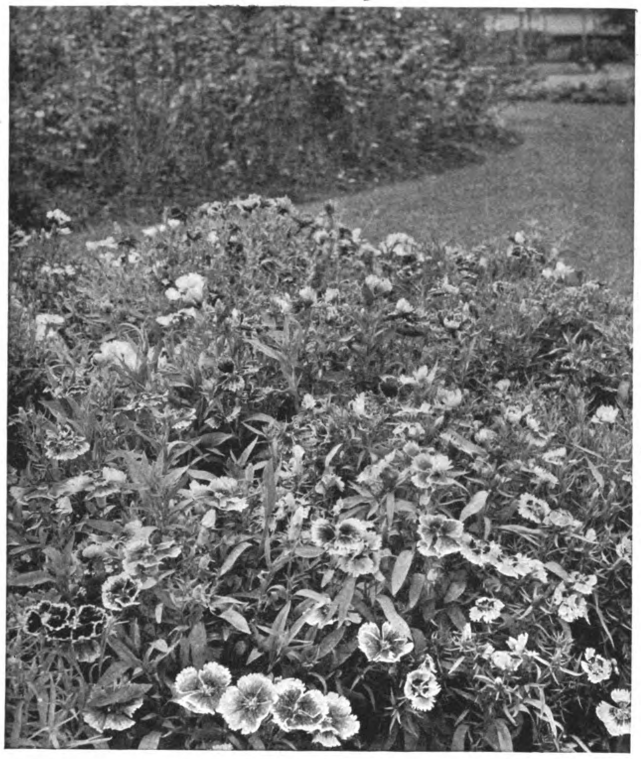
New Giant-Flowered Fancy Pinks

"ORIENTAL BEAUTIES"



A MAGNIFICENT strain of Giant-Flowered Pinks, originally from Japan, but enlarged and improved by careful selection. These splendid flowers measure from 3 to 4 inches across. They are most exquisitely formed, the petals being full, overlapping, crinkled and laciniated. The flowers possess that peculiar and artistic charm so noticeable in all plants from the Land of the Chrysanthemum. They range in color from pure white, through shades of pink and crimson, many strikingly marked and variegated. The coloring and marking are rich beyond description, and nothing could be more dainty and pretty than their charming ruffles and frills. They are perfectly hardy, are perpetual bloomers, needing only to be cut back every few weeks to bring on a new crop of flowers. They are splendid for cutting, lasting long in water. The finest effect is obtained when they are planted in great masses as shown in the photograph.

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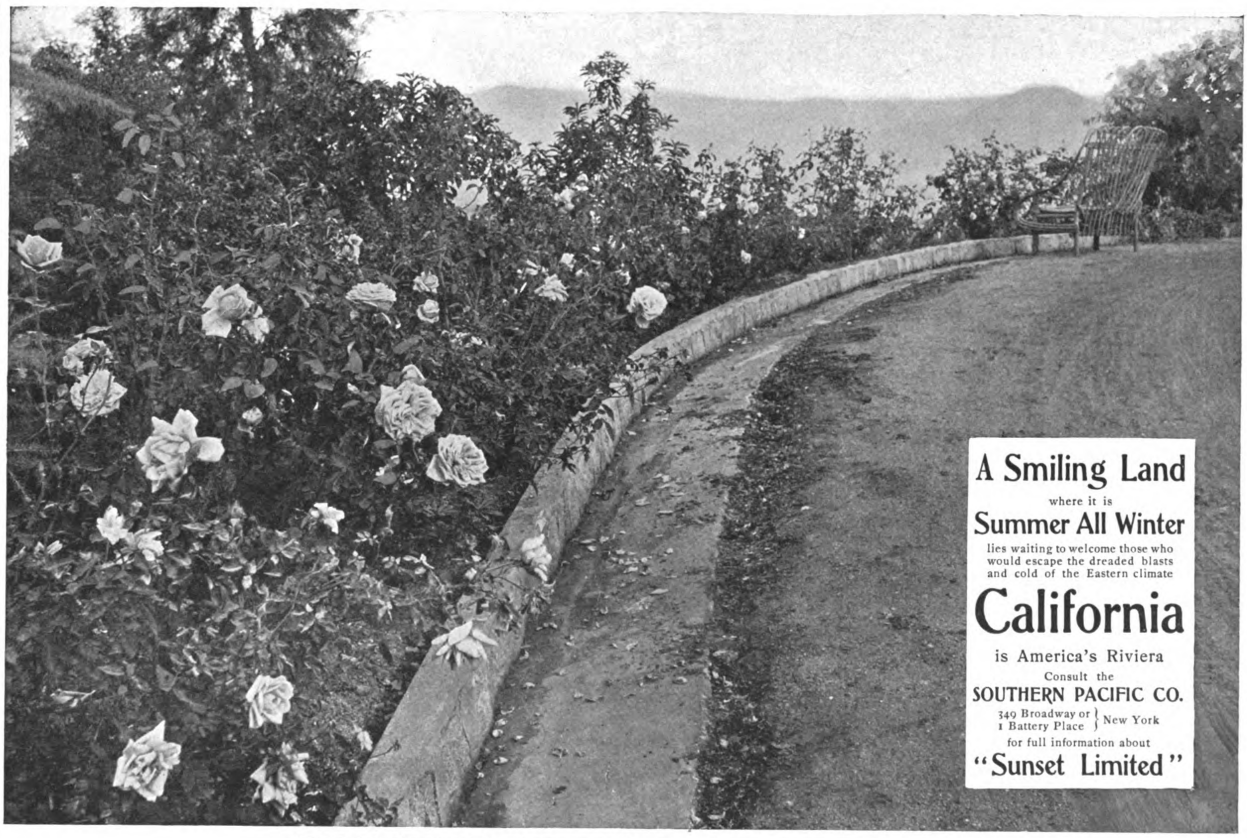

SMILEY HEIGHTS, REDLANDS, CALIFORNIA, IN WINTER

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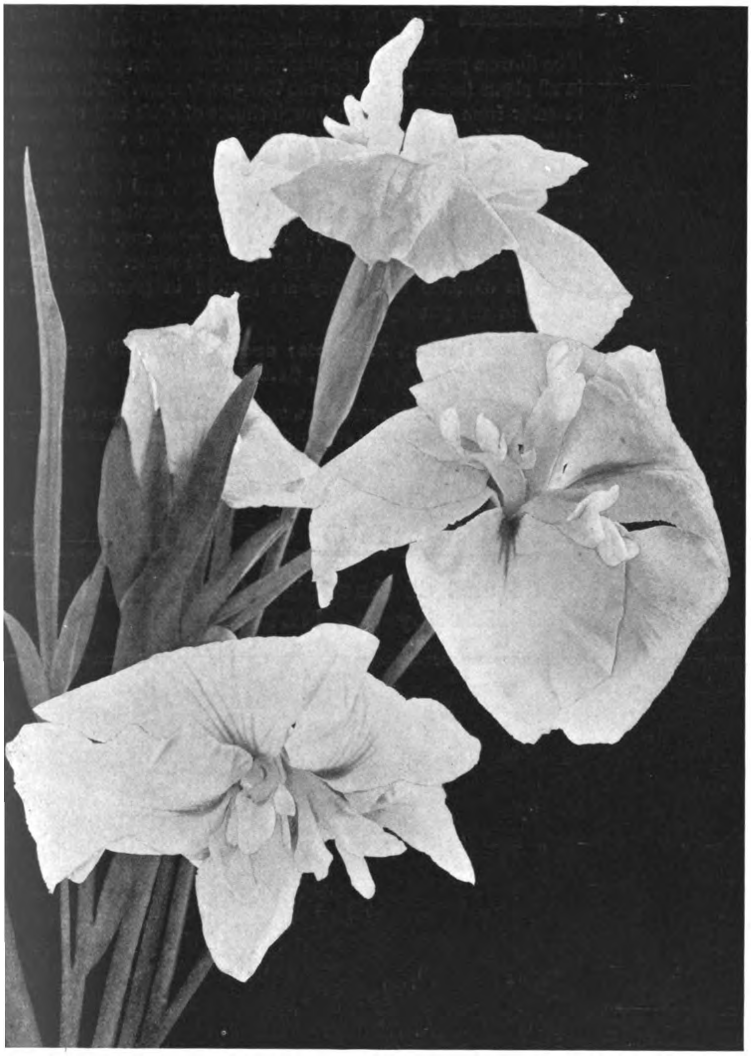
SPECIALTIES



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VOL. I. NO. 6
New Series: Vol. VI—No. 10

APRIL, 1902

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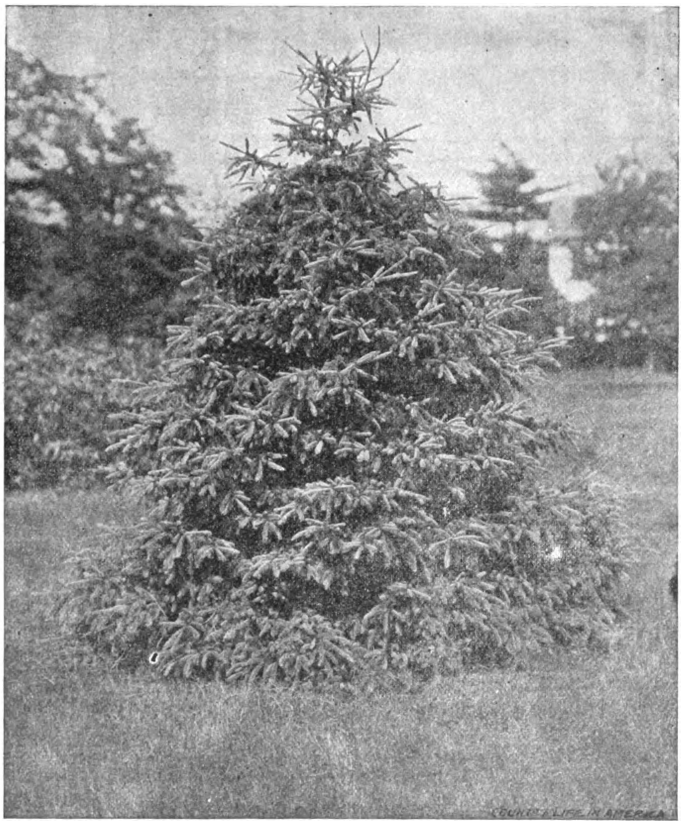

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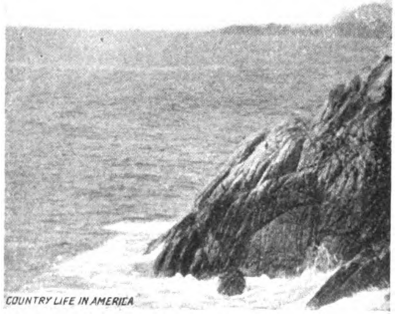

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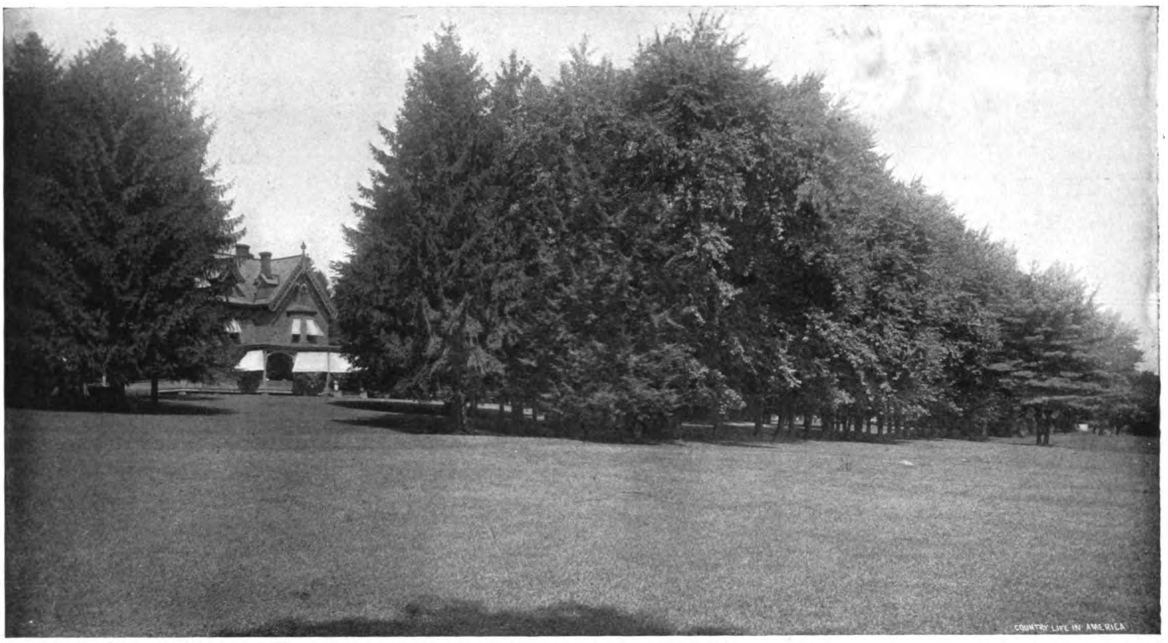

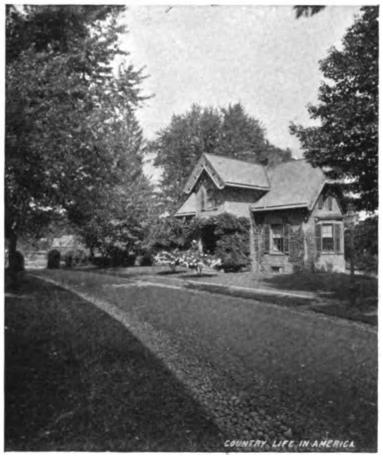

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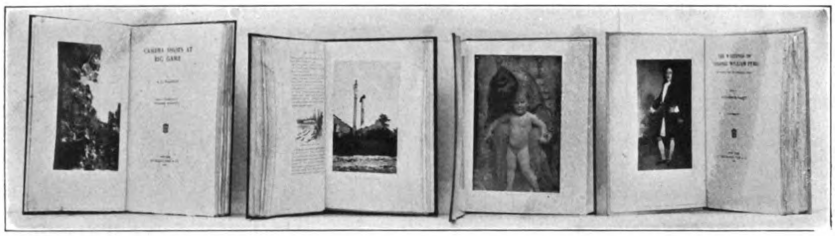

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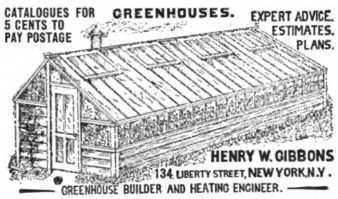

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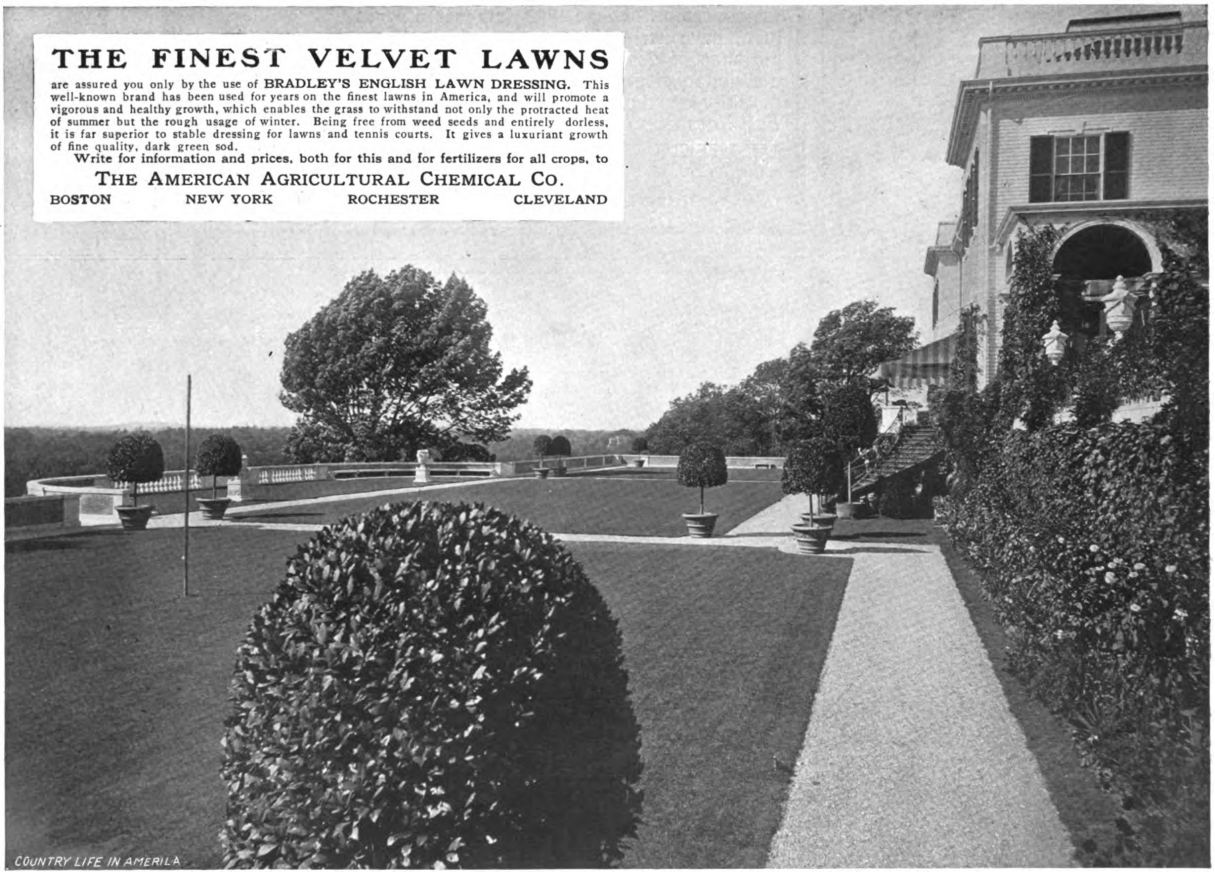

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View outside the formal gardens in the Sprague estate. (See page 206)

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COUNTRY LIFE IN AMERICA

VOLUME I—NUMBER 6
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April, 1902

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"The deep pink flowers of the Judas tree or red-bud"

THE BLOOMING OF THE TREES

By J. HORACE McFARLAND

ONE is likely to think of the blooming of trees as having to do only with those bearing edible fruits; and many there are who scarcely realize that the familiar wayside trees have their own peculiar and special blossoms, often all the more beautiful because less conspicuous than those we are wont to think of in connection with the oncoming of the spring.

True, it is the white burst of the apricot blossoms that usually announces to the ordinary observer the fact that winter is over and gone, and again it is these same audacious white blossoms that point the trite observation concerning "winter lingering in the lap of spring" when they are caught by a sudden dash of still whiter snow. Showy and spectacular are the apricot flowers, and bursting out suddenly as they do under the warmth of an April sun, the bare reddish brown twigs clothing themselves from end to end in delicate whiteness, they seem to typify the season of renewed life and of upspringing gladness in the living world.

There is a general resemblance between the fruit-tree blossoms, even the deep pink of the peach seeming to be obviously akin to the flowers of the pear, the apricot, the cherry and the apple. Each, however, has its special beauty, and now that it is no longer considered to be a wilful waste for one to pluck the flowers of a fruiting tree for ornament and for examination, the modern enthusiast in nature-study may well find fascinating material in the orchard.

The apple tree hesitates long in opening up its pink-tipped flowers, and its downy leaves have thus a chance to appear almost coincidentally with the "blows," providing an adornment which one misses in the earlier masses of bloom. The latest of all the fruit-tree family to bloom, the blossoms of the quince, seem to be the mature expression

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"The white burst of the apricot blossoms"

of the full tide of springtime. There is none of the hurry and rush of gladness so fitly expressed by the apricot, the cherry, and even the less conspicuous peach. Each dainty little cluster of quince blossoms sits embowered in its own leafy protection.

But of all the spring blossoms of the fruit trees, surely those of the apple claim the most attention. In Japan it is the time of the cherry blooming that ushers in the full gladness of spring. With us it should be the time of the apple blooming, for nothing shows forth the prodigal bounty of Mother Earth more fully than the old orchard at the time when the grizzled veterans of many storms are clothed in pink and white, with myriads of wildly happy bees seeking the delicate nectar that we always associate with the sweet fragrance of the apple flowers. But there are apple blossoms and apple blossoms, and I recommend a little apple blossom hunt to my reader who has the spring thirst for beauty upon him. Let him notice the difference between the flower borne upon the Rhode Island Greening and that which decks a Talman Sweeting. He will need no hint to cause him to distinguish, with a punctuating "Ah!" of complete enjoyment, the delicious perfume and perfect setting of the crab-apple flower.

The cherry tree covers itself with a white glory unmixed with any hint of the green so soon to follow the falling of the blossoms. Here, again, there is a point for interesting investigation in the strongly differing flower forms of various types of cherries. The native, uncultivated species also show us several quite unlike forms.

But turning aside from the ordinary fruit trees, it is well to consider those apparently familiar in a general way, which yet bear blossoms of inconspicuous character that are entirely unknown to many of us. The common silver maple, a hardy, thrifty tree, known variously as the soft maple and the white maple, and rejoicing in the uneuphonious botanical designation of *Acer dasycarpum*, is very brave in its blooming, for its flowers are open long before the average nature lover begins to think about spring being at hand. Sometimes even in February, and usually in early March, the delicate little flowers, set closely along the slender branches, show themselves. They seem hard to freeze, and their maturity is swift and certain, for usually about the time when spring has spectacularly arrived we find dropping on the sidewalk or roadside before us the peculiarly shaped winged seed-pods, or samaras, of this maple. The work of the tree in reproduction is done, and it has completed its seeds in time to take advantage of the first warming of the earth. So fecund and virile is this silver maple, that sturdy young trees a foot or more high result frequently by the time of the first frost in the fall, from seed which has followed the blossoming of the mother tree in the midst of the last snow in March.

Another of the common trees whose blossoms are delicately fine and yet inconspicuous, particularly because they are borne so far above the eyes of the beholder, must also be looked for very early in the spring. The graceful American elm, a tree with its own special beauty of form, bears, closely set along the ends of its mature twigs, little wings of reddish bloom. As with many others of these shy flowers of spring, the careless beholder is likely to

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think the slight evidence of life he beholds, away over his head, as he passes under the elm, is the bursting of the leaf-buds. A little investigation will disclose the mistake, and give a new reason for an interest in things outdoors.

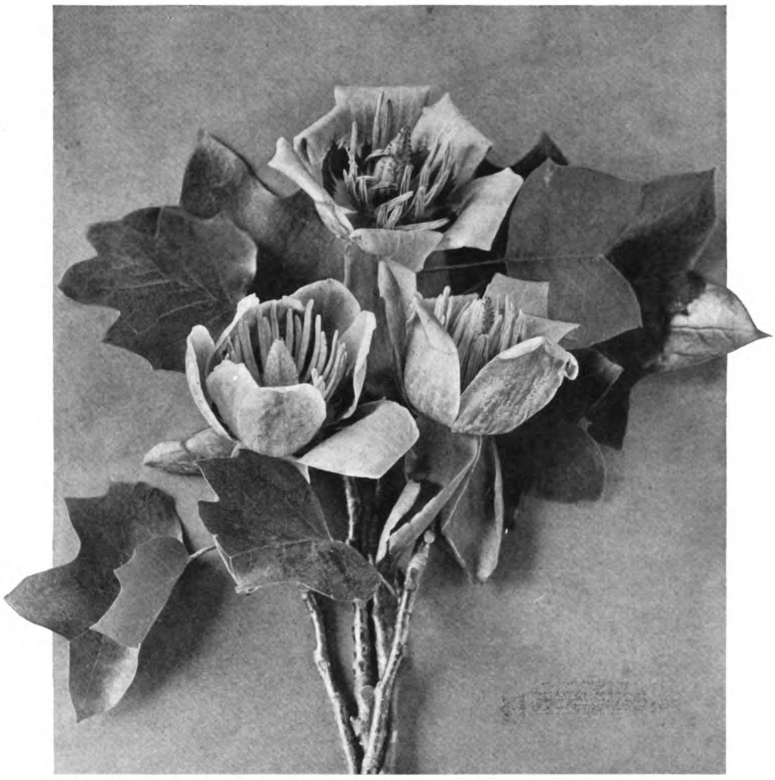
Some of the poplars are showy enough always to attract attention. A very common city street tree of eastern America, execrated by some landscape architects almost as viciously as the English sparrow is by the ornithologist, is the Carolina poplar. When the warmth of the sun has sufficiently melted away the covering of its sticky buds, there is thrust out a somewhat snake-like catkin of red and yellow, giving for a few brief hours a peculiar appearance to this vigorous tree. The observer who has been watching the swelling of these buds probably expects leaves of them, but these fat, well-protected blossom sheaths have nothing to do with the rich foliage that is to follow. If the reader will look at the picture on page 190, he will note as the last bud of the twig a thin leaf-bud. He may see also at the other end of the twig a terminal leaf bud, about to burst, all between being the blossom buds.

All the maples come apace, perhaps the most decorative being the beautiful Norway maple. An avenue of Norway maples in blossom time is a symphony in delicate greens and yellows, and the faintly pervading scent is balsamic and pleasant. Just about the color effect of opening foliage are these Norway maple blossoms, but of a fineness of texture and form hardly equaled by many orchids. I have greatly enjoyed showing a full-size photograph of Norway maple blooms to presumably acute observers, only to find few able to recognize it. The reason is that, as the blooms and the opening leaf-clusters are so closely alike in color, the ordinary observer will imagine that the sudden glory of yellows and greens above his head is the bursting of the leaves, when in fact it is simply the splendid outspring of bloom on these trees, to be followed promptly by foliage of rapidly growing luxuriance.

Of the long, grape-like clusters of the sycamore maple, the delicate fringy flowers of the box-elder or ash-leaved maple, the intense vividness of the red maple blooms, I can only hint, but I hope my hint may send the gentle reader afield on his own tour of investigation this very springtime.

Turn we now to the wilder blooms of spring. The spice-bush first of all, its long slender wands set with sweet blossoms of green and yellow, greets us about the time the lush leaves of the skunk cabbage are making us indignant at the nasty name of a beautiful plant; and but a little later the shad-bush, another ill-named American beauty—which has nothing to do with shad and is not a bush but a good, wholesome tree—flings out its garlands of starry white flowers against the yet wintry aspect of the woodside.

As the sun gathers strength and his rays enrich the sap, there come forth the deep pink flowers of the Judas tree, or red-bud. Here is the first strong color-note of the season, and I always feel riotously joyful when I can see at Conewago the red-bud's graceful and vivid branches swinging against the dark, unmoved green of the American cedar. Then a little later, and before the red-bud has lost its glory in any sense, the full whiteness of the dogwood is developed. Its flat, uncomprising limbs thrust themselves into the color scheme, to make a combination of white with pink and red, against a whole scale of greens, that causes every nerve of chromatic appreciation to tingle. Then is the time when work is most irksome, unless it be with the sketch block or the camera outdoors, and one must shut the desk and go abroad to be filled with the season's inspirations!



"Late to appear are the tulips of the liriodendron"

This same white dogwood is a wild tree of the eastern United States, and it is also a cherished ornamental of the nurserymen. Never, however, in a set planting does it reach the untamed glory of its native wilds, where it will swing its straight branches above one's head as he rambles through the woods and thanks the Creator for life, and eyes, and springtime!

It is the nurseryman's art that has given us the magnolias in America, contributed to the ornamentation of our home grounds mostly from the land of the cherry blossoms and the chrysanthemum. Very early in spring the richly sweet blossoms of the earlier magnolias burst forth, and at first they appear oddly out of place, for there is something languorous and tropical about these great flowers that seems apart from the spicy sweetness of the northern springtime, and alien to its tonic air. Yet the magnolia soon finds its place and its welcome.

I shall always prefer, however, as the first representative of the magnolia family, our own truly American magnolia.

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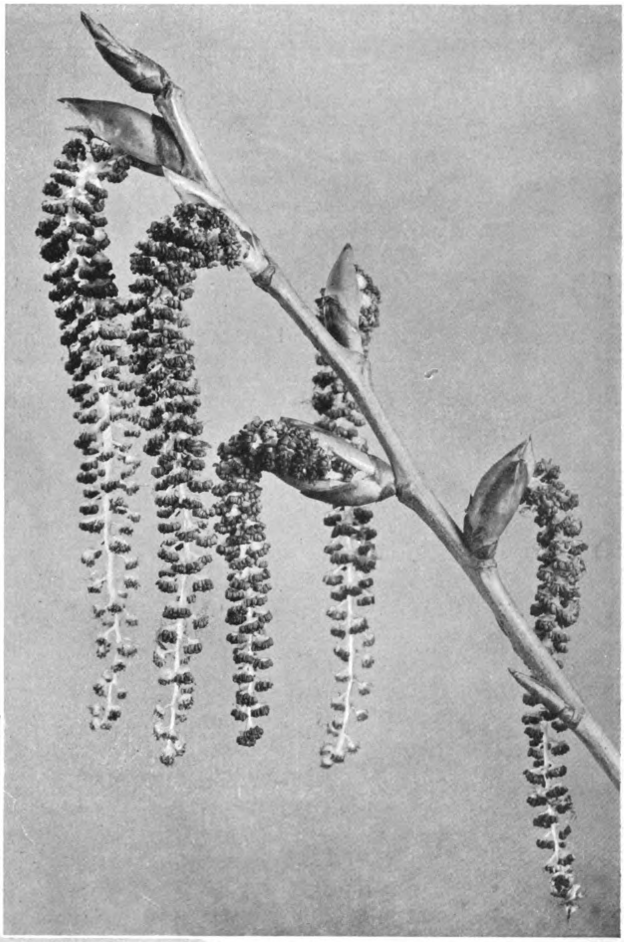
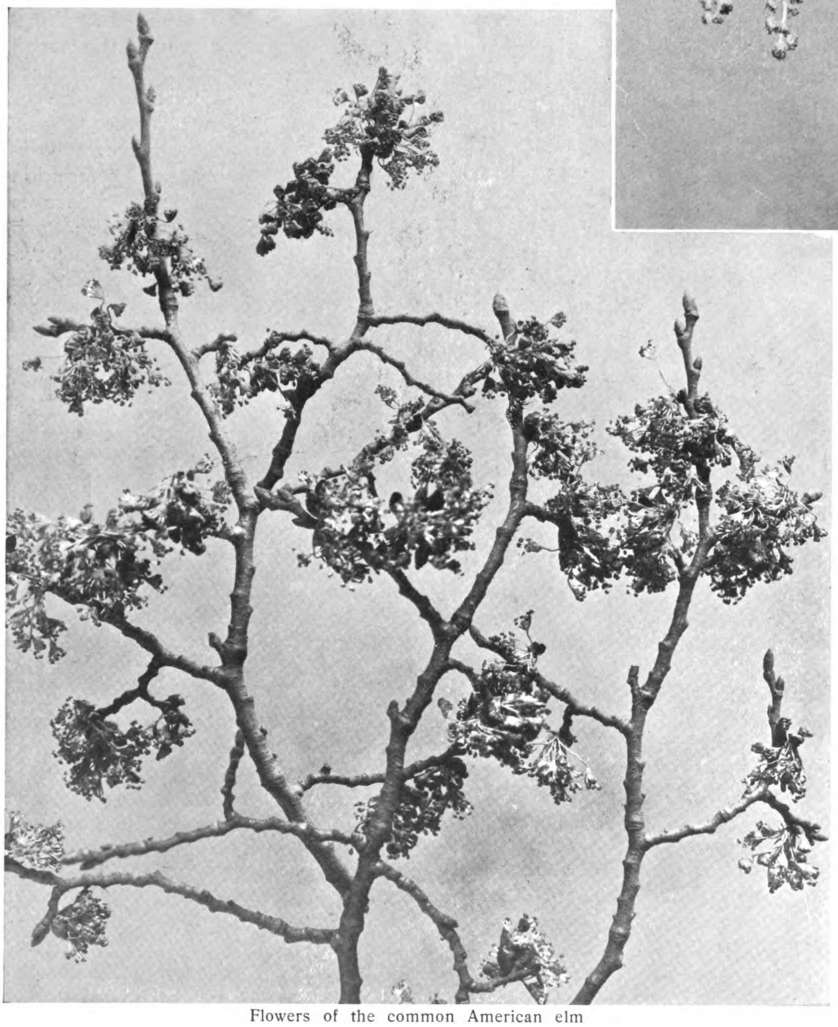
like blossom, that of the tulip tree, misnamed tulip poplar and commercially desecrated as whitewood, a good pulp-making tree! I would urge strongly the popular use of the euphonious botanical name of this glorious American tree. *Liriodendron Tulipifera* the botanists call it, and to my mind the mellifluous accents of this designation properly fit the stately glory and smooth richness of the tree itself. Very distinctly American is the liriodendron—though we are now told that it is also occasionally found in China—and it seems the friend of all the countryside, for it enjoys many locations and has apparently no enemies of fungus or insect as it raises its smooth, symmetrical columns from the hillside or the meadow. The leaf is distinctive and rich, with a substance and a fiber to it, as befits the finished product of nature, and it well adorns what I firmly believe to be the most beautiful native flower of our country. Late to appear are the tulips of the liriodendron,—one could hardly expect Dame Nature to bring such richness to fruition in the hurried rush of early springtime,—and thus not until summer is linking arms with its predecessor are these regal flowers produced. Look at them! Green and yellow and orange, delicately striped and mottled, with creamy stamens and a subtly rich fragrance! Modest they are, but typifying in the highest degree the elegance of the tree that bears them.



The blossoms of the Carolina poplar



Flowers of the common American elm

When summer is almost upon us the long racemes of the locust spread their whiteness and distribute their sweetness along the roadside. Travelers tell us that a single American locust is highly prized in Paris, but we have yet to learn that it is other than a tree whose wood is valuable for posts in eastern America. Some of us blossom hunters, however, have long been awake to its part in the garland of spring blossoms which the trees of America give us for a fresh and pure enjoyment with each recurring year.

An old-fashioned tree, often to be found in gardens planted a half century back, is the laburnum. It is not a native, but seems to fit well into the color arrangement of the natives. When its beautiful yellow flowers appear about the time of the blooming of the locust, (which it resembles in habit, foliage and form of blossom) one is struck with the peculiar appropri-

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ateness of its common name, for the long racemes do indeed form a "golden chain."

I can most heartily recommend to the searcher after nature's niceties an investigation of the tree blooms. There will be many surprises encountered, and material is to be found wherever a tree grows. To hunt wild flowers the dweller in a city must go far afield, and he usually does not go, therefore. But the trees are on the streets, and in the parks; they are everywhere about. A keen eye is needed, for the shy flowers of some of the commonest trees do not flaunt themselves—they must be looked for repeatedly. Watch the swelling buds in the spring; notice the various kinds of these buds; isolate certain of them so that when leaves emerge from one kind you will remember what the bud looked like. Perhaps no leaves will appear at first; some fat, plump buds will swell and burst into bloom, and these you need to remember. To cut a bud lengthwise with a sharp knife will often disclose the potential flower inside, snugly wrapped from harm, and ready to be energized by sun and sap.

Each family of trees has its peculiarities of bloom and bud. The birches throw out catkins of refined character, very different from those of the poplars. The willows have a multiplicity of blooms, none perhaps quite so interesting as the gold-tipped brushes of the "pussy willow." But all are interesting; study them!

An avenue of young Norway maples in full bloom

THE CHORUS

By DORA READ GOODALE

A day comes in the springtime
When Earth puts forth her powers,
Casts off the bonds of winter
And lights him hence with flowers;
And then by marsh and meadow
And by the silvery sea,
Goes up the red-wings' chorus:
On-caree!

Not to the choir of heaven
Those braggart throats belong—
Pan in the swampy thicket
Tuned their rough reeds to song.
A strain of roistering music,
A burst of rustic glee,
Sounds in the rippling challenge:
On-caree!

These are the sweets of April:
A frosty sky and sun;
Brown fields new-plowed at evening
And the slant rain thereon;
The first raw scent of pollen,
The first rare hum of bee—
These, and the blackbird's gurgle:
On-caree!

Hope is a roving gypsy
With laughter on her tongue,
And the blue sky and sunshine
Alone, can keep her young;
And year by year she lingers
Under a budding tree
To join the red-wings' chorus:
On-caree!

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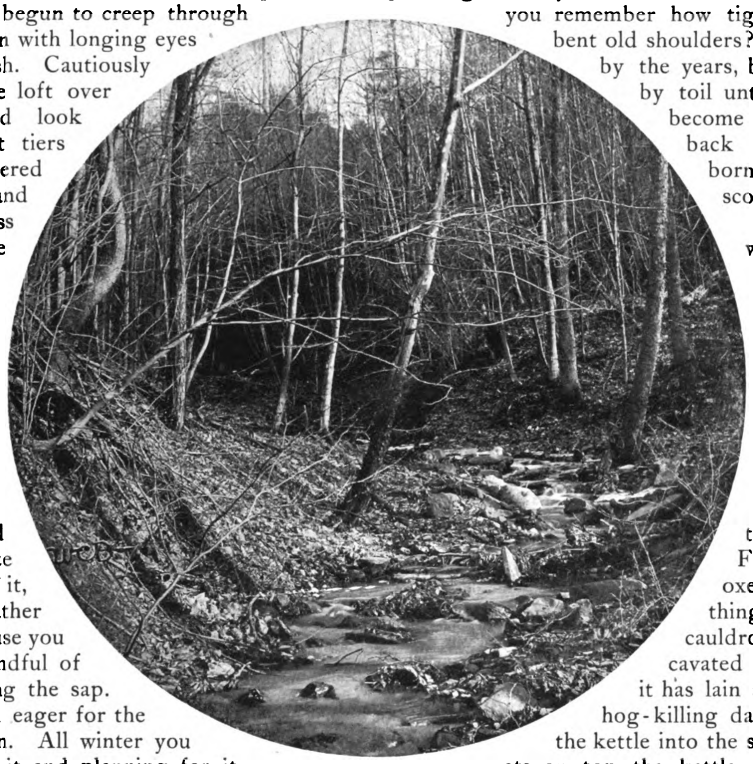
RECOLLECTIONS OF THE OLD SUGAR-BUSH

By BYRON R. NEWTON

I SHALL never see the sun shine bright and warm in March and watch the snow slip away from the hillsides, without going back in fancy to the old days of sugar-making,—the days of wooden buckets, cauldron kettle, and side-logs, the days of ox teams, deep snow, and neck-yokes. Do you remember them, my gray-haired friend in the city,—those dreamland days that can never come again?

Close your eyes and drift back with me over the years. A crust is on the snow. It crackles beneath your feet and sparkles in the gleam of the morning sun. Along the north side of the woods the drifts are still deep, but the impulse of Spring has begun to creep through your veins and you turn with longing eyes toward the sugar-bush. Cautiously you climb up into the loft over the wood-house and look greedily at the great tiers of sap buckets, covered with a year's dust and cobwebs. You press your face closer, in the hope that there may yet linger upon them the sweet odor of the sap. Here is one burned on the side. You recall vividly the day, two springs back, when it happened. The bucket was standing too close to the fire and when it began to blaze you threw sap upon it, and thrifty old grandfather reprimanded you because you did not run for a handful of snow instead of wasting the sap.



"The impulse of Spring"

You are restless and eager for the sugar-making to begin. All winter you have been dreaming of it and planning for it. You go out into the sunlight again. The snow is beginning to melt and the air is warm. Why not "get out the buckets"? Ask father. You find him at the barn and thoughtfully put it to him this way:

"Do you think the sap would run to-day, father?"

"Not much, I'm afraid," he says; "it's too cold yet."

"But don't you think we ought to soak the buckets?" you ask.

Father looks away toward the woods, then up at the clouds, and answers in his deliberate way, "Yes, it might be well enough."

What joy those words bring to your boy soul! Away you go to the woodhouse loft. Down come the buckets, tier after tier, and how you toil and sweat as you carry them out to the old spring, where they are filled with water at the gurgling spout, and piled one on top of the other in a great pyramid. Occasionally a hoop falls off as they are taken down the stairs, and then the old hammer and the narrow piece of iron are brought out and the hoops "drove." That is grandfather's job, and he frets because you handle the buckets too harshly. "I have used these buckets for thirty years," he says, "and they might be used for thirty more if they were taken care of; but they won't stand it long with such handling."

Poor old grandfather! You can see him now as he stands there in the woodhouse door mending his neck-yoke. He would not part with that neck-yoke for a thousand better ones. It is the one he has used ever since he came into the country. He used it in the old days, long before you were born, when there were no wooden buckets and the sap was caught in small troughs hewn out of pine logs. Do you remember that old neck-yoke? Do you remember how tightly it laid upon the bent old shoulders? It was stained brown by the years, burnished and warped by toil until it seemed to have become a part of the rugged back upon which it had borne the burden of threescore sugaring times.

Another day with warm sun and melting snow! Now for the woods! Over night the ice has frozen in the buckets out by the spring, and beautiful little crystal disks roll out as they are emptied. Stack them up now and load them into the wood-shod sled. Father has yoked the oxen in the barn. Every thing is ready. The old cauldron kettle has been excavated from the snow, where it has lain against the fence since hog-killing day last November. Put the kettle into the sled first, pile the buckets on top the kettle, now the huge "store-tub" filled with the wooden spouts, the tapping auger, the skimmer, the hanging chain, axes, crowbar and shovel; and, last of all, we must not forget the piece of fat pork to keep the sap from boiling over.

Whoop! Hit the oxen a cut with the whip, and let's be off. What a joyous trip! Standing to-day on the wharf, looking up at the majestic form of an ocean liner about to bear you away into the most fascinating scenes of earth, you could not feel that uplifting exultation, that excess of mad joy that thrilled your soul the bright spring morning when the old ox-sled with the sugaring kit was about to start for the woods.

Follow the road where the wood has been drawn out during the winter. The snow is growing softer and the oxen crowd and plunge as they sink into the softening mass; but never mind that so long as the sled remains right side up.

Ah, here we are at last! Here is the boiling-place, with the huge old maple leaning over it like an aged man. How many windy days and nights you have watched the

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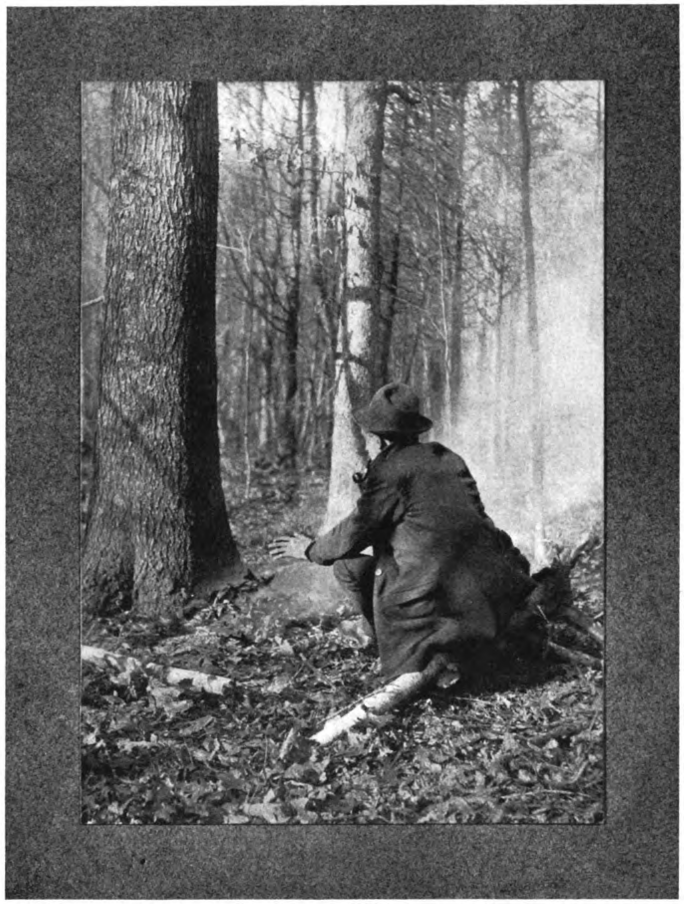
swaying top of that old tree as the sap foamed and bubbled in the kettle, and speculated what you would do if the wind should bring it tumbling down upon you! Now everything is hip deep in snow. Even the sidelogs, which were only half burned when the buds started last spring, are hidden from sight, and you have to shovel for them. Father tries the old hanging-pole and finds it rotten. Snap! it goes as he pulls at it, hanging on the standard-post, and a new one must be found. "Take that little birch there," says father. "It's straight and tough."

"No, not that, father; don't take that," you say, and he looks at you in a questioning way. You wade out through the snow to the tree and put your finger on the trunk. Your initials are cut in the smooth bark, and just under them are tiny scars where the baby hands of little sister Mabel tried to carve her name beneath your own two years ago. Just as the violets were disappearing from the hillside that year little sister's life faded away, and you think of the small grave where the birds always sing their sweetest, saddest songs when the summer comes.

"No, let that stand," answers your father. "I'll find another one." And he walks away out of your sight, and you notice as he goes that his eyes are moist and his poor old chin is quivering with suppressed grief.



"Now get some dry wood and start the fire"

The kettle is hung at last. Now get some dry wood from under the shed — wood that has been drying there for a year — and start the fire. It burns feebly. Fill the kettle with snow and let's wash it. Dig down at the roots of the old tree and find the scouring stones. That has been their place for twenty years. Scour and burnish the old kettle, for the bristles of the last hog-scalding still cling to it.

All is now ready for the tapping to-morrow. The sun has gone far down behind the hill, and the oxen, who have stood patiently chewing their cuds all the long day through, are eager to get back to the barn. Turn them about, and let's be off for the chores.

. . . . . .

A great longing comes over me these last days of April to go once more into the old sugar-bush and help "take in the buckets." The mists of forty years fade away and it all comes back to me. I feel the warm sunshine as it streams down through the treetops. I have laid aside my heavy winter cap, and the south wind, blowing over the deep snowdrifts farther back in the forests, is cool upon my brow. I hear the musical trill of the wood's birds. Far away where the hemlocks stand thick and gloomy, I hear the monotonous throbbing of a partridge's wings as he drums. Here and there the first green point of an early flower is peeping up through the matted dead leaves, and the air is laden with the delicious odor of the spring and the woods.

But in all there is a sense of melancholy and loneliness. Sugaring is over, the glad sugaring time of which we dreamed all the long winter through. Everywhere about the woods the buckets stand, stacked shoulder high in the roadways. Near them are the heaps of spouts, some old and timeworn with a score of sugarings, and some new and bright; and I recall the winter evenings when grandfather sat by the kitchen stove making them, singing as he whittled, and the smell of the pine shavings is again in my nostrils. The sap is still dripping slowly from some of the larger trees and it bubbles forth and trickles down the rough bark as I pull the spout. But it is no longer the cold, sparkling liquid that came from the old tree when first it was tapped a month ago. Far up in the branches the small brown buds have begun to show and the sap is no longer sweet and cold. In the buckets it is milky and souring as I pour it out to enrich the flowers at the roots of the trees. "It would make vinegar," grandfather says, but in the clearing the fields have become dry and the oats must be sown, so there is no time for vinegar-making this year.

Down at the boiling place I see the smoke curling up through the treetops and steam rises from the kettle. The buckets have been gathered in a great heap near by. Now comes the scalding. One by one the buckets are immersed in the steaming kettle and scrubbed with the wood-splint broom as they are taken out. Swish, swish, swish! It is forty years since I heard the sound of that old broom, but back from boyhood it comes to me now, and I see old grandfather there, squinting and puffing as a gust of wind whirls the smoke and steam into his face. The sidelogs which served for the last sap-run are nearly burned through, but we poke them up, making them do for this time, and I reflect that next spring when we come back to begin sugar-making we shall find the blackened

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ends of the old logs here just as we are leaving them now. The leaves of a summer and the snows of a winter will have fallen upon them, but they will be here to mark the spot.

And now the buckets have all been scalded and scrubbed. The old kettle has been swung away clear from the smouldering fire, and that too has been washed and scoured and is ready to be rolled under the shed, where it will remain until another year shall come around.

Hark! Listen, old man, sitting to-day at your desk in the busy city, and you will hear again those musical, clanging tones that rang and echoed through the still woods as the scouring stones beat and rubbed upon that old kettle; and you will remember too, one day in midsummer, when the runaway cows had led you into the woods, that you crept in under the old shed and smote upon the kettle, just to bring back again the sound of sugaring time.

But the buckets are loaded in the wood-shod sled, the old neck-yoke, the skimmer and the tapping auger are tucked in beside them, and sugaring days are over.

Do you recall that feeling of melancholy and regret as you looked back at the old boiling-place and saw the smoke rising, ghost-like, into the top of the great maple that sagged to the eastward, and how, in childish sorrow, you breathed a tearful good-by to it all? One more glance at the old spot as you emerged into the clearing, and then beyond you were the fields, and the plowing and planting and mowing, and down there beyond the fields was the smoke-dimmed valley, and in the valley the village, and in the village the girl you loved forty years ago, old man,—and you are that same boy.

SPRING SONG

By JOHN VANCE CHENEY

Squirrel red and mouse are out,
On the bank a muskrat scout;
Lopes the spotted skunk at will,
Foxes canter round the hill:
Showers are falling,
Crows are calling.

Limbered swamp frogs rouse and peep,
Birds in thickets flit and cheep;
Old man Mist, with shaggy locks,
Totters 'twixt the pasture rocks:
Showers are falling,
Snakes are crawling.

THE RECLAMATION OF A BARREN APPLE ORCHARD

THE CAUSES OF UNPROFITABLENESS IN APPLE ORCHARDS—A RECORD OF A PERSONAL EXPERIENCE—THE EFFECT ON FARM VALUES

By WILLIS T. MANN

We think of the fruitful apple orchard as one of the chief glories of autumn. The full-blooming orchard is the prophecy. By reason of the commercial value of its product, the apple orchard is often a chief source of income for the farmer. No fruit possesses more of the characteristics of a staple. Farm values are influenced by the success or failure of the crop. The value of the farm as an investment is often measured by the amount and character of the orchard upon it. Yet how often we see it neglected and unfruitful; unpruned, and a prey to the unchecked ravages of insects and diseases,—sod-bound, abandoned to goldenrods, yet picturesque even in its decay and desolation! People ask if there is any help for the old orchard. I know a man who has rented barren apple orchards for a term of years, and has made money from the crops that have followed a thorough renovation.

"Intelligent care results in a great increase in vigor and productiveness"

The problem of the renovation of an old orchard may or may not be a simple one. The mere statement of the conditions of the orchard would seem to suggest the solution. Still there may be local causes for unfruitfulness that may not be apparent. Perhaps the conditions may be such that renovation is impracticable. These questions have to be taken into account; yet intelligent care usually results in a great increase in vigor and productiveness.

A simple story of experience may have its lesson. In my possession are several small apple orchards aggregating twenty acres. The soil varies from a light, drifting sand to a somewhat heavy clay. The lighter sand is leachy, and the clay is tough and cloddy. A small part of these orchards had been pruned, sprayed, tilled and fertilized in an experimental way for several years with very satisfactory results. Another part, before it came into my

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possession, had been used for hay, pasture and various farm crops. Farm manures had sometimes been used and the soil,—a moist sandy loam,—was considered to be fairly good. The trees had received little if any pruning and they were very thick and bore many dead branches. Although most of the trees were twenty-eight years old, the largest crop on the three acres in this plot, previous to the adoption of improved methods, was about thirty bushels, mostly culls. The larger part of these orchards was covered with grass and weeds, and while in this condition many trees had been killed by being girdled by mice. No manure had been applied since the trees were set. It was supposed that the barrenness of the orchards was due mainly to impoverished soil.

"Yet picturesque even in its decay and desolation"

In the spring of 1894, these orchards, for the first time, were all brought under a uniform system of treatment which has continued until the present time. The trees have received moderate annual pruning, and the heads have been retained as low as possible, merely training high enough to permit the teams to pass under the limbs, the ends of the pendent branches being cut back to the desired height. Trees have also been removed when found to be encroaching on those neighbors which were designed to remain permanently, and spraying mixtures have been applied to keep the insects and fungous diseases under control. The spraying is done just before the flowers open and twice after they fall, and the material used is Bordeaux mixture and Paris green. The soil has been shallowly plowed, and well fitted as early in the season as conditions would permit, and it has been thoroughly tilled until midsummer for the purpose of conserving the moisture. Cover-crops have then been sown, although not always with satisfactory results. The simple statement of the bare outline of these practices may make little impression on the reader, but they are nevertheless the fundamental means of bringing old orchards into profitable condition. Feed them by improving the soil; save the moisture; keep them healthy; prune; add humus to the soil by means of cover-crops; then wait.

In the beginning, mineral fertilizers were used on all the orchards, except certain rows which were reserved as checks—for experimental purposes—in that part of the orchard which had never been manured. As the expected benefits from the use of these fertilizers did not appear, they were gradually abandoned except on certain rows, near the check rows, upon which the use of the fertilizers has been continued until the present time for experiment. The results of this fertilizer experiment have thus far been entirely negative, and it has been valuable chiefly in emphasizing the importance of certain other factors in the renovation of these orchards. The results seem to show conclusively that the mineral elements were not deficient in this soil, and if they were not formerly available it was probably due to the poor soil-conditions and to a lack of a regular and abundant supply of moisture. Improved soil conditions and the increased supply of moisture have rendered these elements more available, and the healthy leafage—due largely to spraying—enabled the tree to make profitable use of them.

The greatly increased vigor and fruitfulness of these orchards, continued through a term of years, furnish very convincing evidence of the value of these methods—good tillage, cover-crops, pruning, spraying. While it may be possible under other conditions to pursue quite a different

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course with favorable results, yet the objects to be attained must be essentially the same under all circumstances. The tree itself must be protected from its enemies, the food and moisture must be abundant and available, the leafage must have sufficient exposure to sunlight and the fruit must be protected from parasitic injury. A generation from now there should be no orchards to renovate. They should have been cared for properly from the start. In such orchards other fruits may be grown between the young trees if the owner understands his business; but the general farmer would better not attempt such double-cropping, unless he has had experience.

orchards, whereas a few years ago many of them looked upon their apple orchards as an incumbrance; yet in 1900 two-thirds of all the shipments of farm produce of every description from the township (in western New York) consisted of apples and apple products.

The result of these improved conditions has been a very decided advance in land values, and while formerly many farms were offered for sale without buyers, at the present time there are buyers, but no farms on the market. Many of these renovated orchards are of great age and were profitable in a former generation, but for many years crops had been so uncertain that they were no longer con-

"The full-blooming orchard is the prophecy

Perhaps no better testimony in regard to the results can be presented than a statement of the actual amount of fruit produced during the six years beginning with 1895, the year following the adoption of these methods, and including three "bearing" and three "off" years. The total amount of fruit sold during that time was 35,672 bushels—an average of nearly 6,000 bushels per year—the smallest crop being about 3,000 bushels. Of this total amount, 78.5 per cent, or 9,337 barrels, was classed and sold as number one fruit.

Further evidence of the effectiveness and value of these methods is found in the fact that the farmers of this vicinity have almost without exception adopted them and are practicing them more or less thoroughly, with a very marked increase in the health and productiveness of their

sidered profitable. In some instances such orchards were removed before the causes of failure were recognized and controlled.

The quality of the fruit on well-tilled and carefully sprayed orchards is worthy of special mention. One season a record was kept of the quantity of culls obtained from the picked fruit of Baldwins. In one lot of nineteen barrels of first grade fruit, two bushel crates held all the culls. In another case of fifteen barrels, a single bushel crate held all the culls. This was as early as 1894, when the renovation was not yet completed. The grading and sorting were also well done. Spraying alone has a wonderful influence on the character of the fruit, causing it to be relatively free from blemishes of all kinds, more uniform in size and color and of longer-keeping

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quality. The spraying, however, must be well done. There is no operation on the farm that requires more care and thoroughness. Much of the poor result from spraying comes from shiftless work.

"Shallowly plowed and well fitted as early in the season as conditions would permit"

It is just that we should acknowledge the debt of gratitude which we owe to the agricultural college and the experiment stations, which directly or indirectly have been leading factors in this great improvement by bringing to us a broader and clearer knowledge of the principles governing the production of orchards. So, perhaps, looking beyond the present, we may consider the renovated orchard as an evidence of a renovated man and the beginning of a higher type of agriculture — one in which all the manifold operations of the farm shall be guided and controlled by a mind trained to broader conceptions of the laws of nature.

"Other fruits may be grown between the young trees if the owner understands his business." An orchard with a cover-crop of crimson clover, in fall. Property of George T. Powell, near the Hudson River

APRIL'S STORY

By MARY VIRGINIA AGNEW

Blossomed orchards, winging birds,
Vernal raptures put in words —
Sunbeams flashing skies of blue,
Dreams of love mayhap come true —
Tell April's story!

A greenish blur, things growing lush,
A bluebird's note, a lilting thrush —
Wind-severed petals swirling high,
The twilight's misting lullaby —
Tell April's story!

Mother-hens, perturbed with pride,
'Neath whose wings wee fledglings hide —
June-like airs born with the light,
Sudden-kindled fires at night —
Tell April's story!

Violets, anemones,
Blithe nest-building in the trees —
Ferns in woodland ways unfurl'd,
Ecstasy — a ravished world —
Tell April's story!

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"He squinted up his eyes"

The sleeping fox

THE GRAY FOX

PERSONALITY AND HABITS OF THE DARING FREEBOOTER OF NEW ENGLAND, WITH PHOTOGRAPHS OF A LIVE, WILD FOX TAKEN SOON AFTER CAPTURE, BY THE AUTHOR

By HERBERT K. JOB

UP in the northwest corner of Connecticut is a tract of country that might well be called "the White Mountains of southern New England." From the valley of the Housatonic river there are almost sheer acclivities of upwards of a thousand feet, and one may find almost any sort of picturesqueness that is desired,—precipices, mountain-torrents, ice-gorges, trout brooks, forests, swamps, and vistas of winding river with splendid hills as a background. Here, within two or three hours' ride of New York city, various wild mammals still continue in goodly numbers. Foxes and wildcats wage war on farmers' chickens, and in their turn are outwitted by the trapper, along with minks, raccoons, skunks, and occasionally an otter.

Doubtless the red fox has always abounded, but it was only twenty years ago—according to expert trapper testimony—that the gray fox began to poke his grizzled nose into this preëmpted territory. He liked it and the flavor of Connecticut chickens, so, although naturally of southern predilections, he has made himself thoroughly at home, and is now nearly as numerous as his red cousin.

Judging by mere appearances, one would incline to believe that nearly all the foxes of the region are now grays, for the gray is given to "appearance," after the boldest fashion, seeming to court publicity, while the red has a far greater dread of man, and carefully holds himself aloof. Last fall there was a sudden epidemic of chicken-killing in the yards of the residences along the main street of the village of Kent. About dusk there would arise a clamor from some roost or coop. The family would dash out to see a dim gray form bound lightly over the fence, and find, next morning, the remains of the victim only a few rods away in some field of corn or tobacco. So bold did he grow that he would rush the hens by daylight before the owners' very eyes. Soon the whole neighborhood was "laying" for him. One night he put foot into one of my traps, but when I examined it in the morning, only a few gray hairs were left to tell the tale. After a while matters became rather warm for him, and he evidently decided to bestow his attentions elsewhere. This proceeding is characteristic of the gray fox. No red would dream of daring such impertinence. But the gray, if he

Characteristic attitudes of the gray fox when photographed in captivity

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takes the notion, will trot boldly up to a house in broad daylight, trusting to his legs to speed him safely on his way, in case his appetite receives check-mate.

Late in March or early in April the young grays come into the world in the hillside cavern or burrow, and in due time learn to spread consternation among the humbler creatures around them, wild and domestic. They like woods, rocks and hills. The red fox inhabits prairie or open country, as well as the woods, in some parts of his habitat, but the gray would pine amid such barrenness. Hence the species is often known as the "wood gray," in recognition of these tastes and habits.

The further careers of our young grays, however, illustrate the truth that fear, after all, may be a wholesome thing. It is better to lose fat than life. Even fox-craft cannot match that of man. Man sets his wits to work; the red fox loses fat, but many a gray his pelt. Gray can run fast enough to get to his hole when the dog barks, but not when the trap snaps. If he had a little more of the grace of reverence in his make-up, it would be better for him. So, for every red that is caught, the trapper gets a dozen grays, in this locality.

My friend, Mr. E. H. Austin of Gaylordsville, is a trapper and naturalist of no mean order, and is noted far and wide in the region for his ability to outmaster the vulpine cunning. One of his methods is to set steel traps beside carcasses of domestic animals that have been drawn off into the woods, and become the popular meat-market for foxes and other animals. Another resident who thus utilized the body of a fine hog of his that had died asserts that the foxes he caught more than returned the value of the hog. But this device maims so many of the neighbors' dogs that my friend prefers other ways.

Mr. Austin's favorite method is the following. Selecting one of the numerous warm spring holes, that do not freeze over, in the wooded swamps between the hills, he staples the chain of a common strong spring-trap to a rather heavy movable drag, lays the end of the drag in the water, and places the trap out in the shallow pool, covering the chain with mud, and putting a round piece of moss on the pan of the trap so that it just projects above the surface, like a little natural hummock. The bait, a piece of meat, is laid near the trap, out in the water, on the surface of which it is held from beneath by a little stake. Sometimes he sets the bait at this first visit, but the safest way, especially to catch the red fox, is to leave the trap without bait until after a storm has removed all trace or scent of the inevitable tramping about. Then he proceeds straight to the trap, leaves the bait, and goes directly away.

In time the fox comes, probably that same night, for, regardless of severe weather, during which many animals are quiescent, the foxes are regularly abroad. Several nights may intervene, however, before the spring is visited. Whenever the fox arrives, he trots all around the spring many times, viewing the situation from every possible standpoint. If satisfied that there is no trap, the problem next considered is how to get the meat without wetting his feet, which discomfort is especially the aversion of the red fox. Of course that little island out there is the proper place to step on. Snap! He fights and struggles hard, but the trapper finds him later.

One day I wrote to my friend that I wanted to photograph a fox. Promptly next morning came a telephone call, which I hastened to obey. There was a gray fox standing in the mud-hole, shivering, and with bedraggled fur tied up in curl-papers of frozen mud. What a barking and snarling ensued as the trapper pulled him and the drag to dry land, where I photographed him, just as he was! Then, pinning him by the neck to the ground with a forked stick, we tied him securely with cord so that he could not bite or escape, strung him by the legs to a pole, and carried him to Mr. Austin's house. A strap for a collar, with a small chain attached, gave me vantage, and I drove home, carrying him in a box.

For the next few days I had him chained by my barn, and managed to photograph him under great difficulties. He sulked, squinted up his eyes, refused to stand, upset my background every few minutes in his frantic efforts to get his nose behind it, leaped and snapped at me,—and twice got me! In these various struggles I broke two legs of my tripod, nearly wrecked my camera, and spoiled many plates. He acted like an unwilling criminal being photographed for the "Rogues' Gallery." But he was even more at a disadvantage than I. In the course of time his likeness was wrested from him. Then came a bottle of chloroform. The end of that fox was peace—and the taxidermist.

"He sulked"

"The end of that fox was peace"

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THE MAKING OF A COUNTRY HOME

BEING A SERIES OF PRACTICAL PAPERS, BY MANY WRITERS, ON THE POSSIBILITIES OF HOME-MAKING BY PERSONS OF MODERATE MEANS

I. CHOOSING THE SITE, AND GENERAL ADVICE

YOU ask for definite instructions,—where you shall locate, how large the area shall be, how you shall find a place to suit your fancy, what manner of house you shall build, what you shall plant. These questions, and many more, you must answer for yourself. If another answers them for you, the place is really not yours, even though you own it. If you do not know what you want, then wait until you do. The only reason for making a country home is to develop and build what you wish. In business, you are generally obliged to do what you must A definite ideal is the first requisite of success.

Do not be discouraged or dismayed by the expensive estates of wealthy men,—for I am now talking to persons of small means. You may have a summering place if you have only $500 for permanent investment. It may be remote, perhaps in a rural hamlet or on some quiet shore, —but for this it may be all the better. You can buy many a little farmhouse, with a bit of land, for that amount. Year by year you can add something here and there if you are content,—for contentment is better than facility with tools, because it gives you enthusiastic interest in all you do. The grass will grow as green for you as for the millionaire; the apples will hang as mellow on the tree.

The general region in which you are to locate is to be determined chiefly by its accessibility to your place of business, and by the kind of natural scenery that you most enjoy. If it is your desire to leave the city entirely for the summer, your country place may well be far away in mountains or on the sea-shore; but most persons cannot divorce themselves wholly from business for a protracted period, and the country place therefore should be within a short distance of town. Even if one is not to live in the country continuously for any length of time each year, the country place may afford opportunities for frequent respites throughout the busy seasons. Perhaps one never feels the need of relaxation more than in the early days of spring. Two or three days away from town now and then are wonderfully stimulating and restful. Many city people know the country only in the summer, but it is quite as attractive in the spring and fall, or even in the winter. In every direction there are attractive regions. It is surprising how much unimproved or even waste land there is within one to two hours' ride of our large cities. Many of these uncared-for areas make most attractive home sites in the hands of persons of good taste.

For $100, an acre of land can be bought here and there within easy access of our great cities. You can build a comfortable summer lodge for the remaining $400 if you have the knack; and you can make it attractive outside and inside if you have the art. If you have $2,000 and upwards to spend, you can make a permanent country home and can have land enough to consume your energy for digging and experimenting. Do not be ambitious for a large estate. The success of your place will not be measured by its acres nor by its architecture, but by its comfort. Your summer home is to lessen the strain, not to add to your cares. A pride to equal a wealthier associate deters many a man from living for a part or even all the year where there is room to build a fence to climb and time to take a full deep breath.

"The crispy-cool days of October"

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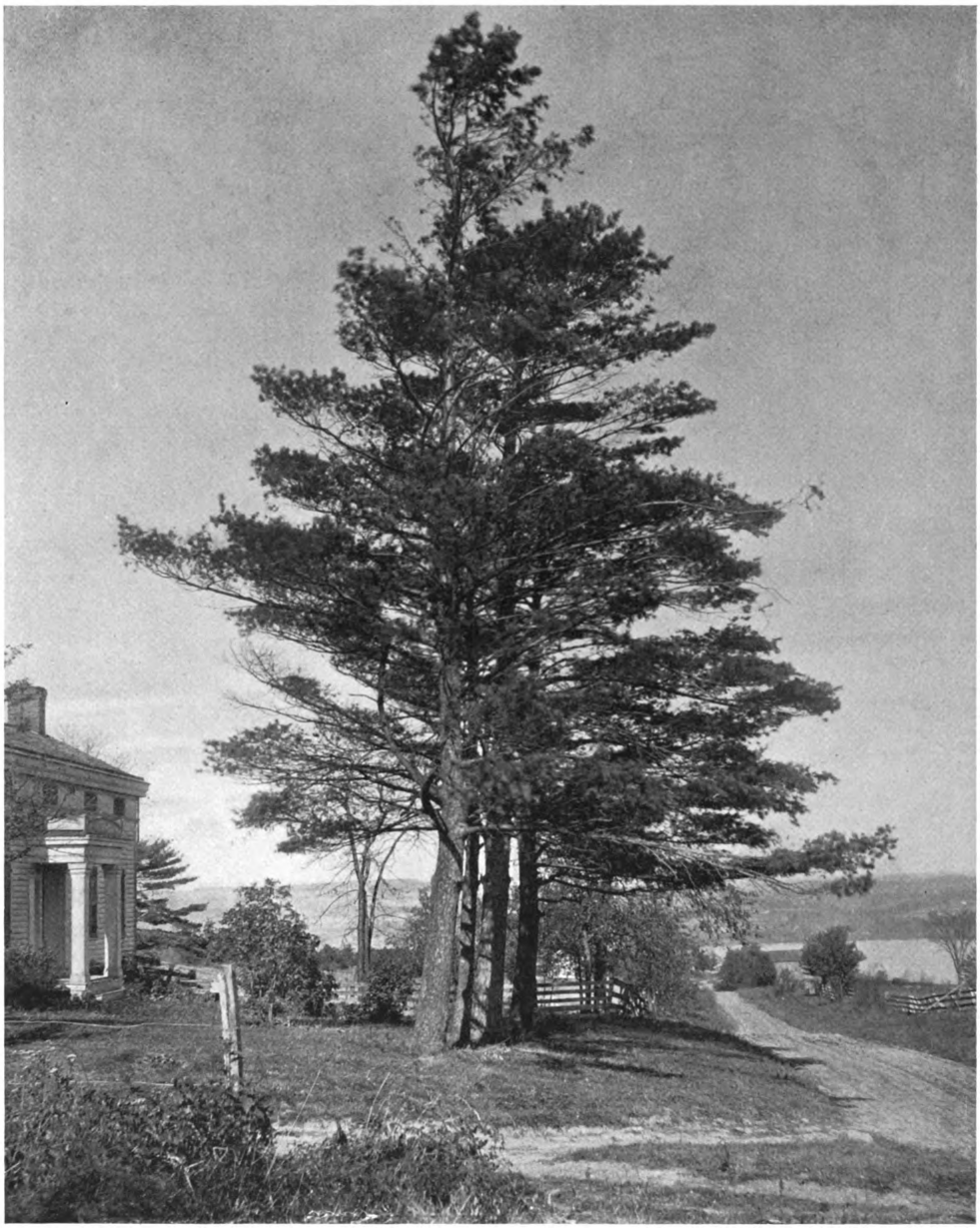
Then sit down and dream over the place you think you want. Picture the garden, the animals, the house. When you have arrived at a practicable ideal, then—but not before—go look for your place. Somewhere the place and opportunity wait for you. Correspond with friends in the country. Go to the village and inquire, and tramp over the country. Advertise in a city newspaper; you will be surprised at the number of replies you receive. If you are thinking of New England, secure the state lists of the so-called "abandoned farms" from the State Boards of Agriculture. Write J. F. Brown, North Stonington, Conn.; J. W. Stockwell, State House, Boston, Mass.; N. J. Bachelder, Concord, N. H.; C. J. Bell, East Hardwick, Vt.; George A. Stockwell, Providence, R. I. Correspond with farmers, or business men's associations in some smaller places, real estate dealers. Look up the matter thoroughly from many points of view. Decide at your leisure and expect never to repent. Be sure that you will have the best place in the world, and be proud of it. A good pigweed that belongs to you is better than an orchid that belongs to your neighbor.

Be careful not to buy too much land, particularly if you know nothing about farming. It is surprising what an appetite land has for money. Or if you want much land in order to control and preserve the natural features of a given area, then endeavor to improve only a small part of it at one time. It is just as necessary to grow into the business of farming as into the business of accounting or store-keeping. But I do not expect you to be a farmer in dead earnest; I only warn you against too great temptation. Be certain that you will have the best garden in the neighborhood, not the biggest. Begin with a flower-pot.

Plan for some leisure time for strolling over the fields with the children. This leisure you may secure if your summer home is not too laborious. Much of your pleasure will be in the out-of-doors; if it is not, do not remove to the country. You will come to enjoy the wind and the rain, as well as the shade and the sun. You will explore the roads and hills. You will follow the sheep under the trees at noon. You will know where the woodchuck burrows. You will find birds' nests. You will know the round of the year from the bursting showers of April till the crispy-cool days of October. The whole countryside is to be yours.



"Many of these old places have great possibilities"

Place high value on scenery. Choose your place with reference to its views. Scenery is worth more than good soil to the summer resident and suburbanite. This is why so many of the neglected and semi-abandoned farm lands

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"Your place is to be known for its homelikeness"

of the eastern states are so valuable to the city man. Many of these old places have great possibilities. There are great trees. There are old orchards. Even the old houses are often capable of being made into comfortable homes with small expense. A cleaning-up, straightening the porch, retopping the chimneys, painting, removing the decrepit fences and sheds, the opening of a generous lawn space,—such simple and easy matters as these are often sufficient to transform a forbidding place into an inviting one.

Preserve the natural beauties of the place. An old fence-row tangle may often be made into an attractive border-planting by removing the old fence and the ragged growths. You know that the plants are hardy. They will not need watering. You can go fishing without fear that they will die from neglect while you are gone. The old hen will not scratch them up. The neighbors' children will not steal them. Their very hardihood and commonness are their salvation, and these attributes should constitute a part of your delight in them. Bring in the wild trees and bushes. Colonize a few clumps of golden-rods and asters and skunk-cabbage and other wild things that you find on your rambles. I am not advising against the use of exotic plants; I wish only to emphasize the point that it is possible to make an attractive home without them. In some country places you will not need to plant; you will need only to cut out judiciously. It is remarkable what good effects may be had by letting things go for a time. Consider the bare old farmsteads all over the country: if the owner had expended half the effort in letting things grow that he has in cutting them out, the place long ago would have been habitable.

Make radical alterations slowly. Repair the old house leisurely. You will get better results and the fun will last longer. The probability is that after five years' time you will care less for radical alterations than you did in the beginning. It is always safe to plan for water supply in the house. The water may be raised by windmill, hydraulic ram, or a small engine; or, in hilly regions, it often can be piped into the house from higher levels. Porches are always to be advised. Make them broad. Leave plenty of room out-of-doors.

Other things being equal, choose the place that has the largest open space in front of the residence. You will have greater seclusion thereby. You will be able to have larger effects in planting and in arrangement of buildings. I believe in large front lawns for country places. But do not expect to mow these large areas with a lawn mower; usually it does not pay, except on fine estates. A meadow-like space is eminently in place in the country. The lawn at my own country place is 250 feet long and 100 feet wide—approximately half an acre. A small area about the house is mown often with a large hand lawn mower—I never use anything less than an eighteen-inch cut—and the remainder of the space is cut two or three times a season with a field mower that I borrow from a neighbor. There are no bushes on the space to interfere with the mowing and to spoil the effect of the lawn. When I bought the

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place, this whole area was covered with a tangle of bushes and small forest trees. The central space was cut out, leaving irregular margins. These native margins are now the border-plantings, framing the lawn. Not an ornamental tree or bush has been planted in these borders. At one side is a flower garden for the children, but beyond this I buy no ornamental plants. All the wild birds know this.

When you go to the country, buy a few good books on the rural subjects that you are specially interested in,—poultry, fishing, trees, farming, geology, fruits, flowers. Ask advice on specific points. It may save you time and money and contribute greatly to your success, if you pay an architect or a farmer for suggestions before you begin to build or to plow. It is well to have an experienced man inspect the place before you buy. Build substantially but not necessarily expensively. The house should be low and broad. Your place is to be known for its homelikeness.

This article is the first of a series of articles on country homes. Various persons will contribute. Plans of grounds, plans of houses, advice on gardens and fields, pictures of attractive homes of moderate cost,—these are to be some of the features.

"You will follow the sheep under the trees at noon"

THE CLOUDLANDS

PHOTOGRAPHING THE CLOUDS FROM MOUNT TAMALPAIS, NEAR SAN FRANCISCO

By OTTO VON BARGEN

SITUATED about ten miles to the north of San Francisco, on the bay of that name, is Mt. Tamalpais. There are few mountains of equal height whose summits afford a view of such diversified character, including ocean, bay and valleys. Although attaining an altitude of but 2,600 feet, it reaches this height in one abrupt sweep from the sea-level, leaving the view in all directions unobstructed. Being so close to the city it is readily accessible, and its slopes are much frequented by photographers and artists. The peak is easily reached from the base by a good trail about two miles long, or one can take the railroad, which follows a zigzag course of about nine miles and has 277 turns.

Mt. Tamalpais is particularly noted for the cloud and fog effects observable from its upper slopes. The summer fogs are formed along the coast and the prevailing westerly winds drive them in through the Golden Gate and over the low hills. They have a thickness of only 2,000 feet or less, and Mt. Tamalpais' summit stands clear above them. In winter, the tule fogs are blown coastwise from the Sacramento and San Joaquin river bottom lands by the easterly winds blowing at that season, but they are not so striking as the sea fogs, nor are they so high.

To observe the finest effects one should be on the summit at sunrise or sunset. The writer, with a friend or two, is in the habit of making the trip at night, choosing one when the fog is thick. We have made two dozen or more of these trips, and so varied are the effects in different states of the weather that the view is never twice the same.

Leaving the city at 11.40 P. M., we reach Mill Valley at the base of the mountain in about an hour. On alighting from the train here, it is still foggy, but we know it is clear on the mountain top. We now proceed on the trail. The latter, in places where sheltered by trees, is so dark that we are compelled to light matches to keep on the path. It is a novel experience when the fog line is reached, as there we pass from the cold and mist below into the clear, dry atmosphere above; the stars here shining with unusual brilliancy. The transition is very sudden — so well defined is the fog line that one walks in a few minutes from the fog into the clear air. It is so warm now as to seem like a furnace. One night when we went up, the thermometer at the Weather Bureau office on the mountain top registered 90 degrees at 5 A. M., while below it was less than 60 degrees.

On reaching the summit, at about three o'clock, we have a rest of two hours before sunrise. When the sun finally makes his appearance, it is truly one of the finest sights in the world: one longs for a method of transfixing the colors on the photographic plate, as no monotint can

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"Clouds above and clouds below"

"The peaceful lines of the clouds contrast with the surging, billowy ocean of fog"

"The bifurcated summit of Mount Diablo looms up as though but a few miles distant, although in reality more than thirty-five"

do justice to the scene — gold- and silver-lined clouds above, beneath a surging ocean of fog, and everything on a vast scale. The Sierra Nevada Mountains, 155 miles to the east, show their saw-edged summits outlined against the morning light with startling distinctness. The bifurcated summit of Mt. Diablo, to the southeast, looms up as though but a few miles distant, although in reality more than thirty-five. Mt. St. Helena, fifty-six miles to the north, and Mt. Hamilton, on which is situated the Lick Observatory, to the south, are easily discernible. The fog rolling below looks exactly like an ocean; where it strikes the distant mountains it is thrown up like stupendous breakers.

If you wish to photograph you must be quick, as these effects do not last long. The first photograph can be taken as the sun makes his appearance on the horizon and is about one-half up or less; if too high it will cause fogging of the plate. The exposure should be liberal, as the clouds and lower slopes which are included in the scene are not yet reached by the rising sun. Then, when the sun has risen above the horizon, one can proceed to take views in different directions. The best effects are obtained by pointing the camera as much as possible toward the sun, without actually including it, shading the lens-tube with a card, as only in this way can the surface of the fog be brought out, showing the undulations. If the camera is directed away from the sun, the fog will show a uniform white surface merging into the sky and indistinguishable from it.

If any portion of the land—that is, lower slopes or part of the upper peak — is included in the view, it is necessary to give a trifle longer exposure than when only clouds were taken, as the clouds, if over-dense on the developed plate, can be locally reduced; in this way one gets better detail in the land. If the latter still prints too dark, it must be "tissued" in printing.

A yellow screen to cut off the blue and ultra-violet rays, and isochromatic plates, are indispensable. The writer uses instantaneous isochromatic plates and a bichromate of potash ray-filter. With the screen an exposure three times as great is required as without it.

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If the clouds below are broken up, one can continue to take views for a considerable time after the sun has risen, as the land showing between the clouds will give sufficient contrast, but if the fog is unbroken, the time for photographing is limited to an hour or two after sunrise. After that, on account of absence of shadow, the view will be too flat. If there are clouds above the fog, one can point the camera directly at the sun, when it is behind one of the upper clouds, and secure a good sunrise picture.

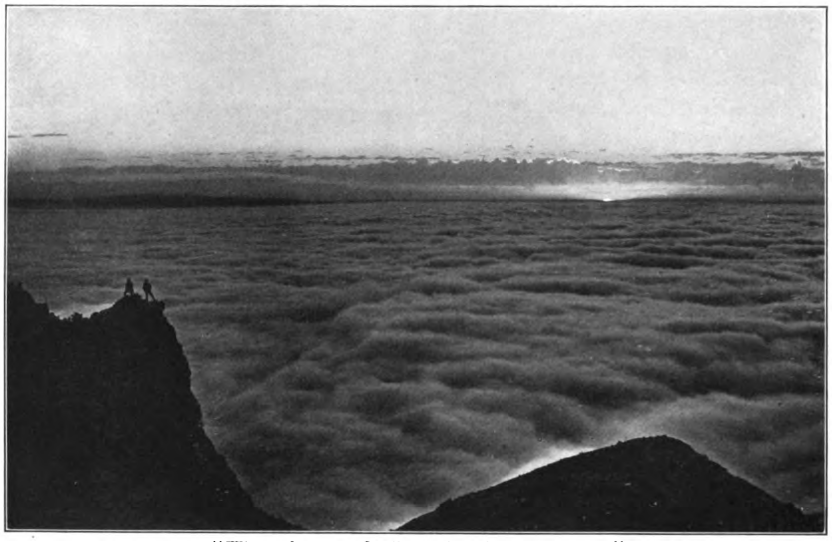
It is an impressive spectacle when one sees clouds above and clouds below. The peaceful lines of the clouds above contrast with the surging, billowy ocean of fog. Sometimes, as the mists roll away, mountain, valley, rivers, and the Golden Gate are revealed. Or, if your view-point is below the summit, the sentinel rocks, the bare mountain side and perchance a light-touched spray of foliage stand out vividly against the sea of fog overhead.

On one occasion, shortly after sunrise, the fog being higher than usual, we saw a most rare phenomenon,—the shadows of ourselves thrown clearly and distinctly on the mist in front of us, with a beautiful colored corona around our heads. For the appearance of this phenomenon, it is necessary that the fog should be very thick and close to the observer on the side opposite the sun, the observer himself being in the clear and the sun unobscured, so that the shadow may be thrown with full power on the side of the near-by cloud.

Another strange effect is noticed on clear days from this peak, when the shadow of the whole mountain is cast into the atmosphere at sunrise and sunset. By diffraction the shadow is raised. At another time, when we were descending the mountain, on reaching the fog-line, we saw a magnificent white fog-bow. As the slope on which we stood was very steep, we saw almost a complete circle.

We generally pass the day leisurely on the mountain, and return to the city in the afternoon. This is an outing easily taken and one from which a person returns to his regular duties with added zest, from inhaling the pure mountain air and drinking in the glorious sights.

"As the mists roll away, mountain, valley, rivers, and the Golden Gate are revealed"



"When the sun finally makes his appearance"

"The sentinel rocks, the bare mountain side and perchance a light-touched spray of foliage stand out vividly against the sea of fog overhead"

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"The mansion of the Sprague estate"

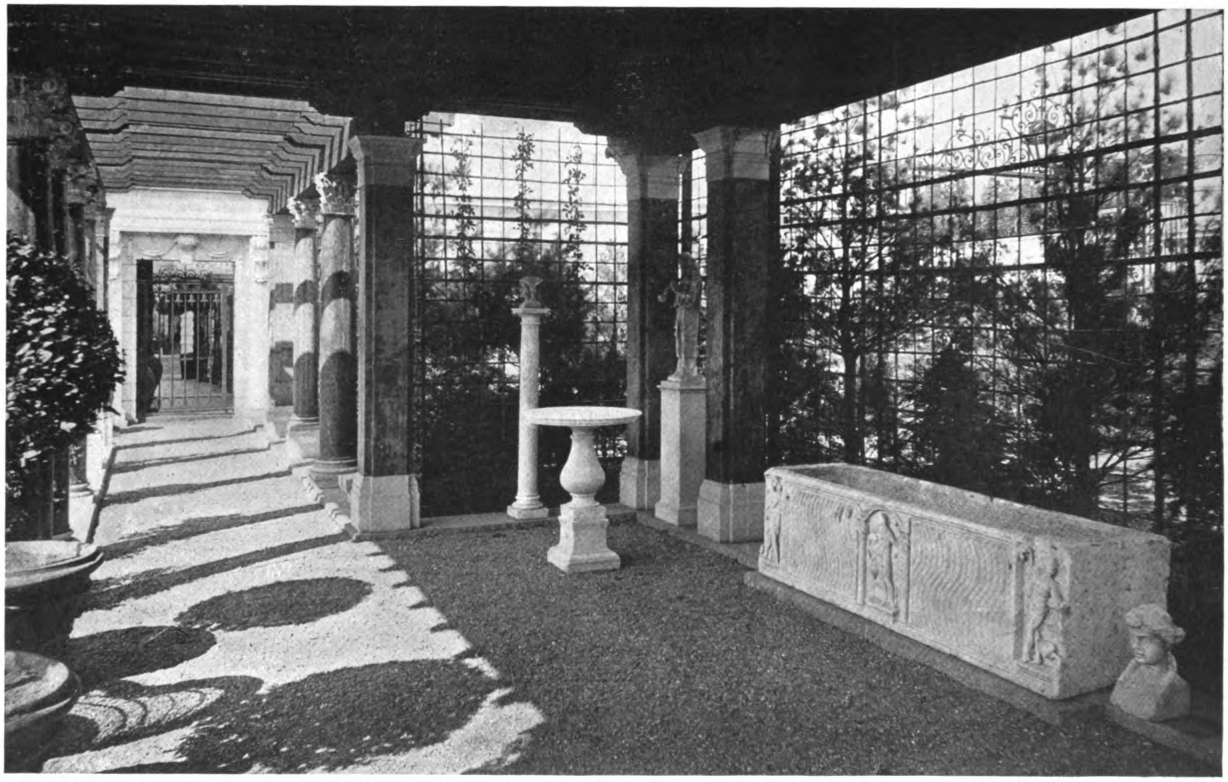
THE ART OF FORMAL GARDENING

AN ILLUSTRATION FROM THE SPRAGUE ESTATE—WHAT FORMAL GARDENING IS—THE TEACHINGS OF THE AUTHORITIES

By JESSIE M. GOOD

THE beautiful estate used to illustrate this sketch of formal gardening was the property of the late Charles F. Sprague, of Brookline, Massachusetts. It was designed by Mr. Charles A. Platt, who is considered to be the greatest American exponent of the formal garden. The Sprague place, known as Faulkner Farm, lies on a hillside. From the house itself one can see much of the one hundred and seventy-five acres comprising the estate. The great white frame house, with its colonial balustrade edging the entire roof, faces the east. Surrounding the house is a magnificent courtyard enclosed by brick walls and ornamental gates in wrought iron. From the courtyard ascends a fine stone stairway to a circular temple from which a view may be had of the entire estate. This temple, with its seven fluted columns, has a low-pitched roof of Italian tiles. It has great strength of plan and execution.

On the west is a superb grassy terrace from which a famous view of the surrounding country may be seen; from this terrace the great stone stairway leads to a grotto below. Some very beautiful arches support this stairway, and from the grotto, out of which water trickles over



"The pillared recesses which break the flat outlines of the walls"

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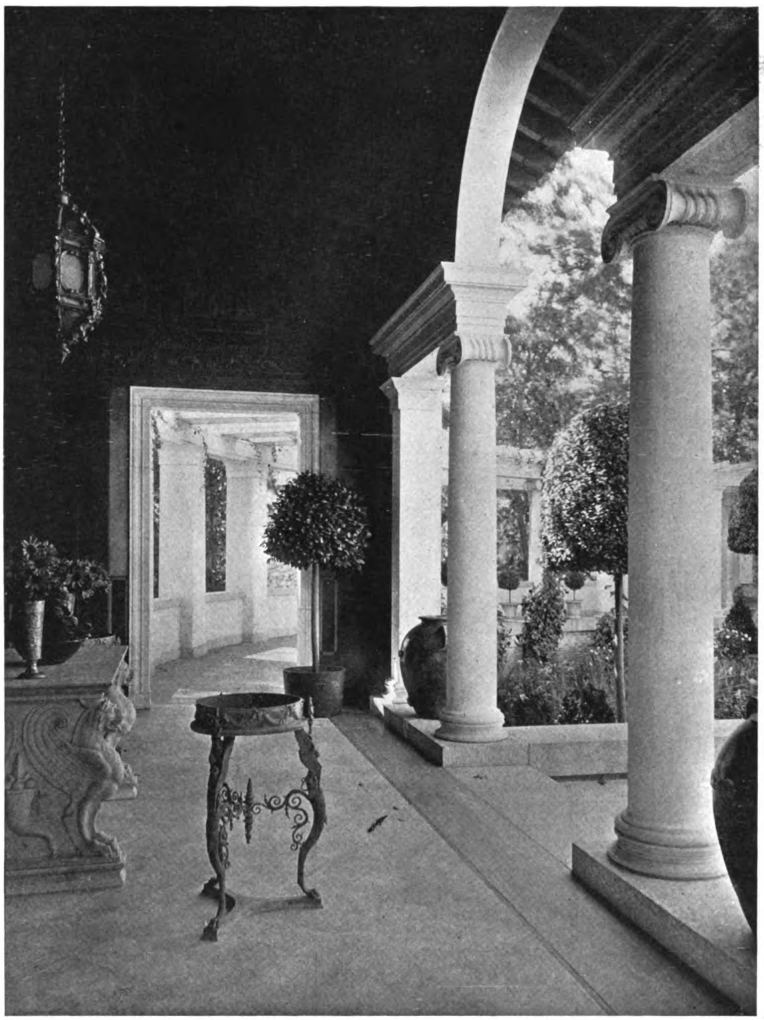
mossy stones, refreshing sights and sounds are experienced on a warm day. From the southeast corner of the house leads a beautiful vine-covered trellis, where one may walk or sit in the shade and feast his eyes on the rich formal garden which lies to the south of the dwelling, with the casino at the end. Four acres are comprised in this garden. The walls, walks, casino and curving pergolas and clipped or pleached bay-trees closely follow the best Italian models.

Observe the plan of the garden in its entirety, how it conforms to the outline dictated by Sir William Temple. There are grassy terraces surrounding the house, and the garden upon the best side of the house. The regular walks and flower beds, the latter only formal in shape, are crowded with bloom and not with formal set patterns in flowers. At one side of the great area stands the mansion, with three terraces behind it and a grotto still in the rear. At the left—as one looks toward the mansion—is the flower garden, whose central walk leads to a luxurious basin and thence to a casino; this flower garden is connected with the residence by a pergola. Directly in front of the residence is the large graveled court, into which, on either side, leads the broad straight driveway. Looking outward from the house, down a straight walk one sees the temple; and the right-angled walks lead through groves. The walks are pleached with bay-trees in the most approved fashion. There is a wealth of plant forms and blooms as perennial as may be in Massachusetts. Lord Bacon would find here all the flowers he chose for the garden for their constancy, color, and sweetness, as well as the best modern favorites.



A view in the pergola of the Sprague estate

The details of this garden, terraces and groves are perfect, from the manner in which one is led from one beauty to another, from one surprise to another, from statues gleaming from the background of green trees to the pergola, whose leafy shadows, dancing down between the pillars, invite you to follow and lead you into the cool depths of the casino, where, while you rest, you may watch the fish in the basin or revel in the wealth of color in the garden beyond. A tall, grilled iron gate in one of the walks seems to say that this part of the garden is private, but you find it only a device for adding beauty and variety to the scene and to tempt you to explore the glories which may lie behind it. Observe the details of the stone-capped wall inclosing the garden and the ornamental tiles set in the base of the walls at the ends of the walks; also the pillared recesses which break the flat outlines of the wall, the statues, the vases, the urns, the walks, the marble stairs, the seats. Nothing seems to be forgotten that might add to the architectural, historical or landscape perfection of the whole.

Such gardens are only for the very few. But may I not admire their beauty and be thankful that some one is able and good enough to provide this soul feast for me? The inability to keep from mentally calculating the cost of such a garden while straying through it is one of the strong arguments that the exponent of the natural methods of gardening brings to bear against formal gardening. It needs many expensive adjuncts properly to develop it. However desirable it may seem that the ground for a certain distance about a house should aid in carrying out the architect's plans, yet surely it is a pity when grass and flowers must needs suggest a corps of gardeners and a lavish outlay of money. This very fact, however, will aid in commending it to the wealthy. Formal gardening will probably be much used about city homes, for the relatively small size of the lots, the straight lines of the streets and rows of trees, and the obtrusiveness of the architecture, limit the number of curved lines necessary to the development of the natural method of gardening.

While the garden spirit is very much abroad among us, yet I fear it will be some time before we are so imbued with it as was the mechanic Alfred Austin tells us of, who always dressed himself in his best attire before going into his fifteen-foot-square flower garden to work. Dr. Scholz, who owned the famous garden at Breslau,

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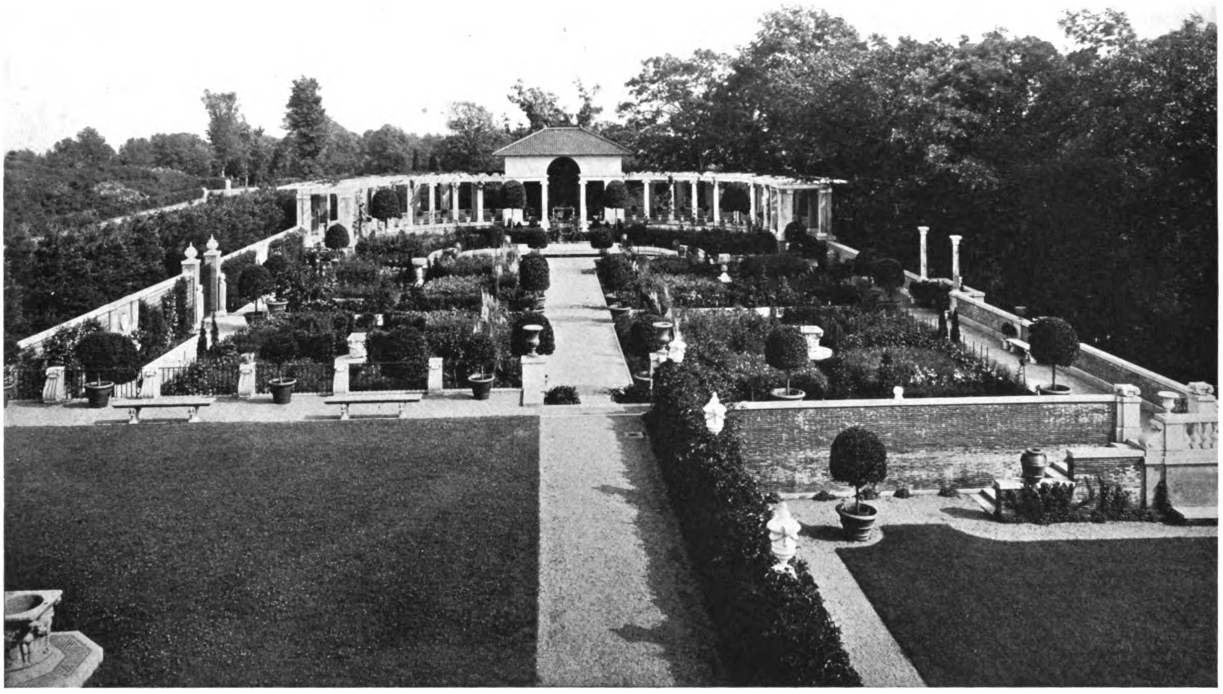

"The rich formal garden, with the casino at the end"

Germany, would have appreciated the mechanic's point of view, for to his famous garden-festivals none afflicted with a blemish in voice or face were bidden. This, in order that the feelings of the guests might not be hurt at the beauty of the flowers, and he wished also to honor the flowers by presenting to them only the most perfect human beauty. Such keen love was felt for his garden by the old Knight January in The Merchant's Tale "That he would no wight suffer beare the key save he himself."

The reverence of the mechanic, the exaggerated sensibilities of Dr. Scholz, and the jealous tenderness of the old Knight, are all phases of the garden passion which only sympathetic garden lovers can understand. We shrink from admitting alien souls with their maladroit comments, clumsy feet, and larcenous fingers within our one sacred "chamber roofed by heaven."

Many things have worked together to bring about the revival in gardening, chief of which is, perhaps, the very rapid increase of wealth of a large class of Americans. There is, after all, a limit to the comfort to be obtained from a house in town. The more splendid the house, the greater and more wearisome the round of social duties exacted from the owners, until in sheer self-defense and to regain the health lost in social dissipation it became the thing to go abroad each year for rest. The ancestral homes of Europe and the British Isles, and the extensive yet easy hospitality found in them, broadened the views of American visitors, who from each visit abroad returned more and more dissatisfied with our artificial manner of living. Some few there were who sold their American holdings and expatriated themselves; but the vast majority with true patriotism set themselves the task of remedying the defects found in our national life.

There was much to discourage the founding of country estates in America, or, I should perhaps say. not the founding of them but the living upon them. In the small European countries it is only a few hours by train to the great capital cities, making an interchange of visits for pleasure and business an easy matter. The roads are fine, forestry is practiced, and the country carries a well-groomed air in keeping with the finely cared for estates. The American founder of a great country home had long distances from the great urban centers to contend with, and a train service unused to catering to a suburban population. With the exception of parts of New Jersey, Massachusetts, and Ohio, our roads were, and are, execrable; while everywhere the land was stripped of its forests, country architecture ugly to a degree, and the farms uncared for. It took a fine extent of courage for a man to remove his family to the country under such circumstances as these and attempt to bring beauty out of disorder. But it has been done time and again. The trolley cars, the telephone, and convenient interurban and suburban communication is making of country life a more joyous thing; and from the vast estate of a hundred thousand acres topped by a French chateau, on down to the cottage with its half acre of ground, the country home is beginning to be recognized as an economic factor in American life. Each year as the wealthy are finding out the true pleasures of manorial living, the season spent in the country is growing longer. Many families come up to town for three months at most in the winter, while very few of the large colony at Tuxedo leave their homes for more than a few weeks at a time.

The evolution of the country home has brought a demand for suitable architecture and for landscape architects to plan the grounds about them. Hence the renaissance of the garden. That this revival is coming about by slow and natural methods augurs well for the return of landscape gardening to its proper position among the

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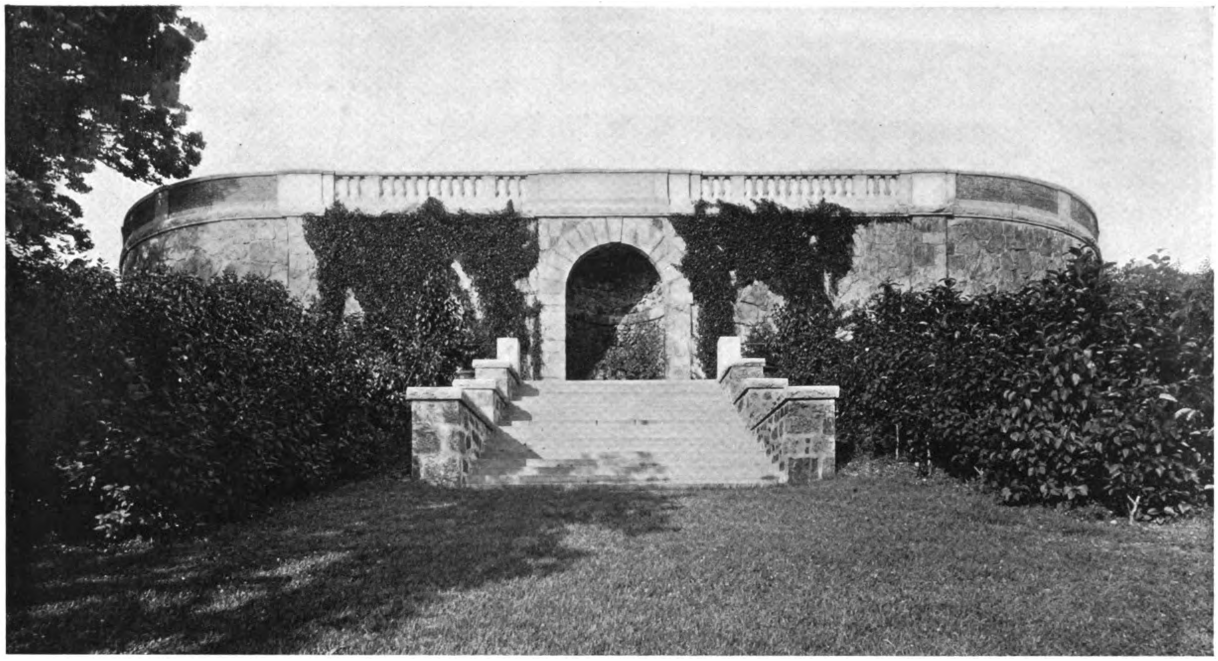
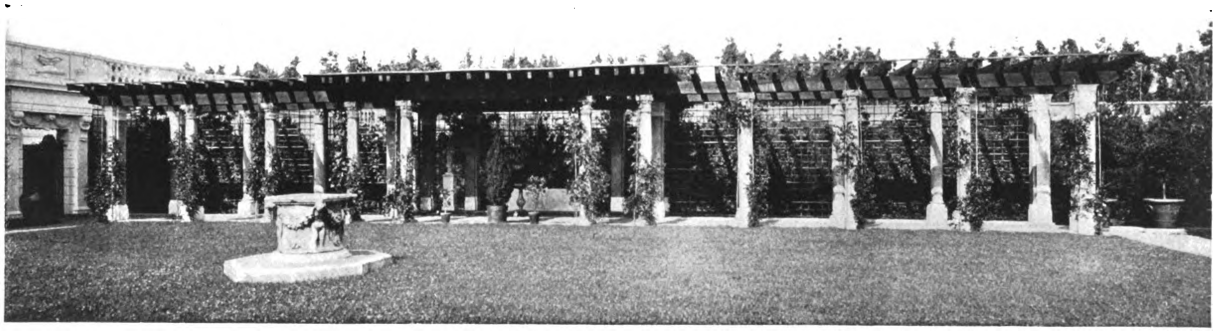


"From the courtyard ascends a fine stone stairway to a circular temple from which a view may be had of the entire estate"

great arts of design, which we are accustomed to account as three, namely, architecture, sculpture and painting. Not so of old. Landscape gardening was the art most nearly allied to architecture. The architects who designed the castles, chateaux and villas of England, France and Italy considered the groves, pleasaunces and gardens as integral parts of the plans for these great residences. The fact that these adjuncts of the house were planned by the architect, while it accounts for the mathematical exactness of the old formal garden and the architectural features which were their invariable accompaniment, will account also for the restful harmony often found in these old gardens. This restfulness is frequently spoken of by the American visitor to foreign shores, who feels, but seldom comprehends, that this restfulness comes from the fact that the brick or stone walls surrounding the house and gardens are of the same material and the same age as the dwelling, that their tints harmonize, and that the drives and walks were planned that the approach by them would add dignity and completeness to the noble edifice. This care is carried out in all the details. If there are yew hedges they will be trimmed in conformity with the architecture of the dwelling. You will not find a battlemented turret on the castle and a Gothic-trimmed hedge.

An architect of the Middle Ages would have felt vast astonishment if told that in the twentieth century men would build great dwellings without special regard to site; would, after the dwelling was finished, contract with one man to grade and sod the grounds about it, with another to lay walks, with another to plant trees and shrubs, and with a florist to plant flower beds, these flower beds being frequently patterned after the heavenly bodies and placed as an excrescence wherever a bright grassy spot in the front lawn could be found.

A period of wretched taste is rapidly passing away, and to-day, especially in and about our large cities, much tasteful and splendid planting is to be found. Especially is this true in the vicinity of Boston. Massachusetts boasts the most splendid specimens of the formal gardens to be found upon our continent. When I say formal gardens, I mean those estates patterned after the formal gardens of the period named above, in contradistinction to the informal style of grounds which came into vogue early in the eighteenth century. For nearly two hundred years the formal plan of gardening had fallen into desuetude. It was, however, too splendid an adjunct to a fine mansion not to be revived in these days when the best of all the past ages is being brought forward for our edification or our pleasure. Much is said and written against the formal garden, and with reason; but the true old formal garden still has a well-defined function and its numbers will undoubtedly increase.



"A beautiful vine-covered trellis"

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THE POOL AND THE CASINO.

"The cool depths of the casino, where, while you rest, you watch the

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IN THE FORMAL GARDENS, SPRAGUE ESTATE

fish in the basin or revel in the wealth of color in the garden beyond"

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HUNTING RATTLESNAKES WITH A CAMERA

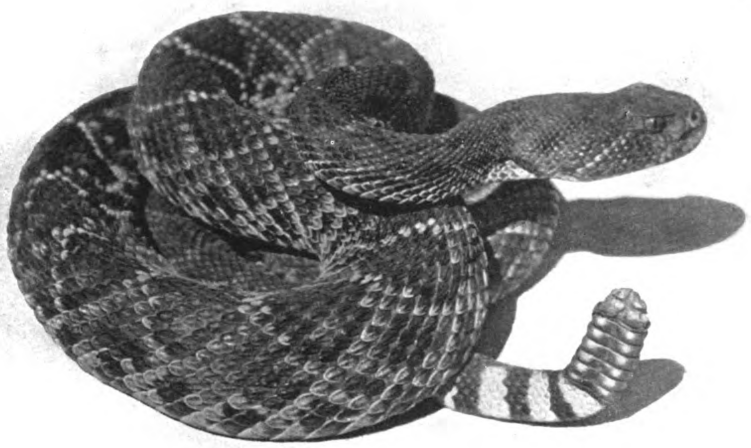
THE EXPERIENCE OF A NATURE-LOVER IN SOUTHERN CALIFORNIA — PHOTOGRAPHS FROM LIFE BY THE AUTHOR

By W. H. BACKUS

IT was up in the Big Pine Mountains of Ventura County, California, that I was following the trail of a grizzly which had come into a sheep camp the day before, chased the herder up on his stand, and killed a sheep. The trail led into a narrow gorge with very rocky, precipitous walls on either side, and dense brush in the bottom. As the brush was almost impenetrable, and would give one little chance of seeing "old Eph" in time to make a sure shot, I climbed up on a narrow ledge that jutted out a hundred feet or so, above the bottom of the cañon. Hanging on with one hand, I crept slowly along, taking every care not to make the least noise. Peering with eager eyes into the deep shadows of the thicket below, watching for any signs of movement, starting at every swaying branch or flitting bird, every sense on the alert, and the nervous tension at the highest pitch, I suddenly heard the shrill, locust-like rattle of a snake. It sent a sickening chill through my heart, causing it to stop beating momentarily and then go pounding violently against my side. The rattle was so extremely loud that I knew I was right on him, and a big one. But where? I could not see him.

I looked down to the ledge on which I was creeping,—no snake; under a projecting rock at my side,—still no snake to be seen, but this rattle always dinning in my ears and coming apparently from every direction. I lifted my head a little. There, about a foot away, on a flat rock at the height of my shoulders, was a big black rattlesnake, coiled up among some dead and blackened pine branches of almost the same color and marking as himself.

I did not stay there long — quite time enough, however, to see much and think more. One of the things that came flashing through my brain as we glared into each other's eyes during that extremely long instant of time was "What a picture the fellow would make!"

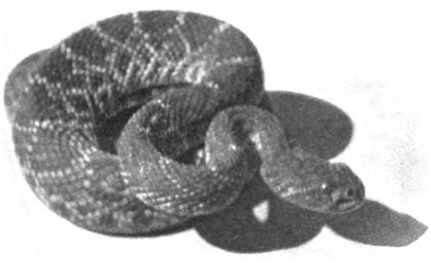


California rattlesnake coiled and alert. Crotalus atrox ruber

What an eye! Never before had I been so close to a free and angry rattler. I saw no blazing eye darting fire that I had read about, nor was there any of the terrible fury in it with which the timid deer turns on his pursuer when brought to bay. It was clear and brilliant, but it seemed to me cold and calculating, and oh, so fiercely intent!

Before I left that cañon I made up my mind that I would have a camera. Next summer found me on the road to the San Bernardino Mountains, armed with a 4 x 5 camera of the "press-the-button" type. A forty-mile drive and a pack of fifteen more over the mountains brought me to a fine camp on a trout stream.

It is strange when one is hunting any particular game how scarce it seems to be! For over two weeks I hunted the rocky cañons, the brushy open slopes and the meadows where rattlesnakes were said to abound. Not a single rattler offered to pose for me and show into how many graceful curves he could coil at a moment's notice. Late one afternoon, as I was getting back to camp after one of these unsuccessful hunts, I came upon one lying beside the trail. It was large and handsomely marked.



Ready to spring. Same species as above

The snake in action, the rattle in the act of vibrating. The reptile is looking towards the observer. Crotalus Lucifer.

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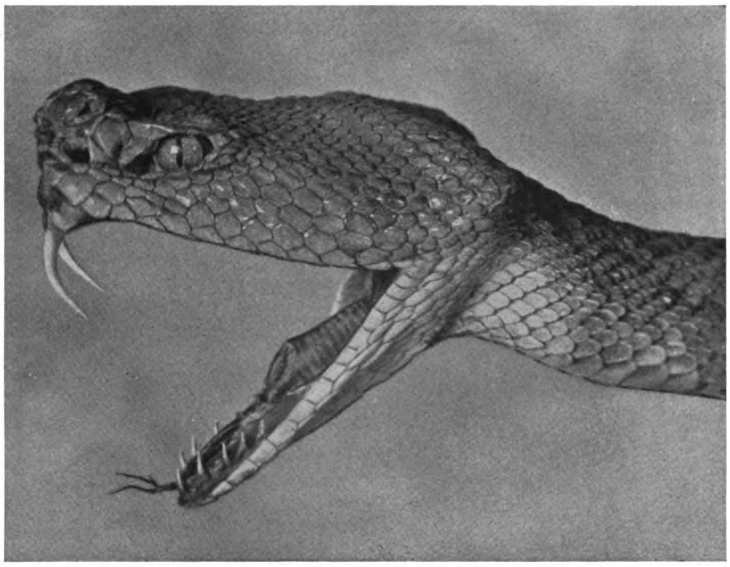
He was already coiled, and as I dismounted he began to sound the warning rattle. He stood his ground fearlessly, as is generally the case, knowing his deadly power and probably also knowing the fear in which he is held. The increasing darkness prevented any photographing on the spot, and the only thing to be done was to take him alive. After an exciting struggle among the rocks, I succeeded in pinning him down with a forked stick. Once when I was holding him by the back, several inches from the head, he drove his fangs into the stick and ejected the poison about four feet in a fine spray. At last, when the head was securely pinned to the ground, I seized him by the neck and dropped him into a canvas bag, and my first "model" was captured.

I had plenty of trouble in remounting my little bronco, who evidently knew a rattlesnake even if the bag was closed. I got on at last and she bolted down the trail on a dead run. Over logs and rocks, through greasewood and buckthorn, we went on as wild a ride as that of Tam O'Shanter, with camera banging me on one side and the rattlesnake, though captive, calling the long roll on the other.



Head of one of the California rattlers, somewhat enlarged. Crotalus atrox ruber

Selecting an open spot the next day, I spread out a large piece of canvas, in order to get a clean, smooth background. I set the shutter of the camera and turned the focusing scale down to two feet, as I had to work that close to get a picture large enough to be of any value. I then opened the bag and dumped Mr. Rattler out upon the canvas. At this unceremonious treatment he coiled up for a fight and began rattling.

Hastily grabbing up the camera, I tried to take a photograph, of him, when he struck the camera front, breaking one fang, as I afterward discovered. This negative was a blur, for I pressed the button with a convulsive grip. The next one was the same; in fact the entire set was a failure, partly from lack of knowledge of how to handle a rattlesnake, and partly from inexperience with a camera. The many reasons for failure are well known to those who have photographed animals of any kind.

After repeated trials with different specimens, I found it not only took infinite time and patience to get a characteristic pose that showed the best form of coil for striking, but that I had to approach with a steady easy motion till I got up to the right distance. Then I suddenly asked him to look a little more pleasant. "You are entirely too serious," I would say; "won't you smile a little?" This, of course, is paralyzing, and procures the right expression for a picture of a rattlesnake, if not for the human model. If my subject had any intention of smiling I nipped it in the bud, and got a look that was exceedingly dangerous. If any of the rattlers ever did smile I failed to recognize the expression, though they may have been smiling all the time with their tails, like a dog. I have a number of photographs in which the rattle must have been vibrating at the rate of fifty or sixty times a second.

I have now been studying rattlesnakes for several years, and in the summer of 1901 I went out better prepared than before to watch them and get photographs, but before I had fairly started I had the misfortune to be bitten by one. This cut my studies short and nearly ended them altogether, as I was far from help except a boy who was with me. But it has added to my interest, and I expect to go again next summer with a camera better suited to that class of work.

Now, as we have exposed our last film, and are safely back out of danger, let us take a look at this little-known and much-dreaded Ishmaelite. See the sharp and delicate fangs, through which run slender canals connecting with the ducts that lead to the poison glands. They are perfect hypodermic syringes, and models of effectiveness. When not in use they are folded back along the upper jaw, and covered with a fleshy membrane to protect them from injury. Back of each fang are several more in reserve, ranging from one full grown down to a mere germ. When a fang is broken the first one drops down into a socket alongside of the one holding the broken fang, and is soon tightly fixed to the maxillary bone and ready for business. The base of the broken fang drops out, leaving that socket vacant for another. Through these hollow fangs the poison, for which man has not found an antidote, reaches a wound. Its effect is proportional to the poison injected, to the depth and to the nearness of large veins.

Notice the pit that lies below and between the eye and nostril. For two hundred years and more this kind of snake has been under observation and yet no one can say certainly what is the function of this pit. And the rattle from which he takes his name,—how cunningly nature has provided for its renewal by adding a new segment each time he sheds his skin, replacing those that are worn or broken!

Finally, is he the vicious reptile he is generally thought to be? I think not. If he were, why did he not strike the fatal blow when we stood face to face on that rocky mountain-side, and I was in his power? Instinct tells him that man is his most deadly enemy, and yet he sounds his warning, frequently to his own undoing. Rattlers are killed each season in a mountain pasture that has been in constant use for over thirty years, but never has there been a head of stock bitten. He shows no desire for revenge by giving chase, however badly he may be injured — something not to be said of man and many animals. He is brave and chivalrous, but dangerous to the heedless.

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THE NEW HUNTING

THE world is full of animals and plants. Every animal and plant has the power to multiply itself many fold. Every one contends for an opportunity to live.

THE ANIMAL This contention forces the individual to live for itself. Self-preservation, it is said, is the first law of nature. The animal appropriates food, usurps territory, kills and even devours its contestants. It kills because it must. It is goaded by the whip of necessity. To live is the highest desire that it knows. Its acts need no justification.

MAN Man also is an animal. He has come up from the world-fauna. On his way he contended hand to hand with the other animal creation. He killed from necessity of obtaining food. As he arose above his contestants, this necessity became less urgent. He has now obtained dominion, but he is not yet fully emancipated from the necessity of taking life. Perhaps complete emancipation will come.

SPORT The old desire to kill — first born of necessity — still lingers. But now we kill also for "sport." Practically a new motive has been born into the world with man,— the desire to kill for the sake of killing. One generation of white men is sufficient practically to exterminate the bison and several other species. All this needs justification. The lower creation is not the plaything of man.

THE DOMESTIC ANIMALS We are still obliged to kill for our necessities. We must secure food and raiment. More and more we are rearing the animals that we would take for food. We give them happier lives. We protect them from the severities of the struggle for existence. We remove them from the necessities of protecting themselves from violence. We take our own. There is no question of morals. We give that we may take; and we take because we must.

FAIR PLAY To kill for mere sport is a very different matter: it lies outside the realm of struggle for existence. Too often there is not even the justification of fair play. Usually the hunter exposes himself to no danger from the animal that he would kill. He takes no risks. He has the advantage of long-range weapons. There is no combat. Over on the lake shore are great cones of ice, built up by the accretions of the waves. Several stalwart men have skulked behind them, and lie secure from observation. A little flock of birds, unsuspecting, unprotected, harming no man, obeying the laws of their kind, skims across the water. The guns discharge. The whole flock falls, the mangled birds struggling and crying, and tainting the water with their blood as they are carried away on the waves, perhaps to die on the shores. There is a shout of victory. Surely, man is the king of beasts!

THE NEW HUNTING But there is another and a fairer side to all this. The lack of feeling for wounded animals is often thoughtlessness. The satisfaction in hunting is often the joy of skill in marksmanship, the pleasure of woodcraft, the enthusiasm of being out of doors, the keen delight in discovering the haunts and ways of the nature-folk. Many a hunter finds more pleasure in all these things than in the game that he bags. The great majority of hunters are gentle and large-hearted men. They are the first to discourage mere wantonness and brutality. Under their hand, certain animals are likely to increase, because they eliminate the rapacious species. To the true sportsman hunting is not synonymous with killing. It is primarily a means of enjoying the free world of the Out-of-doors. This nature-spirit is growing, and there are many ways of knowing the fields and woods. The camera is competing with the trap and the gun.

THE NEW NATURE-KNOWLEDGE We are not to be understood as opposed to hunting with the gun or the rod. Every man has a right to decide these questions for himself. We wish only to suggest that there are other ideals. We wish to point out the tendency to know things as they live and for what they are. There was a time when animals were known mostly in museums, or in books that smelled of museums. We now know them in woods and fields. We know what they do, as well as what they are. Making pictures from stuffed specimens will soon be a thing of the past. Read any book of natural history of fifty years ago; then read one of to-day. Note the road by which we have come: this may color your own attitude towards the nature-world.

THE NEW LITERATURE A new literature has been born. It is the literature of the Out-of-doors. It is written from the world-viewpoint, rather than from the study-viewpoint. Man is not the only, nor even the chief, actor. Even the stories of animals of the old time do not have the flavor of this bright new literature. Not so very long ago animal stories were often told for the purpose of carrying a moral — they were self-conscious. Now they are told because they are worth telling. The real moral is the interest in the animal and the way in which it contrives to live, not in some extraneous literary appendage that

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tries to make an application to human conduct. No longer can one write a good nature-piece until he has intimate knowledge of the animal or plant in the wild, and has tried to put himself in its place. Perhaps the old school of literary effort is not losing ground; but it is certain that the new is gaining. The new literature is founded on specific technical knowledge, but it embraces all the human sympathies. It is the outcome of the study of objects and phenomena. The first product was scientific literature. The second is the lucid resourceful nature-writing of the present day. There are new standards of literary excellence.

THE GAME LAWS The awakening interest in the nature-world is strongly reflected in the game laws,—for these laws are only an imperfect expression of the growing desire to let everything live its own life. The recent revulsion of feeling against the shooting of trapped pigeons, as expressed in agitations before state legislatures, is an excellent example in point. It is gratifying that a prominent place in the discussions for good game laws is taken by sportsmen themselves. It is recognized that hunting for sport must be kept within bounds, and that it must rise above mere slaughter of defenseless animals.

GAME PRESERVES Another expression of this growing sympathy is exhibited in the reservation of certain areas in which animals are to be unmolested. It is a most significant fact that while many country regions are practically shot clean of animal life, sometimes even to songbirds, the parks and other public properties in cities often support this wild life in abundance. Usually it is easier to study squirrels and many kinds of birds in the city parks than in their native wilds. To this awakening interest in the preservation of animals is now added the desire to preserve the wild flowers. The future will see the wild animals and plants safely ensconced in those areas that lie beyond the reach of cultivated fields; and these things will be the heritage of the people, not of the hunter and collector alone.

This desire to protect and preserve our native animals is well expressed in President Roosevelt's reference to the subject when discussing the forest preserves in his message to Congress: "Certain of the forest reserves should also be made preserves for the wild forest creatures. All of the reserves should be better protected from fires. Many of them need special protection because of the great injury done by live stock, above all by sheep. The increase in deer, elk and other animals in the Yellowstone Park shows what may be expected when other mountain forests are properly protected by law and properly guarded. Some of those areas have been so denuded of surface vegetation by overgrazing that the ground-breeding birds, including grouse and quail, and many mammals, including deer, have been exterminated or driven away. . . . In cases where natural conditions have been restored for a few years, vegetation has again carpeted the ground, birds and deer are coming back, and hundreds of persons, especially from the immediate neighborhood, come each summer to enjoy the privilege of camping. Some at least of the forest reserves should afford perpetual protection to the native fauna and flora, safe havens of refuge to our rapidly diminishing wild animals of the larger kinds, and free camping grounds for the ever-increasing numbers of men and women who have learned to find rest, health and recreation in the splendid forests and flower-clad meadows of our mountains. The forest reserves should be set apart forever for the use and benefit of our people as a whole, and not sacrificed to the short-sighted greed of a few."

PREVENTION OF CRUELTY TO ANIMALS The enlargement of our sympathies is also well reflected in the many societies that aim to lessen cruelty to animals. This movement is an outgrowth of the rapidly growing feeling of altruism—the interest in others—which, in the religious sphere, has ripened into the missionary spirit and into toleration. The prevention of cruelty to animals is of more consequence to man than to the animals. They suffer less than we. Perhaps the movement is in danger here and there of degenerating into mere sentimentalism; but, on the whole, it is sane and potent, because it measures our increasing sensitiveness.

IT MAY NOT BE CRUEL Hunting to kill is not necessarily cruel. The best hunting is that which kills quickly. The poorest—for both the hunted and the hunter—is that which prolongs the struggle. Nature herself could be indicted for cruelty were not her practices dictated by inevitable conditions; but this fact does not release man, who acts largely as a moral agent. In nature, many animals meet violent or tragic deaths. The bird of passage that cannot keep up with its fellows is caught by the hawk or owl. The weaklings and the stragglers are taken. Raise the curtain of night and behold the tragedies. Where are the graves of the unfit?

THE RECEDING FAUNA The practices of any age are but the expressions of the needs and motives of that age. Much of the hunting is dictated by the desire of profits in money, and these profits often depend on fashion. Mere fashion has been the cause of the practical extermination of species of birds, but public opinion was finally aroused to check it. The demand for furs is leading to similar results. Many other species naturally perish before the continued onslaught of civilization, by means of which the native haunts are destroyed. We must protect that which we need to grow for our own use. It is inevitable that the animal creation, as a whole, shall recede as the earth is subdued to man. But too often this creation has fallen long before its time—fallen as a result of unnecessary killing.

THE SPIRITUAL VISION All the foregoing remarks are meant to illustrate what we believe to be an enlarging vision respecting our own place in the world. The point of view is shifting. The spiritual factors have increasingly more influence in shaping the course of our evolution. The emancipation of which we have spoken—the release from the necessity of taking life—will come, if at all, as a result of our enlarging spiritual outlook rather than as a result of agitations concerned with questions of diet or with any mere propaganda. It is said, on the other hand, that the conformation of man's teeth shows that a flesh diet is necessary, but this only indicates what our evolution has been, not what it will be. The evolution will come slowly; but whatever it may be, we have reason to believe that our points of contact with the nature-world will strengthen and multiply.

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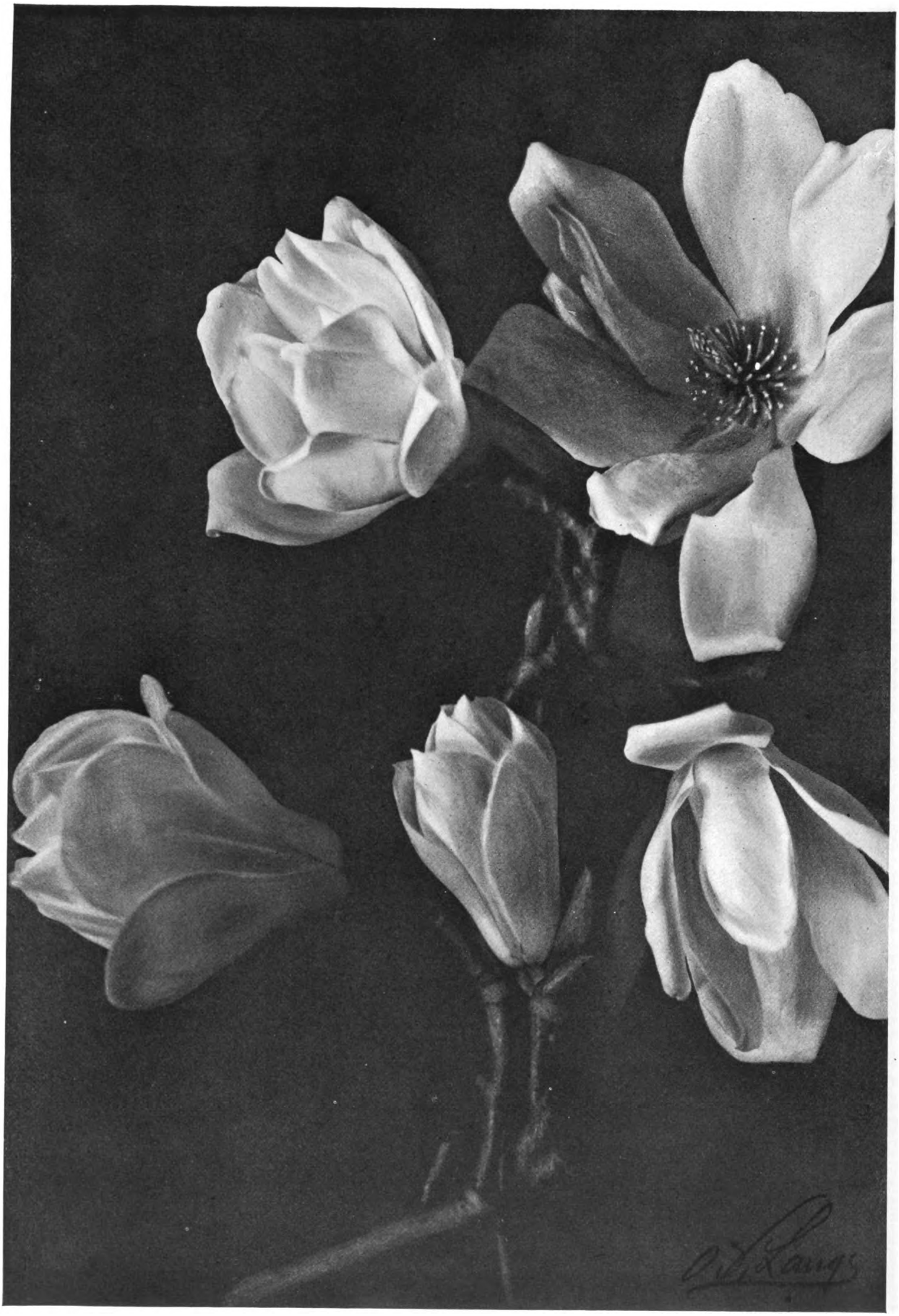

"The richly sweet blossoms of the magnolia." The Yulan Magnolia. (See page 189)

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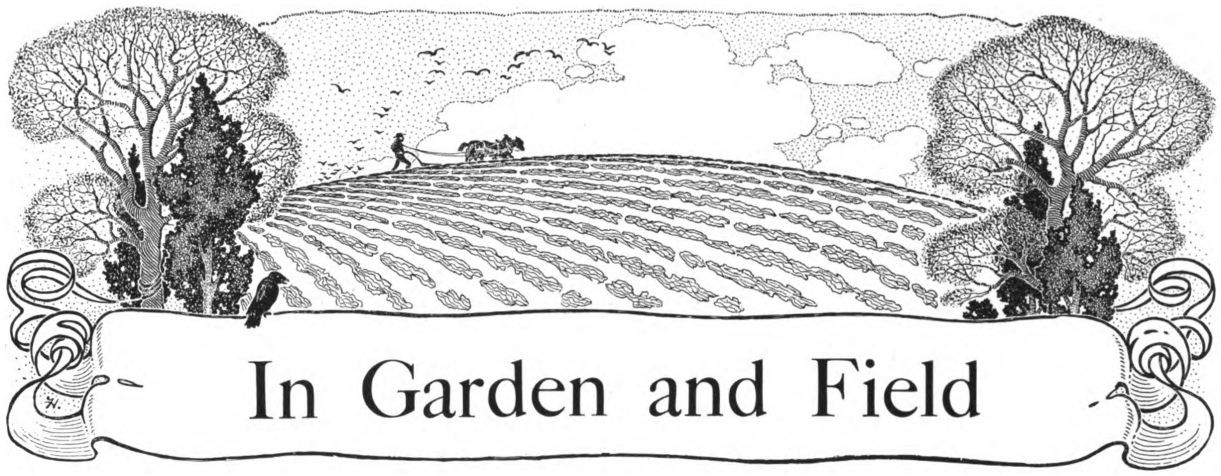

In Garden and Field

Sowing the Oats

I SUPPOSE the clouds are still moving, soft and dreamy, in the April sky, and the west wind is breathing fresh and cool over the old oat field on the side hill. I suppose somebody, with sunburned hands and weary feet, is trudging along behind the patient horses as the drag digs over the hard dry earth and the wind gathers up a cloud of dust, carrying it away into the neighboring woods.

I wonder if the rail fences are still there, and the dwarfed cucumber tree, at the roots of which I built a crude monument of stones one spring day long years ago? I wonder if the old drag still leaps sidewise, as it strikes a boulder or a pine root and barks the shins of the boy there to-day, as it bruised my own in the April days so long past? I wonder if it rudely interrupts his fond day-dreams as it broke in upon my own when I was that boy? I wonder if the white bags of seed oats are still scattered here and there over the dusty field where they have been unloaded from the stone-boat? And are the guide sticks, with the strips of white cloth fluttering upon them, standing there to-day in the fence corners? And is the good old grandfather there, striding across the field casting the grain ahead of him with pendulum-like movement of his brawny old arm?

I listen, that once again I may hear the dreary creaking of the old whiffletrees and the rattle of the harness as we turn about at the corners, and through the clear spring ether I see the white farmhouse with the noonday sun gleaming on the row of milk pans upon the cellar door and the old-time hunger of boyhood and spring-time come back to me. I hear the drowsy bleating of the sheep in the pasture lot on the hill, and wait for the clear musical voice of my sister calling to dinner.

—BYRON R. NEWTON

HOW TO MAKE A GARDEN—DIGGING IN THE DIRT

WITH the first break of spring, digging in the dirt is pleasure. When digging becomes a necessity in order to cause plants to grow, it is labor.

We enjoy the doing of things that other people cannot do; also of those things that have some special personal application to ourselves. Digging anybody can do. It is an exercise of mere muscular effort.

If this is your idea of digging and plowing, you will have little pleasure in making a garden, for much digging is necessary. When you really come to know what digging in the garden means, and what forces it sets at work, you will enjoy it—up to the limit of your physical powers—because it will be intellectual occupation. You will learn to economize muscular effort when you once understand the philosophy of tilling the land. Blind work in the garden has driven many a boy from the farm. Do you remember the fenced-in little garden, into which a horse could not enter, with onions and parsnips and "pusley" growing in hostile confusion on those pretty little beds lying between narrow sunken walks? Yes; well, they are the gardens I mean. Those beds always needed weeding, and the weeds were thickest and toughest-rooted on the Fourth of July, circus days, holidays and the blistering afternoons of summer. There was no idea of tillage; it was all weedage. More effort was expended merely in fingering out the weeds than all the turnips and carrots were worth; and as soon as the weeding made the tender things visible, the bugs laid quit-claim on the whole bed. If those gardens had been laid out in long, comfortable rows so as to allow of the use of the wheel hoe—if not of the horse cultivator—there could have been efficient stirring of the soil as well as the mere killing of weeds; and then there might have been some fun in raising beets and parsley. But there was discipline for weeds and boys in the old checker-board garden!

WHY WE TILL

To till the land is to stir it to the end that plants may thrive. In our loose colloquialism we speak of this practice as cultivating; but cultivation comprises more than tillage. We till the land for the land's sake, not primarily to kill weeds. In the best-tilled lands, weeds have small opportunity to grow. Land that is wholly clean of weeds may need tillage quite as much as that which supports an usurious growth of them. We till—

1. To improve the texture or physical condition of the soil;
2. To hold and save the moisture;
3. To promote and hasten chemical activities, and to make it possible for the countless micro-organisms to live and thrive;
4. To kill plants that we do not want—weeds;
5. To enable us to get the seed into the land and in some instances to get the crop out of it. These two last are sometimes considered to comprise the whole art and purpose of tillage. In such cases stirring the land is interesting only when it is of short duration.

Texture is as important to good soil as it is to a piece of dress goods. The table on which I write contains an abundance of plant-food, but the table will not grow plants: it lacks the proper texture and the moisture. The adjectives that farmers and gardeners apply to good and poor land are suggestive of texture rather than of richness in plant-food, as "mellow," "mealy," "friable," "loose," "crumbly," "warm," "quick," "cloddy," "hard," "dead." Even when one says that a soil "looks rich" he does not refer primarily to its plant-food content; by experience he has learned that a soil that "looks" mellow, soft and dark-colored is capable of growing good plants. The superlative benefits of stable manures usually arise more from their ability to improve the texture of the soil than to add to its richness in chemical plant-foods.

Without water, plant-growing is impossible. In most parts of the older settled regions, there is sufficient rainfall to maintain good crops. But this water must be saved. The soil must be put in proper condition to receive and hold it. The soil should be loose and mellow, for such soil has capillary power and thereby holds much moisture. The greater the depth to which this fineness extends, the greater the amount of moisture that can be held. If the soil contains a liberal supply of humus—secured from vegetable matter, as stable manure and green-crops and litter turned under—it has greater moisture-holding capacity. If lands are hard and bare when winter comes, much of the precipitation flows away as surface wash. If the soil is newly plowed or spaded in the fall, the rain and snow are held and surface drainage is lessened. If the soil contains a cover of vegetation, much of the rainfall is held until it can soak away. But the amount that is held depends, as indicated above, by the mellowness and depth of the soil. The water-table is the region of standing or free water in the soil.

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It is the bottom of our dish-pan. The lower the water-table the greater the capacity to hold capillary or hygroscopic water,—and this water is that which is used by most agricultural plants. The water-table is lowered by deep tillage, underdrainage, the growing of deep-rooted plants. The deeper the water-table the less likely is the land to become muddy—for mud occurs when the dish-pan is full or runs over.

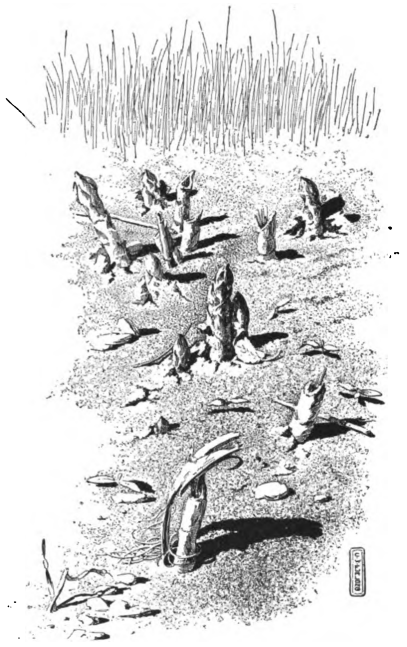
Once having trapped the water, we must keep it. We do this by lessening evaporation from the surface. Spread a mulch over the land. The cheapest mulch is loose, comparatively dry earth, and this mulch can be secured by frequent shallow stirring of the surface soil. This is the prime value and philosophy of surface tillage,—to make and keep a loose earth-cover. The soil never should "bake." When this mulch is well maintained—by rake or harrow—weeds have no opportunity to grow. Weeds advertise the faults of the farmer.

HOW WE TILL

We till (1) to prepare the land, (2) to maintain its condition. On hard lands, preparation-tillage usually should be deep in order to deepen the water reservoir and to increase the foraging area of the roots. On loose and sandy lands with no evident water-table, deep plowing or deep spading may be unnecessary unless it is desired to work manure deep into the soil. Some persons have taught that deep plowing is a principle, but it is only a practice.

But whatever the depth of preparation-tillage, it should be thorough. Work up the soil carefully; then go over it again; then again. Good preparation is worth more than fertilizers. In fact, fertilizers are valuable only when the soil is in such good condition that the plants have a chance of thriving. Till first, and add plant-food afterwards.

If the land was not broken last fall, spade it or plow it as early as possible this spring, in order to prepare it to hold the spring rainfall. Put on the surface mulch with the rake or harrow, to keep the moisture in the soil. Even if the crop is not to be planted until June, the land should have surface tillage from the time that it is dry enough to work. Hold the moisture against the time that it is needed. Many persons fail with the crop because they lost so much moisture before the crop was planted that there was not sufficient left to carry the plants to maturity. In the early season, the "spring fever" is on. We really want to dig. Take advantage of your own ambition: do the hardest labor first; merely keep the land in condition during the dog-days.



125. "The asparagus punching up the mellow earth with joy"

The novice should be cautioned not to stir the land when it is wet, particularly if it contains much clay or silt. When land is dry enough to crumble, it may be worked. Stirred when too wet, it may become pasty and lumpy; the texture may be injured rather than improved.

126. "The crumbling furrow will suggest a thousand problems"

Persons often ask what is the best tool for tilling the surface of the land—to make the earth-mulch. The best tool is the one that does the work best and expends the least amount of energy in doing it. On hard soils, a spading-harrow or disc-harrow may be the best tool for the first tilling after the plowing is done. A spring-tooth harrow may then follow. For the final fitting, a smoothing-harrow or a weeder may be best. The point is that the kind of tool must be selected with reference to the soil and the result to be accomplished.

In gardens, save the moisture by means of frequent surface raking between the plants. Every week, at any rate, it is well to rake the surface thoroughly, even though the soil is dry and weedless. After a rain always stir the soil before it bakes. Do not carry water in pails or run it through a hose, until you have saved all you can of that which falls from the clouds. Water your garden with a rake.

Perhaps these random remarks will open a new world of interest to you. I hope you may some day understand the subject so well that you will till the soil for the fun of tilling it, not merely because tilling is necessary nor even because it affords mental and physical relaxation. You will follow the plow with a new sensation. The crumbling furrow will suggest a thousand problems. You will hear the plants laugh. The soil will have a new meaning to you. Luther Burbank wrote me the other day that I should see his garden with "the asparagus punching up the mellow earth with joy."

SPRAYING

LARGE or small, every place that attempts to grow plants should have a spraying outfit. For a few plants of small stature, a bucket-pump or a knapsack outfit is all that is necessary. For a place of an acre or more, or to reach the tops of trees, a strong lever-handle force-pump is to be advised. There are many good pumps. Look up the advertisements in the agricultural papers and send for circulars. People ask what is the best pump and best nozzle. There is no answer to this question. What is best for one use may not be best for another. What is the best wagon?

For fungi (plant diseases) Bordeaux mixture is the standard material to be sprayed on the plants. It is a compound of blue vitriol, lime and water. Ask your experiment station for a bulletin giving full directions for making it, and when to apply. If you are expecting mildew or leaf-blight, spray before the disease appears. Spray until the tree is covered, even if it is blue. For insects, Paris green and the kerosene emulsions are standard materials. Paris green or other arsenites are used for all biting or chewing insects, as potato bugs, apple worms, caterpillars. For scale insects and aphis, spray with kerosene compounds.

DAFFODIL AND CROCUS

I wonder if the Daffodil
  Shrinks from the touch of frost,
And when her veins grow stiff and still
  She dreams that life is lost?
Ah, if she does, how sweet a thing
Her resurrection day in spring! . . .

A wizard must have passed this way
  Since—was it only yesterday?
Then all was bare, and now, behold,
  A hundred cups of living gold!

—EMMA C. DOWD

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THE PLANTING OF SCHOOL GROUNDS

PLAIN ACCOUNT OF RESULTS ACCOMPLISHED LARGELY BY CHILDREN IN BEAUTIFYING SCHOOL YARDS AT ROCHESTER, N. Y.—SUGGESTIONS TO THOSE WHO WOULD BEAUTIFY THE PUBLIC SCHOOL PROPERTIES

SCHOOL buildings are the only ones that are "finished" and turned over for occupation with a yard composed of a conglomerate of the indigenous yellow clay and the debris accruing from the digging of the cellar to the tinning of the roof. If they are leveled off, it is a concession. These barren blotches are dignified by the name of "school yard." There is a lofty and traditional idea of school yards as play-grounds, that exists in the imagination of many people, which certainly has no prototype in the 7x9 spaces given to most schools. We have been asked where the children will play if we are so cruel as to cover the yards with grass. It does not occur to these idealists that their own children at home, and the children in the parks, play on the grass. They do not remember that there is very little time for play, as the children are not allowed there out of school hours and the intermissions, if any, are short. Neither do they consider the aesthetic side of the child's nature, and that the majority of them have only the streets in which to develop it.

127. What is aimed at.—A vista of hardy herbs, shrubs and trees

Less than two years ago we began in a tentative way the work of beautifying the school yards. We had no definite plan as to ways and means, but decided to begin with four schools. The movement was noticed by the press, and the venerable president of our park board assured us of the hearty co-operation of the park managers. We solicited trees and shrubs from the nurserymen, and in all cases met with a generous response. Our park superintendent gave his services in planning and supervising the planting and contributed many plants from the park grounds. The Art Club of the Women's Union offered prizes for the yard showing the greatest improvement in the fall, pictures to be taken before and after. We had a large contribution of seeds from a leading firm, and prizes were offered for a flower show to be given in August. Some seeds were planted in the school yards, but most of them were taken by the children to their homes.

Of the four schools selected one was located in a large factory district, absolutely barren in the outlook and surroundings. Vines were planted on the building, the fence covered with sumacs and shrubbery. In the front yard morning-glories and flowering shrubs made a very attractive corner. The other corner, being appropriated by the public as a short cut to the next street, has been reclaimed by seeding the ground and by protecting the grass with an iron pipe fence that will be covered with vines.

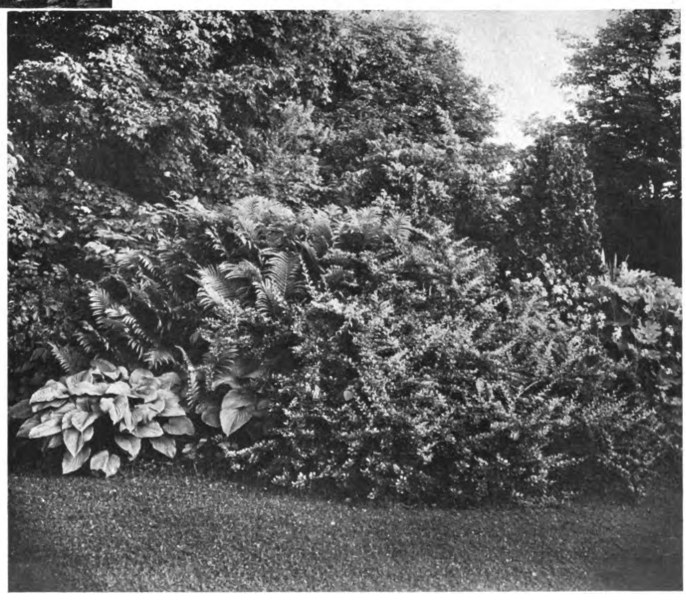
Another school in the suburbs had been built upon an old city dumping ground. Nothing could be more discouraging than its conditions. The principal has the instincts of the pioneer, and the qualities of a general. Under her leadership the children tackled the soil with such weapons as they could muster, begged manure from the surrounding stables, and every child was instructed to bring sods in season and out of season, whenever and wherever they could get them legitimately. The entire yard was covered in this way; trees and shrubs were donated and planted; on the north side was a beautiful bed of ferns brought from the woods by the eager children. The whole character of the place was changed. When a stranger visited the school one Sunday afternoon in summer, children appeared spontaneously, every adjoining fence-post became a watch tower and the argus eyes of a community were on the alert to see that no depredation was committed. This school took the first prize.

In the meantime the seeds given to the children in the spring had been cared for in their home yards with great industry. Vegetables also were grown, for which prizes were offered. The flower show in August was a great success. Besides the flowers grown by the children, there was a fine display of wild flowers and of named branches of the different trees grown in this locality. Twenty-one prizes were given and it was a foregone conclusion that the work would go on the next season.

At the close of the year we took stock. The effort in the four schools by no means represented the movement—it had extended all along the line. Some of the work that we had done with care was neglected through the summer and came to naught. Some schools had accomplished more by themselves than the chosen few. Principals who had desired better yards and had labored for them, but expected to "die without the sight," took fresh courage. One school located near an old quarry had a yard encumbered with stones and stumps from the primeval forest. The principal, nothing daunted, marshaled her forces and organized the girls into a tug-of-war, while the boys dug at the old stumps, and between them they managed to hurl them into the quarry. They brought shrubs from their own homes, gathered hayseed from the barn floors and sowed their grass, and the unsightly grounds were transformed into a beautiful lawn at an expenditure of seventy cents. We found also that a subtle and powerful element was working with us. That "unearned increment" so uncertain and yet so potent—public opinion—was ours. The rowdy spirit that had torn up the flower beds and destroyed the vines seemed to be eliminated.

The new school board had created a new atmosphere. "Influoence" was no longer the potent factor in bringing things to pass and the absence of politics cleared the deck for all sorts of good work. It was recognized that such work is a strong element in making school life more attractive to the pupil, and also in bringing the schools more in touch with the parents and the home.

In planning work for the season we decided to follow the example of one of our western cities and let the children buy their own flower seeds in penny packages, a local firm offering to put up for us reliable seeds of ten varieties that would be in blossom for the flower show in September. We also hoped to cover the large, bare schoolhouses with Boston ivy by inducing each grade to buy one or two vines, for



128. What is aimed at.—A bit of effective border planting

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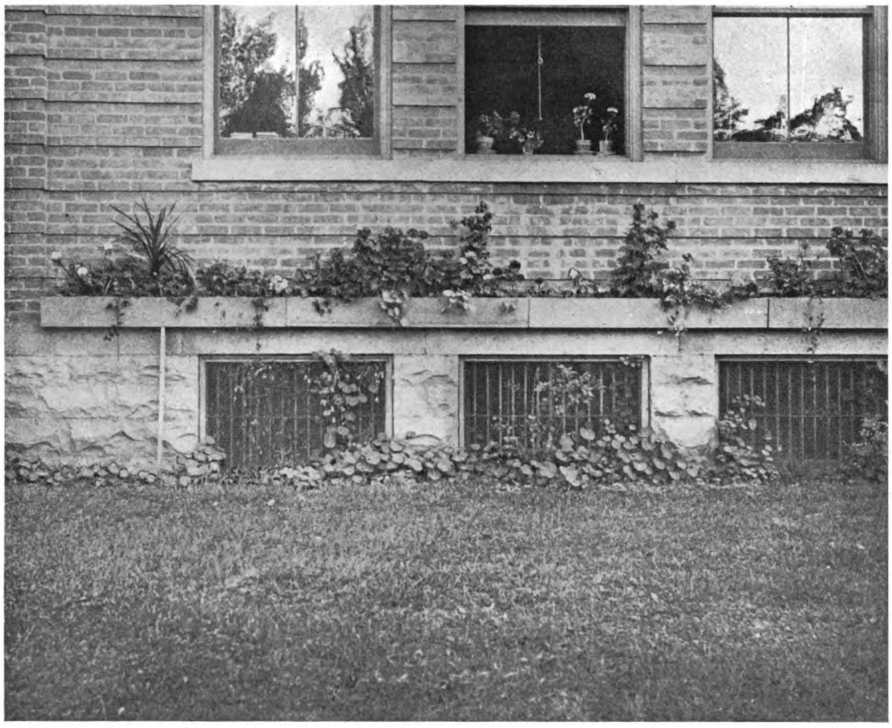


129. "The whole character of the place was changed. Every inch was made the most of"

which they were to be responsible, believing competition to be the soul of enterprise.

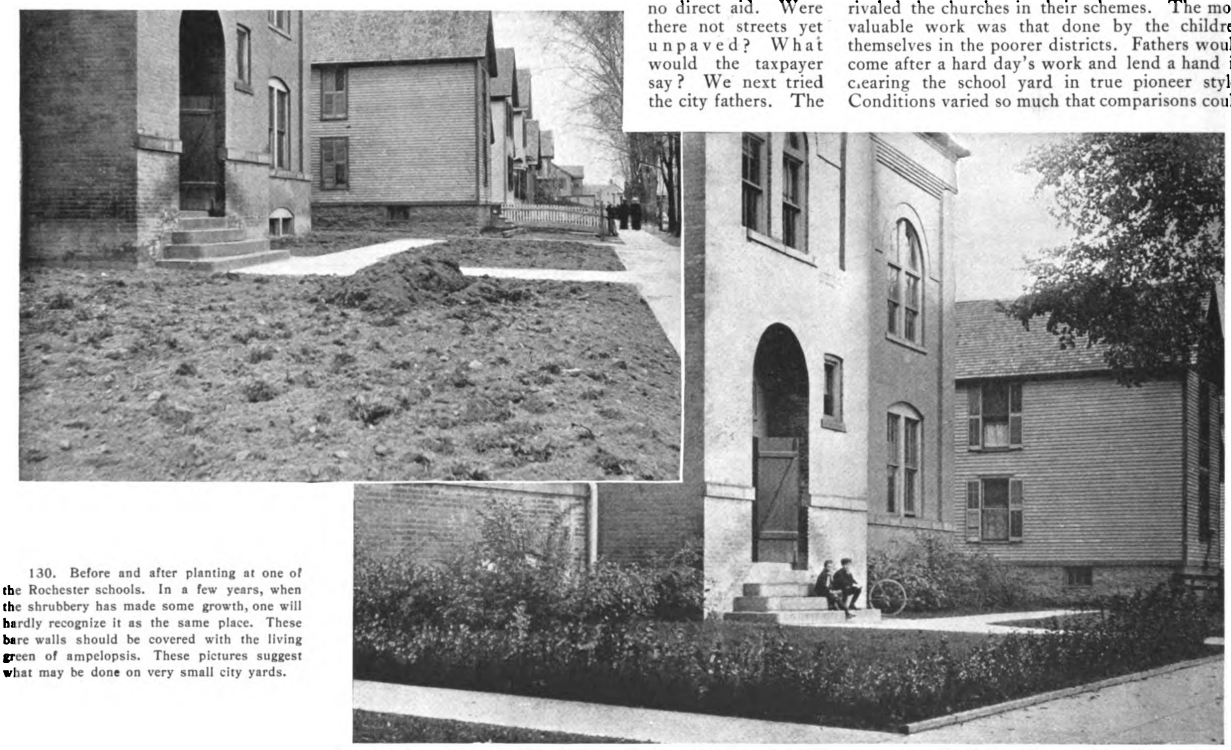
A meeting was called of the principals to discuss the campaign. They were asked to send in the number of seeds and vines desired in each school. The Woman's Union offered to coöperate with them in improving the school yards. Our park superintendent emphasized the discouraging fact that nothing could be done without money. We had no money and no Carnegie rose to the occasion. The Woman's Union is usually impecunious from the fact that its work is always larger than its purse. "Our reach is further than our grasp." We had held a garden social that had realized the munificent sum of $8, which money we intended to use in this work, but modesty prevented our mentioning it. Our committee decided to go out and see what could be done. The care of school yards was certainly municipal work, so our first visit was to the highest civic authority. We were received with official courtesy, but when we tendered our request he could give us no direct aid. Were there not streets yet unpaved? What would the taxpayer say? We next tried the city fathers. The money in the board of education was all apportioned, the park board could not help us financially, so we fell back on the teachers and the children, and they responded gloriously. In fact, one of the inspiring things in all this work has been the readiness with which the pupils and teachers have responded to it as a matter of personal pride and of public spirit.

The orders for seeds began to come in. We ventured to order $25 worth, then $50, then $100. The more they had the more they seemed to want, until nearly $250 worth of seeds, representing 25,000 packages, were ordered and paid for by the children. Sunday school classes began to ask for them, one of our daily newspapers started a Gardening Club, and a flower fever raged in Rochester that was checked only by the lateness of the season. One little girl wrote to her teacher, "I am sick and can't come to school, but my asters are up."

"Uncle John," so well known and beloved by the children throughout the state, came and gave demonstration talks in the various schools, showing them how to plant their seeds, how to transplant, how to prepare the soil, to make window boxes, etc. He created enthusiasm wherever he went and was of the greatest help. Uncle John came to us under the auspices of the State Extension work in Agriculture, giving freely of time and advice.

Orders were sent from most of the schools for Boston ivy to be planted on Arbor Day. The boys came loaded with pennies. They were all paid for and delivered the same day, and now every schoolhouse in Rochester has ivy planted around it and some of it has made considerable growth.

In the work of improving the school yards the second year each school acted on its own initiative. Each had its separate problem, made up of the condition of the yard, the environment, and the imagination and resources of the teacher. The solution of these problems was very interesting. The devices for raising money were as varied as they were numerous, rummage sales, rubber sales, all kinds of entertainments—they rivaled the churches in their schemes. The most valuable work was that done by the children themselves in the poorer districts. Fathers would come after a hard day's work and lend a hand in clearing the school yard in true pioneer style. Conditions varied so much that comparisons could



130. Before and after planting at one of the Rochester schools. In a few years, when the shrubbery has made some growth, one will hardly recognize it as the same place. These bare walls should be covered with the living green of ampelopsis. These pictures suggest what may be done on very small city yards.

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hardly be made. One of our oldest schools had an immense yard with great possibilities if it were not for its areas of stones and desolation. The school visitor for the Woman's Union lived next door. Being a woman of resources she devised a plan. This school was located in a part of the city where the children belonged to well-to-do families. A circular was printed and sent to each home, asking the parents to state how much they would pay a week up to the first of June for the improvement. Nearly all responded in sums from ten cents to one dollar. Over $200 was raised without any trouble and the improvement was put in the hands of the park superintendent.

The work of clearing the ground was laborious Forty-three loads of stone were carted off, seventy loads of street dirt put on, and tons of fertilizer applied. As a result an excellent lawn has been created, edged with 2,500 fine shrubs donated by a former pupil. This yard easily took the first prize.

The school that took the second prize had a much smaller yard, but every inch was made the most of. In the rear was a most attractive little arbor resplendent with morning-glories and devoted to the kindergarten children. This work was supervised by the park superintendent, the money being raised by all manner of clever devices.

The third prize was taken by a school located in the suburbs among the laboring class. This school is perhaps the most interesting and the improvement did not cost a dollar. The larger boys were told that a half holiday would be given to all of the boys that would bring some utensil for work—spade, pick, hoe, shovel, wheelbarrow or cart of any kind. Three hundred and fifty reported for duty, with a medley of articles. There were seventy handcarts, and other things in proportion. The grounds were picked up, stones removed, rich earth brought in, sods brought from vacant lots and laid in place, trees planted and flower beds made. Each grade had its own bed that yielded a fine harvest to the flower show. During the summer two boys were detailed each week to water the sod and flowers daily. If space would permit, honorable mention should be made of many more schools each with its own particular story.

We held our flower show this year in the new Eastman Building of the Mechanics' Institute. The facilities were perfect. Our merchants and citizens contributed over forty prizes. The florists and friends sent in quantities of gorgeous fall flowers for decoration. A beautiful and unique display was sent from Highland Park. Specimens from Mr. Vollertsen's herbarium made an attractive feature.

The center of the large hall was reserved for the children's flowers. As we looked at the rows and rows of tables we could not help thinking, Will the children really come and bring their flowers? Are there any flowers after the long, dry summer? Yes, indeed they came, bringing their treasures with them. One little tot brought the tiniest of bouquets, about three little posies, and presented it with great confidence and glee. Another pair came simply loaded with flowers, to enter the contest for the largest collection. And so they flocked for hours, until the tables were loaded down with their precious freight.

Prizes were given for all kinds of displays, including the best arranged bouquet. Here the assortment was beyond belief, ranging in style from the solid variegated pyramid to nature's own hand. The dear little fellow who took the first prize lived miles away. He brought a dainty combination of asters and silvery grasses that charmed everybody. He took two prizes, a set of garden tools and an outing shirt, both of which delighted his soul. He was last seen at ten o'clock at night trudging home in the rain with his mother, with a prize under each arm, a beaming face and barefooted, carrying his shoes because it was wet.

131. The fun of making a garden. "The children tackled the soil with such weapons as they could muster"

The principal of our leading boys' school was so pleased with the flower show that, in order to correlate it with the school work, he has offered two prizes of $10 each,—one for the best ten problems in denominate numbers relating to their garden work, giving statement and solution, and the other for the best English composition on the same feature.

It is impossible to estimate the reflex influence of this work. It is very evident in the improvement of the home yards and the spiritual awakening of the child. It cultivates the love of the beautiful, keeps him out of the street, and is a wholesome and legitimate occupation for his activities.

In Austria every school by law must have a gymnasium and a school garden. In France they have 30,000 of these gardens and no teacher is employed who has not the ability to teach horticulture. Gardening has been for thirty years part of the public school system of Sweden, from one to twenty acres being allotted to each school. Even in Russia, in one province alone there are over 100,000 fruit trees in the school gardens. In Germany, whence the idea came, garden schools rival agricultural colleges in the scope of their work. To America is reserved the distinction of being the only enlightened country that ignores this branch of education. No wonder we have abandoned farms and overcrowded cities!

SUSAN HUNTINGTON HOOKER.

PLANT MORE VINES

LET us have more vines. Our school buildings are too frequently bare walls unrelieved by anything to give pleasure. Trees, shrubs and lawn make a world of difference about a place, but vines produce a veritable transfiguration. The uncompromisingly ugly face of brick becomes in a few years a living panoply of moving, changing green. As the wind runs over the surface of the ampelopsis the leaves dance and play. In the autumn comes the glory of ruddy colors. The various tones blend into one another with wondrous beauty. I love to come close and watch the changes day by day. The baby hands of the young shoots of ampelopsis are so appealing! The children note the three different kinds of leaves which the ampelopsis bears, the young, heart-shaped leaves of small size, the large mature leaves with the three big characteristic lobes well marked, and occasionally near the base, a leaf that is almost divided into three separate leaflets. After the frost, the leaves fall but the leaf stalks remain behind in serried ranks.

Most vines are easy to grow. The ampelopsis of which I speak—the so-called Boston ivy—grows readily from the prostrate shoots that one can secure at the base of a well-established plant. These should be taken before the leaves start in spring. Bury a foot or two of the vine shallowly; then see that the ground does not dry out until the plant is well rooted. W. M.

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WORK AND PLAY IN APRIL

SPRING HAS COME AT LAST—WHAT WE SHOULD SEE AND WHERE WE SHOULD LOOK—WHAT TO DO IN THE GARDEN, ORCHARD AND FARMYARD

132. A bluebird's nest

PART I. WORK

APRIL! Month of showers, of sudden bursts of golden sunshine, of swelling buds, of the sound of many running waters, of the joyous carolings of the birds returning to their own, of the shrill peeping of frogs! Winter throws a snowball and summer throws a kiss. We go about drawing deep invigorating breaths. Dwelling in cities we develop an unexpected, sudden and altogether inexplicable interest in the housekeeping perplexities of that insufferable little mischief-maker and interloper, the English sparrow. With heads thrown back, we go about watching for a glimpse of a cloud-ship crossing the narrow little strip of blue which is still left to us. And altogether without volition of our own we find our thoughts turning to the country. Vainly we sniff for just a suggestion of newly turned furrows, of things smelling of the earth earthy. Dwelling in the country—ah, you who have never seen Mistress April trip in through the door of spring over the hillsides and the meadows, through the bare woodlands and across the brown fields, betake you to the country when the robin and the bluebird call, and the matins of the meadow-lark and the vespers of the song sparrow make sweet melodies where erstwhile lay the drifted snow!

April 1–10. Spring Plowing Begins

Through all the countryside the burden of the spring song is the joy of seed-time. The days are all too short, for the demands upon farmer and gardener are legion and imperative. The hotbed, the greenhouse, the coldframe and forcing-pit demand constant and careful attention. The climbing sun is forcing vegetation under glass at a rate which is almost visible. Very tender is this lush luxuriant growth, and air it must have in abundance, lest it be scorched and shriveled by overheating. Water also must it have often, and liberally, for the heat soon dries out the soil. An hour or two of neglect in these balmy days may result in the loss of the entire crop, or at least in serious damage. At night a new danger threatens. With the setting of the sun comes a rapid fall of temperature.

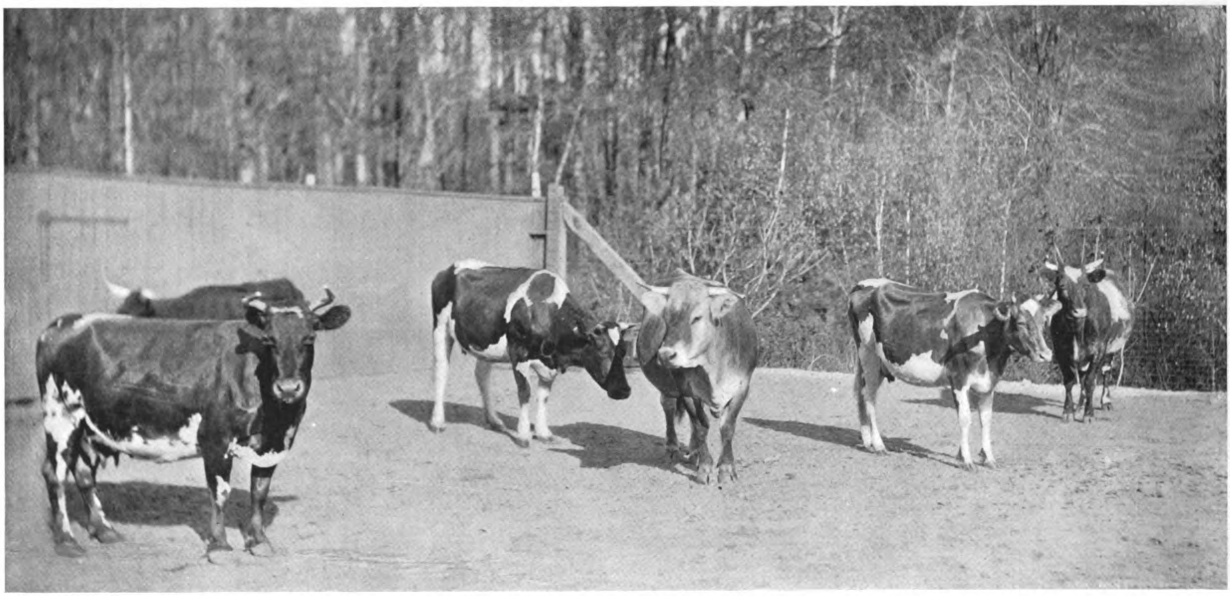
Hotbeds and Coldframes.—March is not yet so far gone but that stinging frosts will follow a day of almost summer warmth and loveliness. Then short work is made of the hotbeds not carefully and thoroughly protected. April 1 is a good time to plant cucumber seed in a corner of the greenhouse or pit kept closer and warmer than that for lettuce. By May, when the last hothouse crop of lettuce is marketed, the cucumber plants will be large, strong, and vigorous, ready to be set out. They will give a crop in June, a month earlier than from the open ground. The lettuce maturing at this time comes into market just when the desire for greens is strongest and therefore brings a high price. Radishes will be maturing and during the month will be pulled and marketed to make way for early forcing beets which were planted at the same time. Some of the larger market-gardens will have a second crop of tomatoes planted about December 1 ripening for the fancy trade, but tomatoes are not as extensively grown under glass as some other crops. Cauliflower is another crop grown under glass to some extent, and good marketable plants should now be ready from November planting. Peppers, melons and cucumbers for early transplanting may be started in hotbeds and will probably be the last vegetable sown under glass except eggplants. Parsley can be sown in coldframes between the rows of growing lettuce, for, being slow of germination, the lettuce will be out of the way by the time the room is needed by the parsley.

Floriculture.—Florists find the first week in April a good time for transferring carnations to coldframes for hardening off. Other plants, both vegetable and flower, which it is desired to harden off before setting out in the open, should go into the coldframes. Tuberous begonias should be started from tubers either in the latter part of March or early in April in small pots or shallow boxes filled with sphagnum. A few of these beautiful plants should be in every garden and can easily be started on window shelves. Hydrangeas kept dormant through the winter can be started during the early part of April for June flowering. For the most part greenhouses, hotbeds and coldframes are already filled with "green things growing" and the principal work is the care and watchfulness essential to keep them growing, the regulation of the air and moisture, and the repotting and transplanting where demanded. Not a few of the bulbs intended for lawn beds and borders, as cannas, dahlias, etc., will need to be potted off.

Outdoor Vegetables.—But it is the outdoor world which most strongly feels the leaping pulse and the spur to activity. By April 1, frost is all out of the ground in the latitude of New York, and plow and harrow and manure spreader are busy from the break of day until the shadows fall. Asparagus and rhubarb beds not attended to last month should receive prompt attention now. Plants set out later will not make as vigorous a growth. The hardier vegetables should be planted as rapidly as possible. Early beets sown from April 1 to April 10 will be ready for the table in June. Early cabbage plants can go out from March 15 to April 15, and the same rule applies to early cauliflower. These will come in in June and July. Celery seed-beds should be ready for sowing and the seed put in by the first week in April. The earlier onion seed can be put in the better, whether to be grown for sets or for a field crop. Lettuce plants taken from the hotbeds and coldframes, or from the window boxes, can go out between the rows of cabbage and cauliflower. Seed of lettuce, endive and radishes can be safely sown in the open. Spinach can go in as an auxiliary crop between cabbage and cauliflower. Mustard and cress or pepper grass and corn salad should go in early. Corn salad sown in September and wintered under straw or hay should be uncovered. Carrots, parsnips, salsify and early turnips can also go in.

Farm Work.—Oats go in as early as the land can be prepared, which should be by the first week in this month. Spring wheat and barley follow. Take a few spare hours to work over and prepare the flower beds, and to plan for the summer flowers.

Annual Flowers.—In hotbed or greenhouse, or in a warm window, sow in shallow boxes such hardy annuals as are desired and such hardy biennials and perennials as were not sown in the open borders in the fall. The aster has of recent years become second only to the chrysanthemum in popularity as a fall flower. By sowing now in coldframe or window box asters may be brought into bloom in July, and by means of a succession of sowings will lend of their beauty and gay colors well into fall. Mignonette, that long-time favorite, can be sown in the open as early as the first



133. "Who said 'pastures'?"

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of April. Sowings should be repeated regularly every three weeks until August. Plants started under glass in February and March can safely be set out by April 15. Stocks, snapdragon, salvia, petunia, cosmos, and ageratum are among the general favorites which can be started now to advantage in the house. If sweet pea planting was delayed in March these beautiful flowers, which have come to play so important a part in the flower world, should surely go in as early in April as possible.

April 11–20. No Time to Lose!

Where sweet potatoes can be grown, start them in hotbeds about the middle of the month. This will advance them sufficiently for setting out in early June. As the sun creeps higher and the days grow warmer, it becomes safe to set out tomato plants. About April 20, not earlier, according to Peter Henderson, seeds of eggplants should be started in hotbeds or window boxes where a high temperature can be maintained.

One of the delights of the old-fashioned garden,—alas! now too rare, with its trim stiff rows of box, its hollyhocks and sweet williams and bright-faced little lady delights,—was the tiny plot of sweet-smelling garden herbs. Some little corner for them should be found in every garden plot, however small, for they are easily grown. This is the month to sow them,—thyme, summer savory, sage and sweet marjoram. In June or July they will be ready to set out. Leeks can go in seed-bed. Preparations for and planting of the potato crop will take no little time and attention now. If a few spare days can be found, go over the pasture and mend the fences. Post holes can be dug now that frost is out, and fences should be in order before the cattle are turned out.

After the 15th start half-hardy annuals, biennials and perennials in the window boxes. In extra warm sunny spots, where the soil has become dry and warm, nearly all kinds of hardy and half-hardy flower seeds may be sown with a reasonable certainty of success. Candytuft, nasturtium, zinnia, old-fashioned pink, *Phlox Drummondii*, godetia, foxglove, forget-me-not, clarkia, California poppy, annual chrysanthemum, and calendula are a few of those to be started in a warm seed-bed for later transplanting to their permanent beds.

April 21–30. The Weeds Make their Annual Appearance

Sow a succession of beans, peas, lettuce, radishes, turnips, onions, etc., to follow those put in early. Get out the hoe and cultivator and fight the weeds in earnest. Good work with these tools now will save uphill labor later. Get and read Bulletins 27 and 29 issued by the Forestry Division, United States Department of Agriculture. They contain valuable information on the planting of forest trees. Wide-awake farmers and land-owners are beginning to see the necessity for tree-planting. In the latter part of April many forest tree seeds can be started in seed-beds. Bulletin 29 gives a table of these, with localities to which they are adapted. Give some attention to the shade tree, destroying such beetles and moths as may appear. Cut out wood infested by borers, and brick and cement up the cavity. The life of a tree can be prolonged many years in this way.

Fruit-growing.—Orchards demand thorough attention. The great peach orchards in Georgia and the Carolinas are in full foliage and cultivation is in order. In the North the first sprayings should be given as the buds begin to swell. Before apple buds swell, spray for scab, codlin moth, bud moth, tent caterpillar, canker worm and plum curculio. Spray again just before the blossoms open. As buds are swelling spray pear and plum, the former for leaf-blight, scab, psylla, codlin moth and blister mite and the latter for curculio, black knot, leaf-blight and brown rot. With small fruits, as currants, raspberries, blackberries, etc., pruning, tying up and transplanting of young vines can be done. If they have not already been fertilized this should be attended to.

The strawberry bed demands attention as soon as the weather has settled and danger of freezing weather has passed. If protected with evergreens these should be removed entirely. If the covering has been of straw and leaves, rake off and leave between the rows for a mulch and to keep the berries off the ground. Plow and harrow new beds in preparation for setting in June.

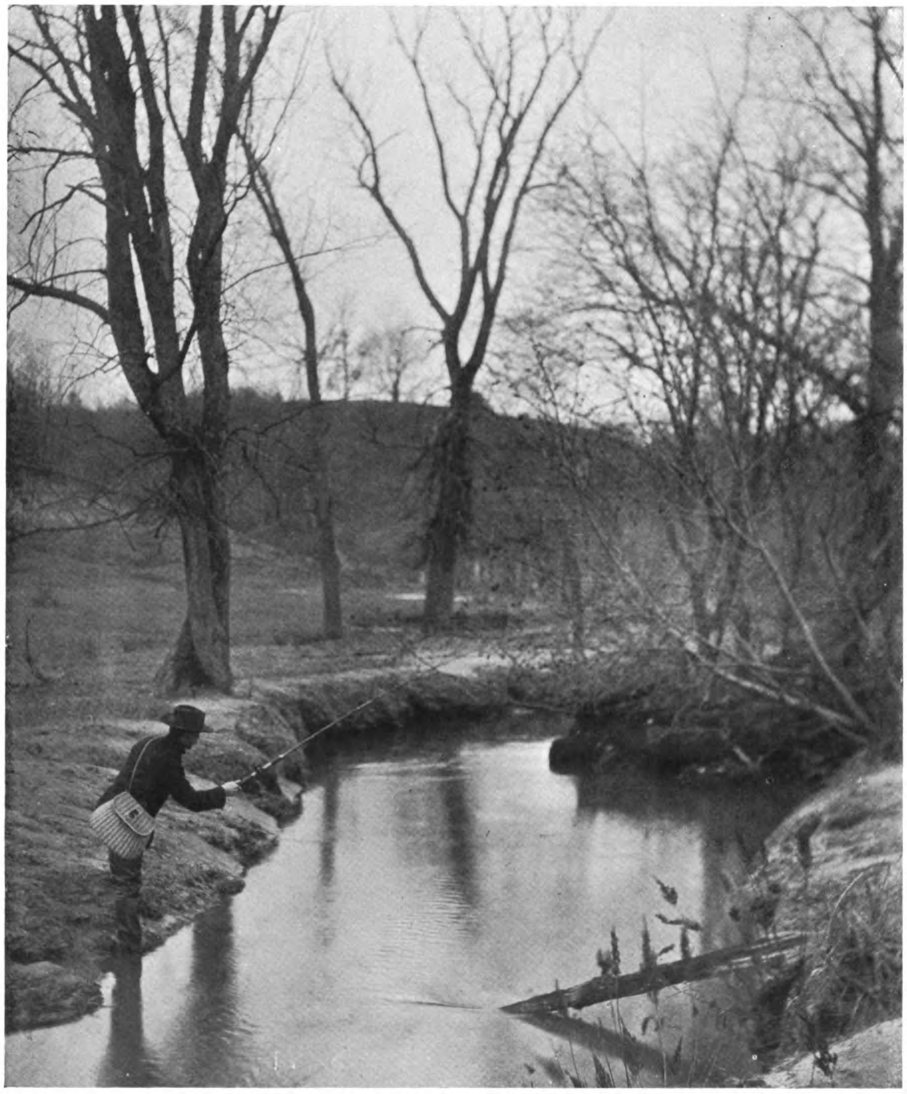
Go over the vineyard when the buds are burst so far as to show which are likely to be the most suitable shoots for training or to be left for fruiting. Rub off all the buds not wanted. This work done now will save much labor in summer pruning.

Animal Industry.—April work for the dairyman is not radically different from the winter routine. Cows which calved in the fall need careful attention to keep the milk pails full. They are shedding the winter coat and growing a new one and they are sensitive to sudden climatic changes. Give them a good big barn-yard and all the sunshine and fresh air possible. At your approach the cows will look at you reproachfully as if to inquire "Who said 'pastures'?" In spite of their appeal, do not turn to pasture too early, before the tender young grass has grown sufficiently to have become nourishing.

April is the month of lambs. Prepare good quarters for the ewes about to lamb and separate them from the remainder of the flock. In the latter part of the month the fleeces should come off and then the sheep will need to be protected from cold rains. Turn out to pasture for a few hours each day, gradually increasing the length of time. Tagging of sheep should be done before turning out.

In the apiary the warm days infuse the little honey makers with the first symptoms of returning animation. Watch the bees carefully to prevent spring dwindling. See that water of a higher temperature than the ice-cold brook and pond is available for them. Examine the hives frequently to see that they do not become queenless. Bees are particularly sensitive to cold winds in the early spring, and the hives should be protected with a wind-break of some sort. And for you who have no bees and have never thought of keeping bees, now, just now, is the time for you to decide to buy a swarm or two at once, not alone for the sweets with which they will furnish your table but for the pleasure you will get in watching and studying these wonderful little toilers of the insect world.

Poultry.—The routine for the poultryman is little different from that of



134. "Early April has its own peculiar and charming setting for this gentle pastime"

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March. Hens are to be set and brooders and young chicks taken care of.

For one having a small pond available, considerable pleasure is to be derived from a flock of those stately honkers, the Canada geese. The wild spirit is strong within them, yet if the wings be clipped they are easily domesticated and there is no prettier sight than a flock of these splendid game birds as contented dwellers on the farm save when the migrating instinct strong within them, and the call of their free brethren floating down from the clouds, makes them for the time being uneasy. During March and April they will nest, usually on the bank of the pond or in the bushes not far distant, pairing off and selecting their nesting grounds. These geese can easily be trained to make excellent decoys.

135. Feeding the chicks

136. Canada geese seeking a nesting place

PART II. RECREATION

I seem to hear the calling
Of a merry mountain brook
As it tumbles into gorges
Where the sunbeams seldom look;
And I dream of rods and fishes,
Reels and dainty flies,
Lines and hooks and leaders
Till I have to rub my eyes,
For I know that I am wishing
For the time to go a-fishing,
When the wily trout will rise.

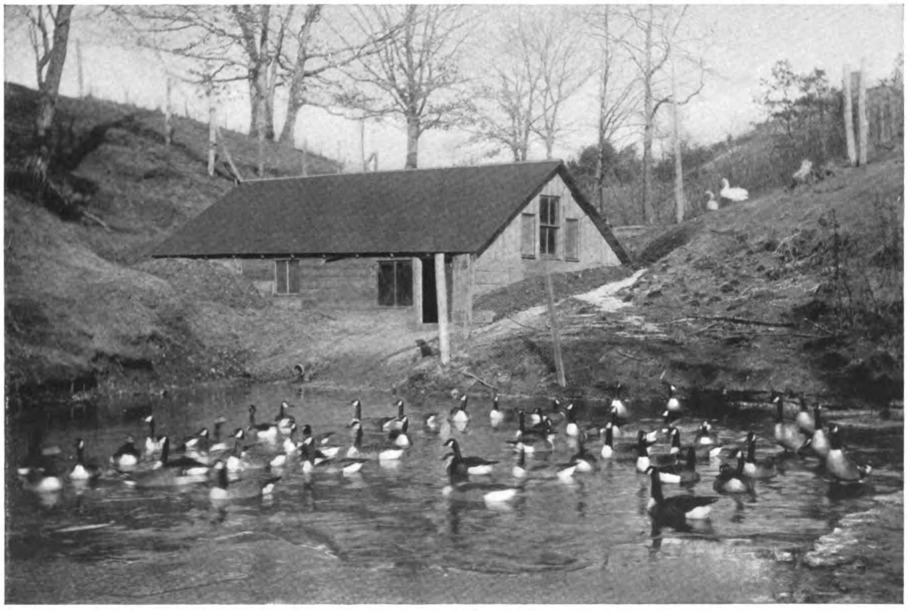
O ye brothers of the angle, of the gentle art of fishing, to whom All-fool's day brings a materialization of the dream, envied are ye of the unfortunate in whom the fever must needs burn yet a little while ere opportunity affords means of relief! In Massachusetts, Connecticut, New Hampshire, New Jersey, Virginia, Nevada, Oregon, Rhode Island, Washington, and Maryland, the open season for trout begins on April 1. Cold sport it is, especially in the northern states, but there is a fascination in tramping through the thickets where the alders have hung out their signal tassels, listening to the long roll of the drumming grouse, noting new arrivals in the bird world and now and again taking a plump, firm-fleshed speckled jewel from the icy waters of the swollen brook. Early April has its own peculiar and charming setting for this gentle pastime. Many fly fishermen are inclined to sneer at the bait angler, but these are not true to the teachings of dear old Izaak Walton and they cheat themselves of rare pleasure, for the fish will not rise readily to the fly at this season. In the latter part of the month flies may be used with better success. In New York, Wisconsin and Minnesota the open season does not begin until April 15. Long Island, however, is excepted in the New York law and the season opens March 30.

No sport in America has had a steadier or healthier growth than yachting. Each year has seen a marked increase in the number of boats under sail and in the power and interest in pleasure yachting, racing and cruising. This year promises to see more boats afloat than ever before. Two factors of supreme importance in bringing about this development of a healthful, delightful sport have been the advent of the skimming-dish type of small sailboats, especially adapted to rivers and shallow inland waters, and the perfecting of the gasolene motor. April sees but few boats in commission, but it is one of the busiest months of the twelve for the amateur sailor—the time for painting and repairing hulls, overhauling sails, rigging and engines and preparing for the active season so close at hand. Canoeists and oarsmen also find their hands full in making craft ready for May waters.

Golfing has done much to awaken an appreciation of walking, particularly country walking as a cure for dyspepsia, a restorer of lost appetite, a renovator of wasted tissues and general tonic for the system. The clear bracing air and the countless charms which nature is unfolding on every side make April one of the pleasantest months of the whole year for cross-country walking. Bicycling as a fad has had its day. and has settled down to its normal and proper place in American life. For those who ride for the mere enjoyment of riding, the latter part of April will practically open the season. However, even then country roads are likely to be unsettled and the riding rough. Automobiling is to play an important part in recreation, and the warm days of April will bring the horseless vehicles out by the thousands. However alluring as must be the call from the countryside, the automobilist will find scant pleasure in riding over April roads.

"Gie me ma cleek an' putter!
Gie me ma wee bit ball!
A'm awa for glen an' hieland
An' the bonniest game o' all!"

So sings MacDougall, for the canny Scotsman knows from many years of playing how much of deep enjoyment is to be gotten from golf in the month of showers. The greens are a bit soft mayhap and the swampy spots are full of water, but he has the links almost to himself. From every side Spring whispers that she is here; he becomes intimate with the bird folk, and modest little field flowers thrust themselves upon his notice by the very hardihood of their helplessness. Now comes a burst of sunshine: verily it is good to be on the links in April.



137. A flock of Canada geese making the most of spring

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PART III. NATURE-STUDY

But if April is less generous to the sportsman than some of her sister months, to the nature student she beckons from every side and cries, "Come!" Copse and meadow cry "Come," and the rocky wooded hillside cries "Come." From April 1 to 10, watching for the returning sparrows, we find the alder thickets decked in gold and purple tassels to welcome the feathered guests seeking the protection of their secluded tangles, that quiet little red-capped fellow and good neighbor, the chipping sparrow, and the myrtle warbler who stops over on his way farther north to his chosen breeding grounds. The swamp maples are robed in scarlet, the first warm color of the year. The swamps must be visited to mark the arrival of our awkward long-legged but beautiful friends the herons. The black-crowned night heron is due to bring his dismal "quork quork" into the swamps, and not far behind will come his smaller cousin, the green heron. Where the swamp borders a river, with all the wariness born of being much hunted, the great blue heron sojourns on his way north.

Leaving the swamps, we go up across the pasture where the woodland is throwing out an advance guard of scattered scrub oaks, beeches and birches. The latter are tasseled out. Look sharp for those small ground lovers, the savanna, field and vesper sparrows, for they are due to arrive. In the old apple orchard hark to the lively twitter of that white-vested little gentleman, the tree or white-bellied swallow. Along the pasture fence and by the roadside the spice bush has gowned herself in yellow. From the forest depths comes the beautiful song of the transient hermit thrush. Absurd as it seems to look for nests in these bare woods, it behooves you to scan all possible bird homes closely. Any time from April 1 to 15 the red-shouldered and red-tailed hawk, the long-eared and screech owls, the crow, bluebird and the woodcock will set up housekeeping.

As the month advances birds and flowers come in an unending procession. Any day from April 10 to 20 the bittern's pump is likely to begin its "chug chug" in the swamp and the clapper-rail to show himself. The yellow-bellied woodpecker, the ruby-crowned kinglet, the yellow palm warbler and the Louisiana water thrush pause for greeting ere they continue on their journey. The pine warbler instals himself and the barn swallow is hailed with pleasure by every farmer because of his social disposition. In wooded dells, on sunny southern pine-crowned slopes, in old bush-grown pastures, under the brown carpet of oak groves and on the mossy edge of mountain swamps the rare fragrance of the pure white and delicate pink blossoms of the sweetest of all spring flowers, the trailing arbutus, rises like incense to the Giver of all life. Over the brook the shadbush begins to fling out its white clusters. Along sheltered banks look for the beautiful little bloodroot. It is time for the Dutchman's breeches or white-hearts to appear along rocky ledges, and in the seams of rocky cliffs and hillsides the early saxifrage fills most unpromising crannies. With the bloodroot appears the slender anemone, while at the same time in moist hollows of the wood we look for the yellow adder's-tongue or dog's-tooth violet. The little blue flowers of the liverwort shyly solicit attention.

138. "The harmless snake eyes your approach silently, intently"

A tramp afield in these warm April days is likely to afford an introduction to many lowly folk who have just thrown off the long slumber of the winter. The woodchuck scurries off as you appear, or in some warm and sunny spot the harmless snake eyes your approach silently, intently.

As May-day approaches, meadow and woodland grow lavish of their floral offerings. In this latter part of April go forth for the greetings of the wake-robin in the woods where the soil is richer and less rocky, the beautiful white and painted trilliums, the wild ginger, along the meadow brooks the marsh marigolds, in damp places the clenched fists of expanding ferns, on the overhanging cliff the brilliant columbine, in rocky woods the foam flower or false mitrewort, the downy yellow violet, the wild phlox, the bluebells, and many another old or new friend to make glad the heart of the amateur botanist.

April 20 to 30, watch for the spotted sandpiper and the semi-palmated sandpiper along the edges of the rivers and in the salt marshes. The former has come to stay; the latter has engagements farther north. Those aërial artists, the chimney-swift, purple martin, cliff swallow, bank swallow, and rough-winged swallow now find the stage set to their liking. The black-throated green warbler and the black-and-white warbler should be watched for, and that trim, handsome gentleman in light brown, the brown thrasher, is likely to be found inspecting low bushes for a suitable site for a home. The least-flycatcher, that quiet little unassuming fellow, is likely to instal himself in the apple or pear tree close by the house any day now, and hail you familiarly whenever you appear. The blue-headed vireo is also due. Just in the edge of the wood the towhee or chewink may be heard rustling among dead leaves, while as the shadows fall the mournful plaint, "Whippoorwill," will ring out from the somber solitudes.

Several of the early arrivals have begun to nest. The robin hardly waits for the first green leaves. Look underneath the bridges and under the eaves of buildings for the shallow mossy home of the phebe. The white-breasted nuthatch has completed his home. In low bushes and occasionally on the ground the song sparrow has builded well, and high up in the evergreens the purple grackle is very busy preparing for maternal cares. So April runs to May.

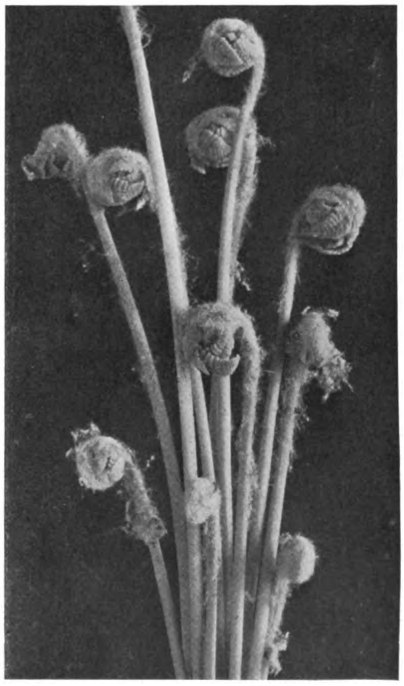
W. B. THORNTON.

GRAFTING

IT is now time to graft,—any time before the leaves are half grown. The cions should be perfectly dormant, having been cut before the buds began to swell. The success of grafting plums and cherries depends very largely on having the cions as dormant as they were in midwinter. Many operators keep the cions in an ice house in order to prevent them from starting. This caution is not so necessary with pears and apples. In fact, cions of these fruits are often cut in late March and early April in the North. Set the cions as early as you can now, for they should have the benefit of the first growth of spring. For all limbs three-fourths inch and more in diameter, the common split- or cleft-graft is best. For smaller limbs, the whip-graft is commonly employed. Graft all the leading limbs if you desire to work over the top of a tree, even though it may be necessary to cut some of them out later.

Wax thoroughly. A good wax for applying with the hand is made from: 1 part by weight of rendered tallow; 2 parts beeswax; 4 parts rosin. Melt these all together in a kettle. Then pour the liquid into a pail or tub of cold water. When it has solidified, work it until it develops a "grain" and looks like taffy candy. The hands are greased when it is applied.

139. The rue anemone



140. "The clenched fists of expanding ferns"

141. "In moist hollows we look for yellow adder's-tongue"

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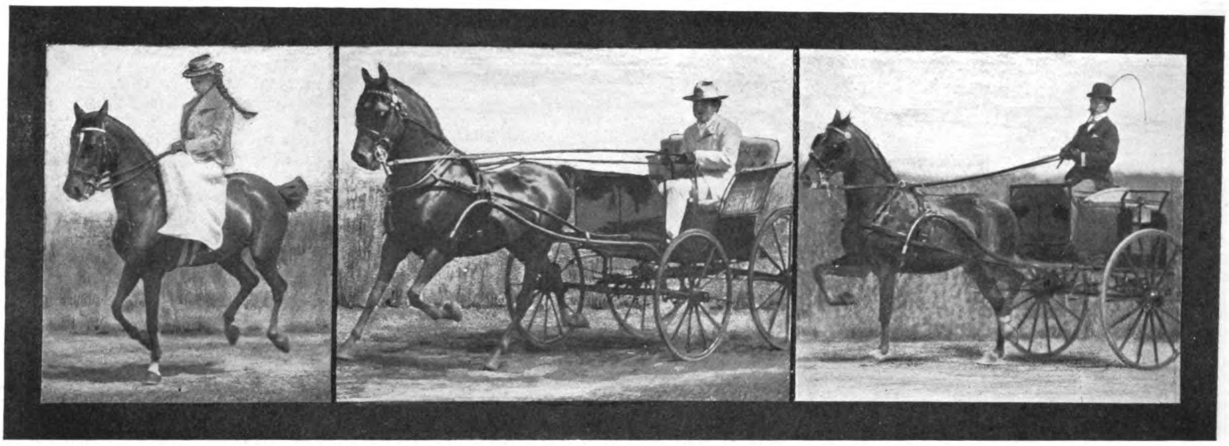

142. Driving horses of good form and action

THE POINTS OF A GOOD HORSE

ONE must have studied many horses critically before the good and bad points are discovered quickly and the relative importance of each determined at its true value. Observe the well-bred horse from the front as he is led out. One can tell on the instant if he has some of the true oriental blood in his veins. Good breeding and careful education through the centuries are seen in the face and head of the horse as easily as clean living and intelligence are observed in the face of a man. Each head has an individuality.

We receive a good impression at first sight; we fall in love with the bright hazel, convex, alert, expressive eye set exactly on the corner of the moderately long, broadish, clean head. The nostrils are open, thin and yet prominent,—

> "Wide nostrils never stretched by pain,
> Mouth bloodless to the bit or rein."

Pointed ears are set symmetrically on the sides of a rising, prominent brain and are flexible as the wings of the pigeon. If the head is set lightly on the neck and at the right angle the correct pose is secured, and flexibility, intelligence and courage stand out in such a taking way that some minor defects of body-form may be ignored. A beautiful harmonious head often sells the horse and saves him from abuse, because the owner comes to love the spirited intelligence and responsive service of an animal that is correctly built ahead of the throat-latch. If this end of the horse is good, the other end is likely to be good and able to keep up. We shall confidently expect the front legs to reach out true and strong and straight, not pigeon-toed; the front feet will not be thrown out to the sides when the animal is speeded, like those of a paddling goose. The breast looks like the narrow, projecting prow of a caravel. The floor of the chest is concave like the gentle rise of a stone arch by reason of the strong inside muscles of the legs.

Now stoop and glance backward between all of the legs. If the inside lines are not symmetrical or the pairs are not alike, a malformation, a blemish or unsoundness is to be discovered. Back the horse and see whether he has lost flexibility and drags his toes instead of lifting his feet promptly and setting them down squarely in taking the backward step. Stand aside and let the horse pass quietly. Note as he passes and repasses whether the neck and body-lines are symmetrical, and the movements of the limbs harmonious.

Having studied the outlines generically, we are ready to note details. The neck may be rather slim, longish with little or no "crest" or "arch," if the horse be desired for fast work; or long and flexible if for coach work; or shorter, with higher crest, if for pleasure driving; or heavy and rather short but with high crest if for draft. But for all uses the neck should be set on the top "corner" of the horse, not square on the end of the body like the pig's or he will "hog" the bit and drive like a harnessed swine. In any case, the neck should embrace the shoulders broadly, not as the handle embraces the mop-head. If the neck is set on the "corner," then the shoulders will have to be set on the body obliquely. This will give elasticity to the front limbs and they and the feet will last longer than if the shoulders were less oblique. The unsoundness of the feet is frequently the result of a too straight conformation. Good heads and crests are shown in the coach horses in the head-piece beginning this article.

The withers are important. The saddle-horse should have high withers. Low withers are one indication of speed. Some saddle-horses require a webbing around the breast with ends attached to the saddle to prevent it from working backward. The horse with trotting form may require a crupper-strap attached to the saddle to keep it from working forward. The imperfectly bred horse may have trotting hindquarters and draft-shaped forequarters. If so, the front end is unable to keep out of the way of the rear end; the result is overreaching.

Who has ever described a horse's back without wanting to revise the description? The Scotchman has the best brief description: "When one is in the saddle there is nae room for anither behind." Note the body-lines. A short top and a long lower line indicate strength and speed. If the hips be placed well forward, as they should be in all four-footed domestic animals, and the neck on the corner of the body, there is no room for a long back. "Long hindquarters," "coupled well ahead," "a strong loin," are, in effect, synonymous expressions. Xenophon says, "If he have a double loin, it is the easier for the rider." Most of our trotters do not have prominent loins. But press the thumb and finger along the loin and find those steel-like muscles placed along the back, out of sight and danger, and where they will pull the hardest. These muscles are evident in the good horse.

Horses that are "ribbed up" closely and smoothly are easier keepers, and their stride is shorter, than are those which have a more open conformation. The rump should be broad, but not steep or "goose rumped" nor "beef rumped," like the shorthorn. Neither should the tail be set at right angles with the body, but be placed symmetrically to match the angles of the neck and head. A fine, lofty neck means a tail to match it, and vice versa. The twist should be well cut up, but the space made available by the high cut should be filled with muscle. Here they will be most efficient and least likely to become sore by concussion or severe use.

"No legs, no horse," is an old proverb. Whoever described one leg so perfectly that it could always be identified? Then how can one describe two legs, the front and hind, when they are radically different? The front leg is subjected to the greater concussions; the hind leg to the greater strain. The hind leg must be crooked at the hock; if crooked too much the result is the weak "sickle" leg; if too little the result is a "pounder." Then, too, the foot is likely to partake of the character of the leg. That portion of the legs, front and rear, below the hocks and knees, should be relatively short and broad when viewed sideways, not roundish; and it should be thin when viewed from the rear, not much unlike a razor blade when a cross section of both are compared. A line drawn from hock to fetlock should be nearly straight, concave rather than convex. If convex it is a "curby" leg and may develop into a true curb. The cords just below the hock should be well tied in, and the leg should not have the appearance of being too narrow from front to rear, just below the hock; nor just below the knee on the back side of the front leg, a common fault in many a well-bred horse. If the line from hoof to pastern be rather long and moderately oblique, elasticity is secured. In the draft horse the line may be shorter and straighter. If the quarters are not placed symmetrically on the body the toes of the hind feet will point out and the hocks will come together, or be "cow-hocked."

The skin should be moderately thick, firm and fitted on to the bones below knee and hock as tightly as a kid glove on a lady's hand. The bone over which the skin is fitted should approximate ivory in texture and strength.

Dark-colored hoofs are likely to be of better texture than light-colored ones. The shape of the foot is variable. The "cold-blooded" draft horse has a broader, flatter foot than the light driver or speed horse. The foot is often the point most likely to be deficient in draft horses, the heel being too open and the foot too flat. Occasionally "the hollow of the foot makes a hole in the ground." On the other hand, the driving horse sometimes has a foot too hollow and narrow at the heel, in which case the foot is likely to become contracted, since the frog does not come in contact with the moist soil, loses its elasticity, becomes hard, contracts, draws the quarters in until the hoof becomes too small for the internal structure. The shoe does not pinch, but the hoof does. There is a happy medium between these two extremes. A horse's limbs should be placed well under the body, for the same reason that the wheels of a street-car are placed well under its body, to secure a swaying, easy motion instead of a pounding, inelastic one.

Horses are of many colors, but dark browns and bright bays with dark points are preferred, since dark colors indicate fine, close-grained texture.

But some one may have depreciated the value of the horse in "breaking" him, in doing which his mouth has become hard and unresponsive, courage turned into revenge and whip-obedience substituted for obedience to the driver's slightest wish sent through the reins by the kind hand. So the horse should be driven before one can determine whether all of the points of a good horse are present.

I. P. ROBERTS.

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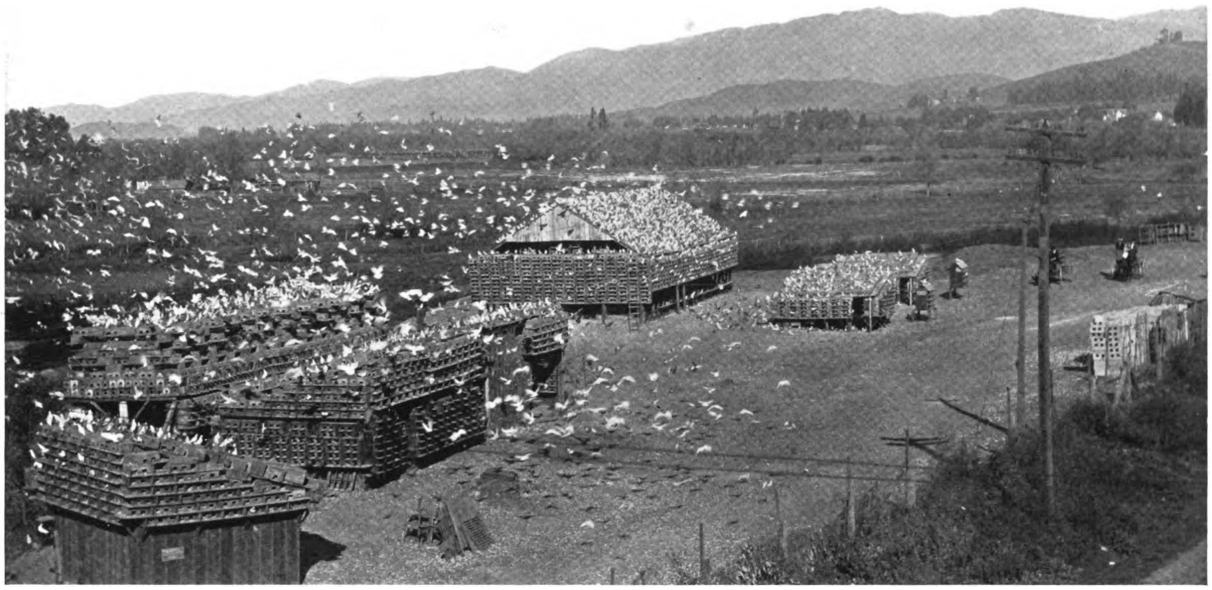


143. Pigeon ranch at Los Angeles

A PIGEON RANCH IN CALIFORNIA

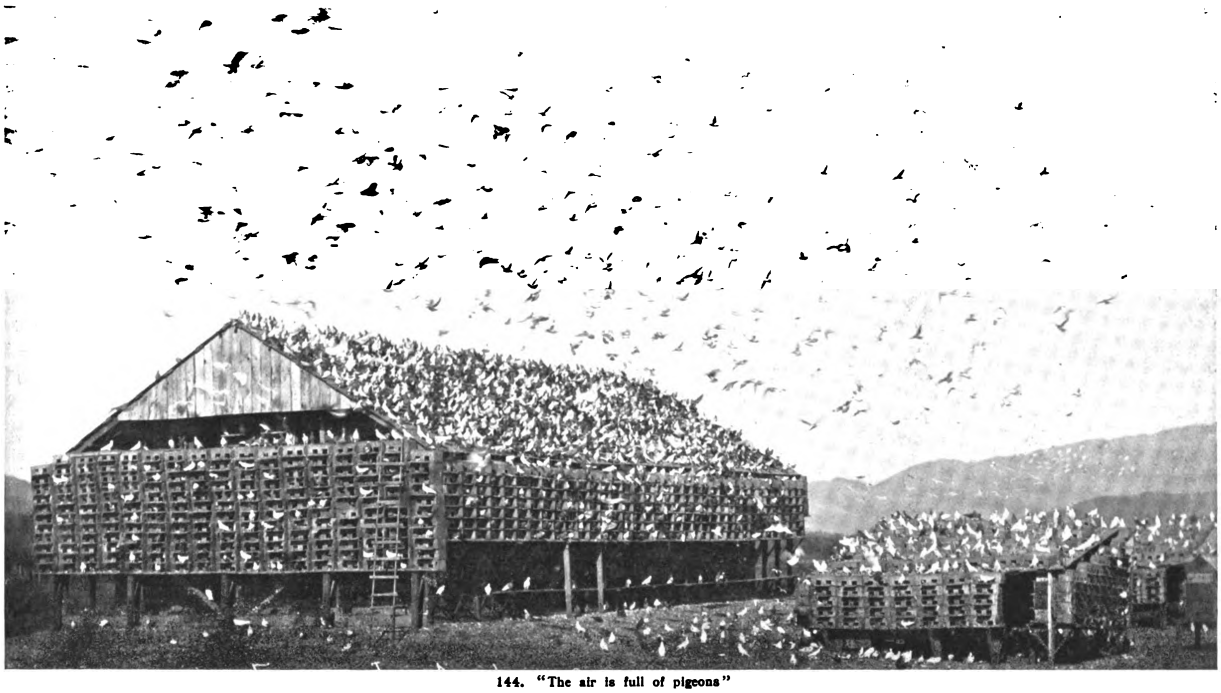
THE HOME OF THIRTY THOUSAND BIRDS AT LOS ANGELES

THE breeding of pigeons is a picturesque and remunerative industry of the far west. The bird ranch owned by T. Y. Johnson, of Los Angeles, Cal., is said to be the largest in the world. Although this business has been carried on to some extent in foreign countries, it is comparatively new in America. It has succeeded beyond all expectation, and the profits have been large enough to arouse great interest.

Three years ago, notwithstanding the uncertainty of the outcome, Mr. Johnson selected a pretty spot in the Los Angeles river bed, where, among sycamores, willows and alders that outlined the small stream, he erected a number of immense bird tenements, one being sixty feet long, twenty-four feet wide and eighteen feet high. Tiny domestic establishments were arranged in tiers all over the exterior walls, while through the interior ran eight narrow aisles, affording passageway to the inner flats. In the beginning three thousand pigeons were secured as tenants.

The male bird chooses the nest before mating. During the eighteen days of incubation he takes the nest for an hour both morning and afternoon. The progeny are numerous, each pair of pigeons producing twelve squabs a year. The squabs are allowed to remain under the paternal roof for only three weeks, at the end of which time they are prepared for market. When they are old enough to fly they invariably become thin and tough. At the age of six months, those birds which have escaped the stew kettle select their mates and nest. During the past three years the original 3,000 birds have increased to 15,000.

September and October are the molting



144. "The air is full of pigeons"

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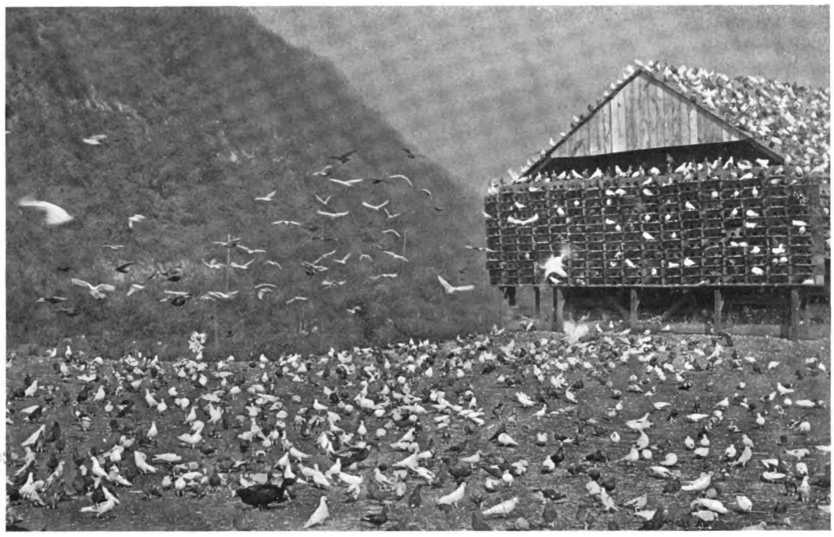
months, and during that time only forty dozen squabs are produced monthly, but during every other month four hundred dozen squabs are hatched.

In selecting birds for the market, Mr. Johnson takes the dark-feathered youngsters, as he hopes eventually to have only white birds. Two hundred and fifty dozen squabs, on an average, are sent to market each month, the price of sale ranging from $1.50 to $3 per dozen, though in molting seasons when the birds are scarce $10 a dozen is often realized. Mr. Johnson estimates that his revenue from the birds during the past year has amounted to $12,000.



145. "At meal time"

At present the lofts are all occupied, and some of the more recent home-makers are compelled to occupy humble habitations on the ground. Each week the lofts are disinfected with a solution of carbolic acid, while every nest is sprinkled with insect powder and sulfur, a process the birds seem to dislike.

At meal time the scene on the ranch is one of picturesque animation. Responsive to the first note of a musical, long-drawn whistle from Mr. Johnson, which announces a banquet, the birds flock from every crack and crevice of their tenement. The air is full of pigeons. To feed this flock of 15,000 birds requires twelve sacks of screenings, eight sacks of grain, and an immense quantity of boiled meal each day. During the week, three or four barrels of stale bread are soaked in water and added to the menu. The cost of these provisions amounts to $15 per day, which is at the rate of $5,475 per year.

The birds never stray beyond the wire boundaries of their home, seeming quite content with the narrow confines of eight acres. Convenience and comfort are carefully considered, and every morning straw is strewn on the ground that the birds may build new nests if they so desire. The life of this interesting bird city is one of unending contentment, undisturbed save when a predatory hawk or rat appears upon the scene. Fourteen to sixteen wagon-loads of guano are removed from the premises each year, and the great bulk of feathers taken from the marketable birds is utilized by the upholstery departments of furniture factories.

HELEN LUKENS JONES.

THE HOUSEKEEPING OF THE HUMMING-BIRD

WITH PHOTOGRAPHS OF LIVE BIRDS ON THE NEST BY THE AUTHOR

THE nests of many kinds of birds are close at hand, or easy to find if you only know where to look. For a quail's nest you may look on the ground in the edge of the woods or in some weedy field; the oriole always hangs her home over a dusty road in the top of some swaying elm limb; the great-crested flycatcher carries his snake skin or fish scales to a woodpecker's hole in an old apple tree, disputing with the bluebird for its possession; phebe calls from under your eaves, and the kingbird rules the top of your pear tree,—but to find a humming-bird's nest you must search far and wide. The humming-bird lets time and chance determine her nesting site, and you must trust to time and chance to discover it for you. Last summer a mother humming-bird came and built in an apple tree by our door.

The old bird was very busy and preoccupied.

146. Young birds in the nest

Her whole manner would put to shame any one who might ask himself whether life were worth while. First we saw her gathering lichens from a summer-house roof; next we found, by watching her, the half-finished nest in the little fork of the apple limb only waist high from the ground. It was one of the prettiest things I have ever seen. The nest was a little larger than half an egg shell, and so carefully covered with moss and lichens that the whole thing looked exactly like a knot on a moss-grown limb. It was lined inside with dandelion down until it was like silk. You simply gazed at it in delight, wondering how one slender bill could create such art.

The two pearly white eggs, scarcely larger than peas, appeared before the nest was quite complete. In two weeks one of them disappeared, and in its place, down in the bottom of the nest, was a young humming-bird. The next day the other little one was hatched. The two birds were odd samples of bird life. They looked for all the world exactly like half-drowned honey bees! From the day they were hatched the old bird was a busy parent. Often she would be gone for an hour among the flowers, though generally but half an hour or twenty minutes. On returning she would perch for a moment on a dead apple-tree limb, then fly to the nest and gently wake her young by prodding them with her bill. She fed them by thrusting her bill into their upturned throats so far and so vigorously that you felt sure they would be killed. As the young grew they would hold up their heads without being first awakened, and when we came near they made a low, humming sound, like that of a very highly pitched tuning fork. Whether this was in supplication for food or in alarm we could not determine.

It was four weeks before the young humming-birds could fly. It takes a robin but two. As they grew their breasts crowded out the top of the nest until it almost broke. The last week in the nest feathers came out rapidly on the birds, and their bills, which had hitherto been very short, grew with surprising speed. The nest had been so cleverly placed that, though it was on the south side of the tree, the sun could never shine into it. When we pulled back the leaves in taking pictures the mother came and sheltered her young from the hot rays. During a sharp thunder storm, however, she did not come near the nest.

One day the larger of the two birds jumped out, and instead of sprawling around screaming for every cat within a mile to hear, as a young robin would have done, he sailed easily and silently into the top of the tree and from his perch quietly surveyed the world that had so suddenly become his. The next day the other bird did the same. They did not call or hesitate or first flap their wings or crawl timidly out on a branch. There was no air of experiment. They had the mien of veterans from the start.

JULIAN BURROUGHS.

147. Feeding the young

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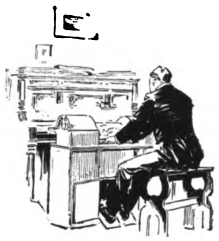

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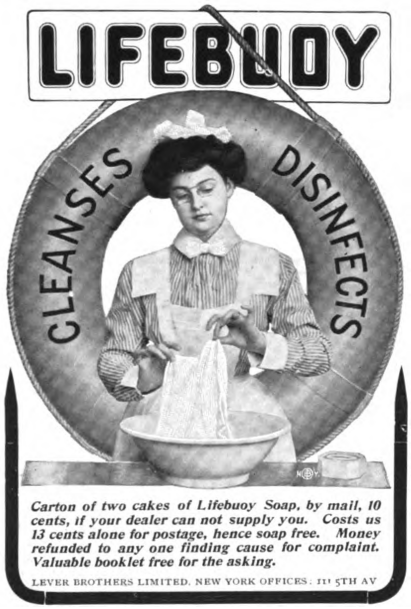

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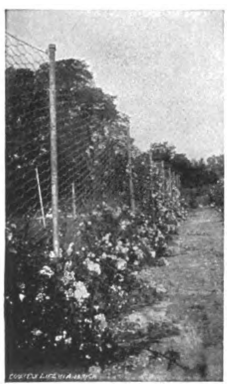

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People Who Have Improved the Country

III. GEORGE BANCROFT

THE famous American historian, George Bancroft, was a great lover of the rose. His rose garden at Newport, R. I., once contained four thousand rose plants. A picture of his summer residence accompanies this article.

Bancroft's house was one of the older and less pretentious places at Newport. He built it in the autumn of '51 and spent his summers there until his death in 1891, with the exception of the eight years from 1867 to 1874, during which time he was Minister to Prussia and to the German Empire. The house was poorly arranged and lacking in comforts, judged by modern standards. A few years ago it was taken down by the present owner of the land, Mr. Herman Oelrichs, of New York, who has built a new residence not on the old site but a little nearer the sea. High walls and a marble balustrade have done away with every trace of the old rose garden. The walk from Bancroft's house to the sea was bordered by rose beds. The garden ran down to within a hundred feet of the edge. With a heavy sea and a high wind the ocean spray was occasionally borne into the garden.

The roses were not visible from the street. They were mostly arranged in long, narrow beds, skirting the walks, and did not interfere with the central open space. There were hundreds of varieties and numerous species. Most of them were perfectly hardy, remaining outdoors all the year round. A few beds of tea roses and other relatively tender sorts were carefully covered during the winter. One eccentricity of the place was a vegetable garden near the cliffs. When one goes down to view the ocean, a field of cabbages seems somewhat out of place.

The famous American Beauty rose is often said to have originated in Bancroft's garden. The facts are these: In Bancroft's garden were several varieties lately imported from France. One had no label. This was much admired by a florist named George Field, who happened to be looking over the place in company with Bancroft's gardener. Field asked for a cutting. He got it. Field and his brother worked quietly for several years until they had a big stock, and then they advertised their novelty as the "American Beauty" rose. They are said to have made a small fortune out of the transaction. The American Beauty has since become the most famous of all roses in the United States. It has never failed to bring higher prices than any other rose. In the market reports it is always quoted in a class by itself. Only experts can grow it to

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I gave a little Postum to a lady friend one day to take home and try. She reported that she did not like it at all. I found she boiled it only five minutes, so I gave her some more and told her to boil it twenty minutes. That was different. She has been using Postum now a long time.

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perfection, and there is a recognized type of greenhouse specially adapted to it.

Some time after Field & Brother introduced the American Beauty, horticulturists began to investigate its origin, with the result that its proper name was found to be Mme. Ferdinand Jamin, the name it had in France before a plant of it had been sent to Bancroft's garden where the label was lost. This variety is of no importance in France or in Europe. In fact, the American Beauty has become so much modified by American conditions that some think it is practically a different variety from Mme. Ferdinand Jamin.

One criticism of the Bancroft place was that it was comparatively bare of flowers after the roses were gone, i. e., during most of July and all of August. Bancroft left most of the cultivation, pruning and fertilizing to his gardener. His first gardener, George Hardwick, was an exceptionally able man, and the rose garden was

Bancroft's house at Newport

brought to its perfection in Hardwick's time. Bancroft knew all his roses by name and understood the points of a good rose. He made the rounds of his favorites every morning.

The portrait of Bancroft at the head of this article is by far the best likeness that exists. The original portrait was an oil painting made at Berlin in 1874, when Bancroft retired from public service. The old Kaiser Wilhelm and our first minister to the German Empire exchanged portraits at parting. Both were painted by the court painter, P. Bülow. The portrait of Bancroft is at Berlin. That of the Kaiser is now the property of George Bancroft's grandson, Prof. W. D. Bancroft, of Cornell University, who has loaned it indefinitely to the Corcoran Art Gallery, at Washington, D. C. The historian's library was purchased in 1893 by the Lenox Library of New York. It includes about forty books on roses but no manuscript concerning the garden.

George Bancroft was one of the first of the long and honorable line of American scholar-politicians. His "History of the United States" is a classic. George Bancroft was born in 1800 and died at the ripe old age of ninety-one, after a short illness. May we have more men like him.

W. M.

NEW IDEA IN CHRYSANTHEMUM CULTURE

THE "ringing" of grape-vines to produce larger and earlier clusters involves a principle which has lately been applied to herbaceous plants, notably the chrysanthemum, resulting in an increase of over an inch and a half in diameter of blossom and a gain of four days. Experiments conducted by Prof. U. P. Hedrick at the Michigan Experiment Station, have given results which practical florists have considered very promising. Professor Hedrick writes that the figures given above are likely to be misleading, and desires another year's test with a larger number of plants before publishing detailed measurements.

The work of "ringing" chrysanthemums is easily and quickly performed. A strip of bark half an inch wide was removed a little before the buds began to show color, at a point where the stem would naturally be severed when the cut flower was ready for market. It is to be hoped that similar experiments will be tried on all florists' flowers of the first importance, in cases where a fancy product is desired and the plant discarded after flowering.

NEW THEORY ON

Cause of Hay Fever.

Hay fever is not so much a result of climatic conditions as it is a showing of the "weak spot" in the general condition of the body. If a hay fever sufferer can be fed up to a prime condition of health by the use of well selected food the chances are the hay fever will not present itself.

As an illustration, a lady in Cave Spring, Ga. explains how the change of food affected her. "This past summer I found myself in a very low state of health and much emaciated. I got down to ninety-five pounds and was worried, especially as I had to look forward to my annual tussle with hay fever in September and felt it would push me even further down.

One day a friend told me she had been using Grape-Nuts Breakfast Food and that she felt like a new person with greatly increased strength and vigor. I grasped at the straw and began the use of Grape-Nuts. The effect was really magical. In a week I felt toned up and in a month began in earnest to gain eflsh and strength. By September my weight had increased to 110 pounds and much to my amazement I discovered that when the hay fever sufferers began to complain I had not one symptom and escaped it altogether. Inasmuch as I had suffered for years from this miserable disease and had made no change except in my food, I naturally concluded that my improved condition was caused by the daily use of Grape-Nuts and by observing the usual laws of health." Name can be given by Postum Co., Battle Creek, Mich.

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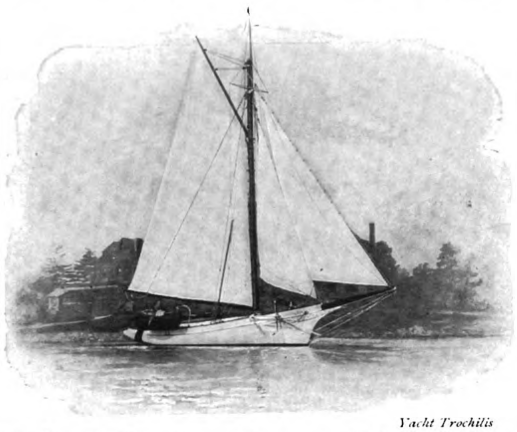

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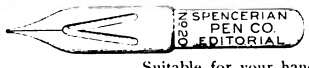

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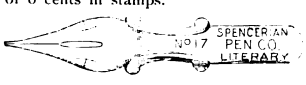

SOME APRIL BLOSSOMS

IT was a subject of vague and perennial wonder to my neighbor that nature should clothe one of his dooryard trees—they are box-elders—with blossoms every spring, and get never a key for her trouble, while the other tree, apparently barren of blossoms, is laden with fruit in the fall. A careful look among the opening leaves showed him the inconspicuous green flowers on the seed-bearing tree, and a brief explanation solved his riddle.

There are many instances of this division of the flower-bearing function among familiar trees. The aspens are good examples. Most people

Pistillate Blossoms of American Aspen

know them. They grow in copses when let alone. The brightening of their gray-green branches is one of the earliest signs of spring. No trees respond more promptly to the first call of the awakening earth. The plump gray "pussies" put their heads out in March. In April they cast their shiny brown scales, and pendulous catkins like chenille fringe, gray and green and rosy-tinted, hang from every twig. Out of these catkins the pollen is shaken. On another tree there are prim green catkins set with aggressive little pistils. These catch some of the drift of pollen that comes their way, and seed is set, which ripens in summer.

* * * *

The red maple is one of the beautiful trees. It never forgets its name. For months its twigs glow like red-hot needles among the sober hues of the winter landscape. In April the little garnet buds unfold, and a cloud of yellowish green tassels veil the bare twigs, like a mist.

Staminate Blossoms of Red Maple

The opal colors of these staminate catkins contrast strongly with the pistillate flowers which are scattered over the same tree. They are rosy of hue, and boldly thrust out their red forked tongues for pollen. They are assertive—they have come to stay—they are red maple keys in their infancy.

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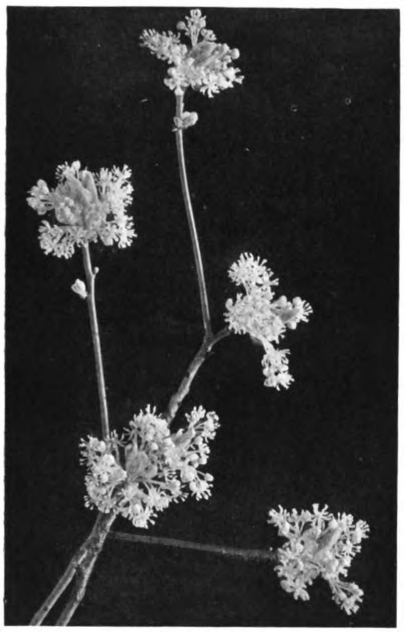
Capping their bright green twigs the fragrant buds of the sassafras have been bursting with secrets since the coming on of winter. In April they cast off the scales that keep them warm, and



Staminate Flowers of Sassafras

push out tufts of pale greenish yellow staminate flowers. In the neighborhood is a tree (probably) bearing clusters of greenish pistillate flowers. Here will be the berries in the fall, though by far the most profuse bloom is on the other tree.

* * * *

The red-berried elder is a most ambitious shrub, with buds of unusual precocity. They seem to chafe under the long delays of winter. On the sunny, protected south side of a stone wall, I found last December a lusty plant of it with many buds already open and far advanced. In

Buds of Elder

our April walks we shall see it along wooded paths making the most of its long belated privileges. It will never be more interesting than it is just now, with its knobby purple flower cones enlarging, and its many fingered leaves unfolding in the sun

A. G. T.

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APRIL TROUT FISHING

Advice to the City Sportsman Concerning the Necessary Outfit

NOT until after the fifteenth of this month will it be possible to seek trout in New York's unposted streams without coming into conflict with the game wardens; but the angler is already busy removing his stock of flies from their camphor and moth-ball scented environment, and calculating whether the price of a spring suit foregone will allow him to add further to this most fascinating portion of his outfit.

However seductive the fly may be to the fish, it is twelvefold more so to your fisherman; the trout takes his flies one at a time, the angler by the dozen, making it a consideration for the latter when he finds that good, serviceable and artistically made, reversed wing trout-flies can be had at from one dollar to one dollar and a quarter a dozen. They may be purchased in assorted patterns to suit the particular stream or season. While it is impossible to make a definite statement as to the exact pattern of flies which are most killing, the following table of those suited to the different months may be of assistance to the novice.

April.—Cow Dung, Red Ibis, Golden Dun Midge, Jenny Spinner, Gravel Bed, Cinnamon, Red Spinner, Stone Fly, Red Fly, Parmachene Belle.

May.—Iron Blue, Fern Fly, Sky Blue, Red Dun Fox, Little Dark Spinner, Turkey Brown, Hawthorn, Yellow May, Yellow Dun, Montreal.

June.—Gray Drake, Silver Doctor, Orange Dun, Green Drake, Marlow Buzz, Alder, Blue Blow, Black Gnat, Dark Mackerel, White Miller.

July.—Pale Evening Dun, Grizzly King, Silver Horn, July Dun, Red Ant, Wren Tail, Brown Palmer, Grizzly Palmer, Beaverkill, Professor.

August.—Flagon, Govenor, Shad, Coachman, August Dun, Orange Fly, Land Fly, Seth Green, Goslin, Royal Coachman.

Procure a couple of flies of each pattern that you desire, and also a couple each of red, ginger, and black hackle, these last being serviceable everywhere; but if it is necessary to limit expenditure one of each will give you enough to start with, some three dozen, say.

It is well, moreover, to make out the list of the patterns upon which you have decided and mail it to a tackle dealer; for if you purchase them in person you will leave the store with at least twice the number first determined upon. A well made leather-bound fly-book with clips to keep the snells straight, drying-leaves of flannel, and waterproof leaves to hold six dozen flies is also a necessity and may be had for a couple of dollars. Such a book measures about eight by four inches, and when filled is rather bulky. But for obviating this difficulty an enthusiastic fisherman has invented a system of tying flies on tiny brass tubes instead of directly to the hook. When ready for casting, the tubes carrying the flies are slid over the snells and down on the shank; when not in use, the fly-bodies are strung on brass wire, mounted on a little celluloid leaf 3x5 inches, each leaflet carrying one dozen bodies. A card 2½x5½ inches with lengthwise corrugations carries one dozen hooks, each hook having a corrugation of its own in which to lie. By this arrangement one may carry any sized assortment of fly bodies, while but a dozen hooks are needed. Not only is the heavy large-sized fly-book thus disposed of, but the breaking of a hook does not put the fly-body out of commission.

This idea has been carried further of late, and the fly-bodies may now be had with tubes made in three sections, one for the wings, one for the legs or hackles, and one for the bodies, allowing an angler furnished with a set of elemental fly-parts to make almost any combination at the stream, in imitation of such insects as may be proving attractive.

The trout fly-rod varies in dimensions with the kind of work demanded of it. For large open bodies of water and long casts a rod of 10 or 10½ feet in length will be the best; for narrow streams with bush-grown banks where very short casts are the order of the day, select a nine-foot rod. Made of split bamboo such a rod may be had for ten dollars and upwards, but costs considerably more in money and attention to keep in repair. For all practical purposes, however, a

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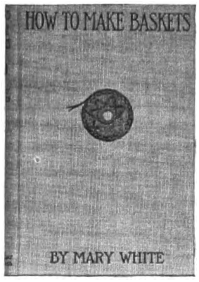

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well-made lancewood, costing, with nickel-plated trimmings, four dollars, is almost as good, and will furnish just as much sport; and is in every way superior to a split bamboo which may be had for less than ten dollars.

The fewer the joints in a rod, the better its action, but a rod of from 9 to 10 feet in length with three joints, is, of course, far easier and pleasanter to carry any distance and much less likely to become injured than a two-jointed affair of equal length. For a man who is fortunate enough to live within reasonable distance of good fishing waters, one of the pleasantest rods to handle is a 10-foot fly-rod, made with two joints, each 4½ feet long, and a detachable butt one foot long. For $4 these may be had in weights ranging from six to eight ounces, It is an unwieldy thing to carry, but a beautiful arrangement when once in action.

A willow trout-basket or creel, which will hold nine pounds of fish (more than any angler ought to expect for a day's work) may be had for $1.00. Nine pounds, I know, does not sound very much of a catch, but when it is taken into consideration that a one-pound brook trout is a big one, a three-quarter pound a fair size fellow, and that even a half-pounder will give you lots of fun, it will be seen that that this size creel is quite large enough, unless the fisherman desires to carry his lunch in it, in which case one with twice that capacity may be had for about 20 cents more.

Speaking of utilizing a creel for a lunch basket, one of the neatest devices is a creel with the slit for the insertion of the fish at one side, a leatherine lid and closed with a spring brass flap, which will drop to admit the fish and then fly back in place. The upper part and one side of the creel is occupied by a small tray, in which lunch may be kept in dignified seclusion from the victims.

Another style of creel, while not as artistic in appearance as that made of willow, but yet handy enough for the tourist, is one made of water-proof canvas, expanded by small sticks of wood inserted in loops, and which on the removal of these can be folded up in a very small package. This creel may also be turned inside out and sent to the wash.

A three-piece lancewood 10-foot trout fly-rod with metal reel seat will weigh about seven ounces; the butt or handle may be wound with cork or cane. The former is more comfortable, the latter more durable. The full metal reel seat will cause the rod to weigh ¾ of an ounce more than if fitted with reel bands only, but as the fly-rod carries the reel below the hand the additional weight will help to balance the weight of tip and make the rod handle more easily. For this reason I prefer a rubber and nickel reel to one of aluminum, as the rubber and nickel affair, weighing an ounce more than the aluminum one, allows with the all-metal reel seat 1¾ ounces of additional weight to act as a counterbalance, just where most needed.

Such a fly reel, holding 40 yards of line, can be had for the moderate expenditure of $1.50; no particular advantage is obtained by spending more than this as the length of one's cast is governed by the ability of the fisherman and not by the free running qualities which add to the cost of a bait fishing reel. The reel should have a band or tire projecting over the edge of the plate to which the crank is affixed. This arrangement contributes to the fisherman's peace of mind by preventing the line getting between reel-plate and crank, and making a tangle.

On the back of the reel-plate should be a sliding button which serves to put on or off at will the ratchet click, which prevents the reel from over-running when lengthening the line or making a cast. The advantageous point of the adjustable click lies in the ability of the fisherman to make the reel free running when he desires to substitute the humble but remunerative "wum" for the artistic but sometimes unappreciated fly. The ordinary fishing line is of no use on a fly rod; with the light flies it will not cast far enough and is prone to entanglement. The regulation fly line is made of braided silk water-proofed and enameled with a preparation which which adds stiffness and weight to the line, The stiffness prevents kinking and snarling, while the weight enables it to be sent to quite a distance, even in a light breeze.

Get 40 yards of No. F fly line; No. G is strong enough but you can make casts more easily with the larger size. Have it tapered, that is, one end half the diameter of the other.

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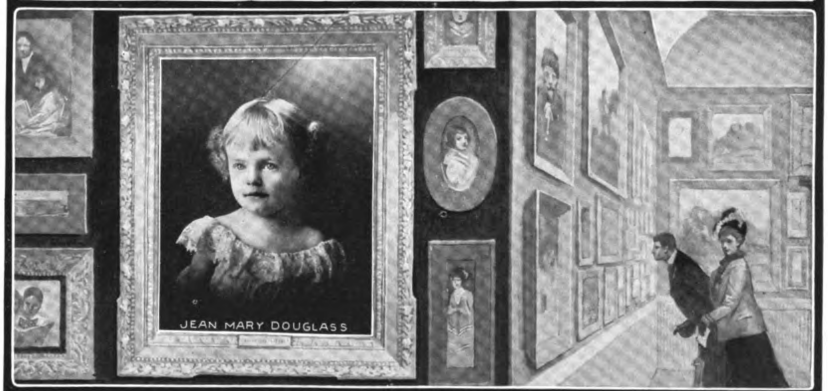

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Such a line is worth about two dollars. Tournament fly casters spend much more for a line weighted with a wire through the centre. By its use they can cast to great distances, but the line without the metal core will do all that is needed in actual stream fishing.

Flies are not attached directly to the line. To break the visible connection of the flies with anything terrestrial, a length of silkworm gut, from six to nine feet in length, is used. Six feet is long enough and costs less than nine. Beside the loop on each end of the "leader," as the length of gut is called, see that two other loops are attached at intervals. These allow a quicker attaching and removing of flies than by the old manner of fastening them at the knots. Such leaders can be had for a quarter each, and it will be well to procure at least six of them to allow for accidents, wear and tear, besides giving you several assortments attached to different leaders in order to try each one in succession until the most taking for that particular day or water is discovered.

Leaders should be moistened, until limber, before using, otherwise they will snap in two when casting, or when subjected to strain. A good moistener can be easily made (from one of the flat two-ounce tins in which tobacco is often packed,) by fastening inside with cement a couple of leaves of felt which are to be moistened, and between which a couple of leaders, if placed on leaving for the stream, will be found in condition to use, on arriving at the fishing grounds.

Of course, with a light flexible rod it is impossible to lift one's fish from the water, therefore a landing net is an important part of the angler's equipment.

The best form for trout fishing is the little affair with rattan handle and bow, with netting of linen, as cotton nets are apt to become entangled with the hook points. This should be hung by a loop of cord to a coat button, so that it may be easily reached when needed, yet out of the way when casting or playing the fish.

Except for very deep water I prefer hip-wading boots, with the upper portion supported by straps attached to the belt. Have the boots a couple of sizes too large and wear knickers, heavy woolen stockings and soft-soled moose hide moccasins. One is then comfortably dressed for walking and on starting to wade the hip-boots may be pulled on over the other foot gear.

Keep the rod, when not in use, in a grooved wood form and enclose the form in a leather-bound case of brown water-proof canvas.

For actual carrying to and from the stream, if any distance is to be traversed, have a three-partition case made of light cloth, which may be folded and placed in the pocket and occupy no more room than a handkerchief. Dry the line after each day's sport by removing it from reel and hanging it in a place protected from sun and rain, and so situated that a current of air will circulate around it.

About four pages of this magazine might be filled with pictures and diagrams explanatory of the manner in which flies are cast and which the expert only (who needs them not) would understand. In fly casting as in swimming, fifteen minutes' actual practice with an expert is worth a whole library of written instructions. Get someone who knows to show you the principles, then put rod, reel and line together, and to the end of the line attach a cork. A grass plot, or the flat roof of a city dwelling makes good practice ground. When you can put the cork into your hat at ten yards with a reasonable degree of certainty, bend on your leader and flies; when you can get the end fly in the hat six times out of ten you are ready to practise on the water. Don't try for long casts at first. Aim to make your line lie out straight on the water, and the end or "dropper" fly land furthest away from you. After a certain amount of skill has been acquired, there is a fascination in being able to make a good cast that makes the actual slaughter of fish a minor consideration.

E. T. KEYSER.

SOME PUMPKINS.

HAVING experienced, in former years, the advantage of training pumpkins on poles and trees, I determined last spring to build a trellis over the kitchen door, on the south side of the house, for shade, ornament and fruitfulness.

I planted the seeds of the small pie pumpkin

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in a box, in the house, early in April and they were almost ready to run when I set them in the ground about the first of June. Five plants were set out on each side of the steps, and a foot apart.

I spaded deep into the rich soil, and powdered it fine, leaving a saucer-shaped depression in the ground about the plants, so that the moisture would settle around the roots and not run off.

Three or four times during the season I stirred the soil thoroughly with the hoe, and

Pumpkin Vine at the back door

watered the vines with liquid fertilizer from the stable. A more interesting subject for nature [illegible] I have never had. My vines grew about [illegible] inches a day, and every few days I found it necessary to tie the sprays to the wires and slats of the arbor.

In a few weeks they had reached the top of the trellis and formed a canopy of shade so dense that the sun could not shine through, even in spots. The leaves grew so large that they resembled palm leaf fans, and the scores of rich golden blossoms, opening every day during the summer, were wonderful to behold. The pumpkin arbor

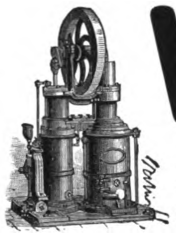
Side view of Pumpkin Vine

became the admiration of the whole neighborhood. Seven golden pumpkins ripened and were duly made into pies.

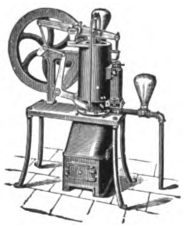
I learned several interesting and profitable lessons from my experiment.

1. That no plant or vine grows more rapidly, or makes a more luxuriant, tropical and dense shade than the pumpkin vine.

2. The tendrils are so strong, that, after they have made a dozen tight coils about a wire or around each other, they become almost as tough as wire itself.



WATER



A supply of water for country residences, hotels, schools, etc., being a necessity rather than a luxury, the importance of having the supply constant, as well as easily procured, is self-evident. Before the invention of the

Rider and Ericsson Engines

this question of water supply was a vexed one and not often satisfactorily solved. Since the invention of these engines many thousand residences, schools, hotels, stock farms, etc, have had a constant daily supply of water without danger, complication or material expense. Many of the largest colleges, such as Harvard, Cornell, Columbia, University of Michigan, and many others have the engines in their mechanical laboratories as being the standard machine for illustrating to their students. Thousands of the most prominent citizens of this country, as well as other countries, use them; many of the rulers of other countries, including King Edward VII and the Khedive of Egypt, have the engines in their palaces. The heads of the greatest engineering establishments in this country, such as the Baldwin Locomotive Works, Westinghouse Machine Works and Allis Chalmers Company, pump the water at their country places with Rider or Ericsson engines. Almost every public school in New York City has one or more of the engines supplying water for the use of the students. Many of the most prominent stock farms in this country pump all of the water for their fine cattle with Rider or Ericsson engines. These facts may not be conclusive, but to the average mind are important. Such people do not buy inferior machines if better ones are in existence. The celebrated Captain Ericsson, of Monitor fame, the inventor of the Ericsson Hot-Air Pumps, considered the Ericsson Pump the most important, from a utilitarian standpoint, of all of his inventions. A boy who can build a fire in an ordinary stove is competent to take entire charge of a Rider or Ericsson Pump, and the cost of running them, with any kind of fuel, is practically nothing. Their absolute safety under all circumstances is not an unimportant consideration. Owing to the recent reduction in the price of many materials we are able to make a discount of 10 per cent. from our present list prices without in any way affecting the quality of the engines. In writing to any of our stores for information delay will be saved by stating the conditions under which a pump would have to work.

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3. Pumpkin vines possess remarkable vitality. One stem was crushed underfoot and held together by only a few fibres, but I bound it tightly together with a strip of muslin, and it climbed to the top of the frame and bore a ripe pumpkin, another branch was broken more than half in two, but it grew right on and bore fruit.

4. The male and female blossoms were also an interesting study. The former being very numerous, and blooming at the ends of long slender stems, while the latter grew on stout thick stems with embryo pumpkins well formed back of the blossoms before they opened.

5. The fruit grew in greater profusion, ripened more perfectly, and had a better flavor than when it grows on the ground.

6. Though the bugs were very troublesome last summer, and destroyed almost all of the pumpkin and squash vines in our vicinity, my climbing vines were not molested by them.

7. It was very entertaining to watch the ripening of the pumpkins. At first small round spots or stars of yellow appeared on the surface. Then followed an intricate tracery of yellow lace, woven by nature's skilful, yet invisible, fingers upon the groundwork of deep green, which grew brighter and more distinct from day to day, until the whole orb of emerald turned to a globe of gold, and by the sun became a sun in miniature, by other suns surrounded, in the zenith of our arbor's sky, and the fruit of the pumpkin tree was ripe and ready for the harvest.

WILLIAM CHAMBERS WILBOR.

A BLACK BEAR CUB

THE article in the February number of "Country Life in America," on the Virginia Opossum, contained many interesting facts about this curious animal, the most surprising of which is the size of their young, which is only half an inch in length, while the mother weighs ten or twelve pounds.

Apropos of this I send a photo of mine of a baby black bear taken in February, at Forest Park "Zoo," in Springfield, Mass., about twelve hours after it was born. The mother gave birth to two cubs. While she was in another part of

A baby bear weighing twelve ounces

the den the keeper managed to get one of the little ones and take it to the warm bird room to keep it and bring it up by hand.

The last litter of cubs met with a sad fate. Four hours after they were born the mother ate them, a thing that bears sometimes do in captivity.

It can easily be seen by the photograph what a diminutive thing the young bear is. It weighs just twelve ounces, while the mother bear weighs 400 pounds.

Careful thinkers have estimated the probable weight of a baby bear at from twenty to fifty pounds, and nothing short of a picture like this is calculated to convince.

GEORGE D. BARTLETT, JR.

Fruit Growing in California

"Statistics of the Fruit Industry of California" is a recent Government publication which gives figures for the eleven years from 1890 to 1900 inclusive. Over half a million tons of fruit were shipped out of California by rail and sea during 1900. This was the banner year for citrous fruits (226,000 tons); for dried fruits (90,000 tons), and for canned fruits (76,000 tons). The record year for green deciduous fruits was 1899 (97,000 tons), and for raisins 1898 (48,000 tons).

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WESTMINSTER KENNEL CLUB SHOW

February 19th to 22d, 1902, inclusive.

LOOKING over the Catalogue of the first four dog shows held in New York, those of 1877 to 1880 inclusive, one is struck by the great progress in the breeding of dogs since then. It is also curious to see the changes fashion has made in the popularity of the different breeds.

Ashton Defender. Cost $1,000; imported from England

Could we see some photographs of the people, particularly the ladies with their pets, we should not find the cloths more old-fashioned, than the dogs themselves. Here we find the mastiff and Newfoundland among the largest classes, after

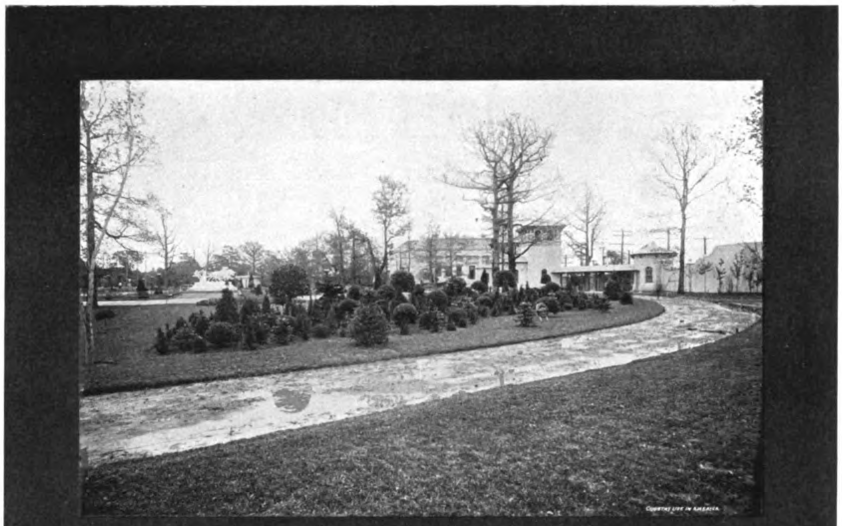
Mrs. Kernochan's Prize Winning Team of Irish Terriers

the setters and pointers, while the present day popular collies, bull dogs, and fox terriers were practically unrepresented, and Boston terriers, probably the most fashionable breed of to-day, were entirely unknown.

Champion Woolton Dagmar. Blue Roan Field Spaniel

One of the curiosities of the Ladies' Kennel Association Show of 1901, was a Newfoundland, while the setter and pointer classes were given up to those that would "show" themselves and not work, as it is rare to find our best field dogs at a dog show.

Among the toy dogs was a large entry of



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Pan American Exhibit, Buffalo, N.Y. 1901.

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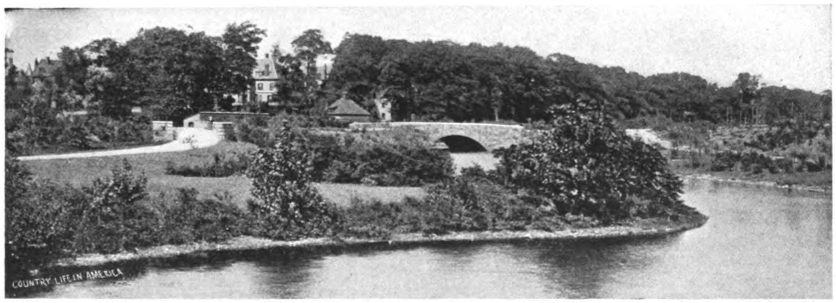

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Italian greyhounds—a breed rare indeed now-a-days—but one that, when fashion gets through with the bat-eared and diminutive bull dogs together with the Boston terrier, that go so well with Milady's present sporting craze, may again become a fad.

It is only necessary to compare the entries of the earlier shows, with those of recent dates, to reach the conclusion that the "dog has his day." Who would have thought, from that small beginning, that New York city could support two large shows a year.

The entries for the show of the Westminster Kennel Club, exceeded in number those of any show ever held in the country. All breeds

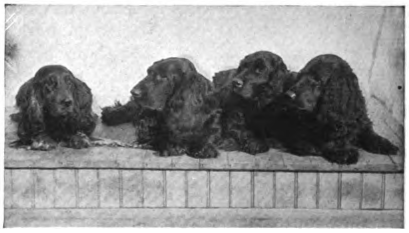
Milo Fils

were represented in the various classes, by almost perfect specimens, notably bull dogs by the celebrated Vancroft Kennels owned by Mr. J. B. Vandergrift of Pittsburgh, who has perhaps the largest and most representative kennel of the breed, and owns such good dogs as Katerfelto and Portland, besides a number of grand bitches.

Perhaps the dog who attracted the most attention, and who is never without a crowd around his bench, is Rodney Stone, said to be the most typical bull dog in America. This dog, with his kennel mate, Persimmon, has cost his proud owner, Mr. Richard Croker, Jr., a small fortune.

The great Danes and Russian wolfhounds are usuaily among the largest classes of big dogs, and here they were represented at their best, in entries of the Montebello Kennels and E. L. Kraus, respectively.

The small dogs, called toys, now seem to have things all their own way. At the head of all kennels of these pets, was Mrs. Smythe of



A team of Field Spaniels

Germantown, Pa., the owner of the celebrated Swiss Mountain Kennels, which include field and cocker spaniels, Pomeranians, King Charles spaniels and Yorkshire terriers.

Mrs. H. G. Trevor, of the Meadowmere Kennels of Southampton, was a keen competitor with curly coated French poodles, and always takes a blue ribbon with Milo Fils.

Of special interest was the judging of packs of beagles. Each pack consisted of five couples, attended by master and whip. Three packs were entered. The Windholme Kennels, of which Mr. H. T. Peters of Islip, L. I., is master, are followed on foot. The others, the Round Plain Beagles, of which Mr. John Caswell of Boston, is master, and the Middlesex Hunt, of which Mr. A. H. Higginson, of Boston, is master, are both hunted mounted. The dark green hunting coats were decidedly picturesque.

-ELIZABETH LEWIS.

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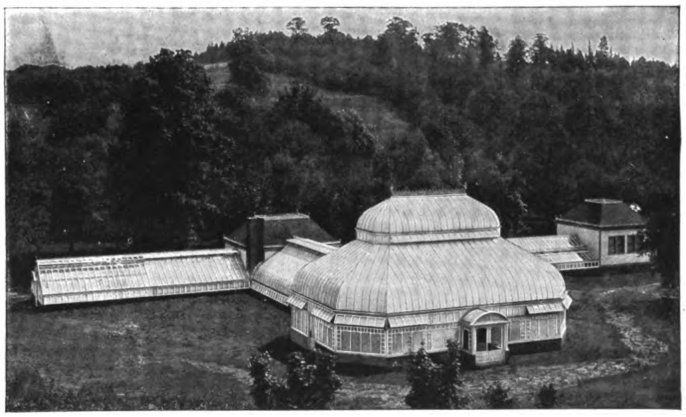

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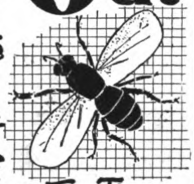

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A REMARKABLE CENTURY PLANT

CENTURY plants are proverbially slow and uncertain in coming into bloom. When they decide to flower they act in a hurry. The speed of growth and height of the solitary flower are nothing short of marvelous. The accompanying picture shows a stalk which shot up twelve feet and a half in ten days, and ultimately reached a height of thirty-four feet, eight and a half inches in four months. The reader may judge of the strength of the stem by looking closely enough at the picture to see the man in

Century Plant

the branches. This man weighed 170 pounds. The photograph was taken by a carpenter at Santa Barbara, California, who also furnished the following statistics of growth. The bud or stem started on April 21, 1899. It had grown on April 29 to 12 ft. 6 in.; May 6, 15 ft. 9 in.; May 14, 18 ft.; May 20, 20 ft.; June 3, 22 ft. 4 in.; June 17, 25 ft.; June 24, 27 ft.; July 1, 29 ft. 4 in.; August 19, 34 ft. 8½ in.

For the above picture and information we are indebted to Mr. W. F. Dreer of Philadelphia.

"THE BLUE SPIREA"

A fall-blooming shrub is always a welcome acquisition, especially so when its habit of growth is pleasing. These qualifications may be found in the Chinese shrub Caryopteris Mastacanthus, introduced into cultivation in recent years. This shrub blooms on the current year's growth, commencing in August and continuing well into October. The individual flowers are small but numerous, forming a dense cyme on

Bush of the Blue Spirea

short peduncles arising from the axils of the leaves. They are a lavender blue in color. The bees are especially fond of it, and hover around it in swarms. This plant is not quite hardy at Chicago, but in most sections of our country its roots, if well mulched, will live over winter, and the following season's shoots bloom freely. The best way, however, to handle it, is to take it up in the fall and replant it in a cold pit, or plant it in a soap-box and winter in a cool cellar, replanting outdoors in the spring. A partial cutting back in the fall and a final one in the spring is necessary, on account of the root disturbance. By this means much of the old wood is retained and much finer plants are secured. The one here illustrated is five feet nine inches high and seven feet in diameter. W. C. EGAN.

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THE CITY MISFIT.

MANY a city-born man is out of harmony with his surroundings. Many a country boy has dropped into a city occupation with which he has no sympathy, and from which there is no promising outlook. He is sick of the treadmill routine and longs for the variety and inspiration of country life which comes naturally to the individual possessed of a mental as well as physical vision. Letters from city misfits come to us frequently, and how easy it is to lead such men astray by advice born of one's own enthusiasm and love for life out-of doors! If the man is sincere in his aspirations and is not encumbered with family ties, there is no reason why his desires should not be fulfilled. But the man who is "long" on family and "short" on cash and farming experience, must look carefully before he leaps. Farming is a serious, a difficult, an intricate business. Books will help immensely, but experience must supplement theoretic knowledge. The city man can become a countryman, but the transformation should be gradual unless the city man be a capitalist. The novice should begin humbly and in a small way. A window box is a miniature farm; it may grow into a back yard or front yard plot, a surburban residence with garden, a rented field or a farm. But the steps should be gradual and not faster than is dictated by the acquisition of experience. The city man should remember that there is always a demand for intelligent labor in the country. Much rather would I take my chances with a man intelligent and willing, though inexperienced, than with an ignorant, narrow-minded man of wide experience. Intelligent labor is always at par or above.

Not long since a middle-aged druggist of New York asked for advice on this very point. He had no capital either in money or experience, and he was on the downward slope of life. Would it be wise for that man to invest what little cash he has in a winter course in agriculture, cut loose from his own profession and with three months' training launch into a new and untried field? I confess the lack of courage or confidence to advise him to make the venture. His business provided a livelihood for himself and family but no more. He was dead tired of the monotony, the suffocating environment of his life work, and of gazing into the hopeless future. He will probably make the attempt. The experiment will be watched with almost painful interest. There is abundant room in the country for the man with eyes and ears open for the joys and beauties of out-of-doors. Wealth there is not. Health and happiness await the open-minded, the willing handed man.

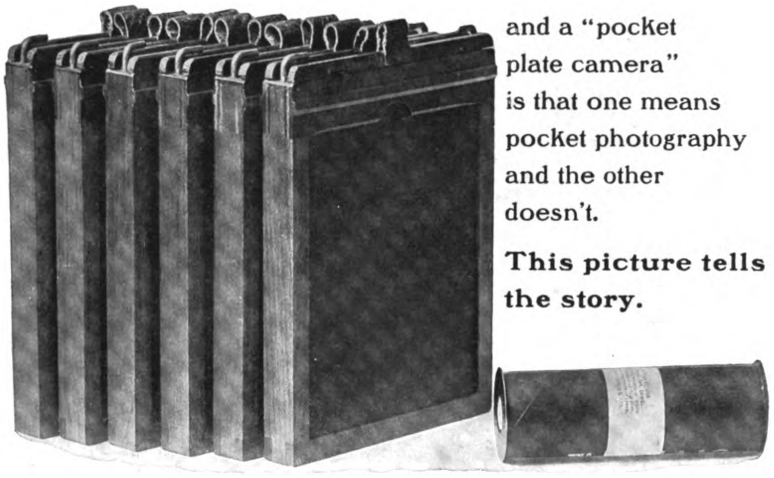
JOHN CRAIG.

HARDY PLANTS FOR THE NORTHWEST

"Ornamentals for South Dakota," by N. E. Hansen, is a remarkable production for so new a country. It is a free illustrated publication of over one hundred pages, reporting on the hardiness and general desirability for home planting of 288 kinds of trees and shrubs, as tested at Brookings, S. Dak. Most of these plants were cultivated at the experiment station during the memorable February of 1899, when the thermometer fell to forty degrees below zero, with no snow on the ground to protect the plants. The collection was largely composed of species native to sections of Russia having a dry and cold inland climate similar to that of our great Northwest. Naturally, many of the favorites of moist and coastal regions succumb to such trying conditions. In Professor Hansen's "Black List" we are sorry to find many of the choicest plants of the southeastern United States, China and Japan. Nevertheless a goodly list remains that can be recommended for general cultivation. The box-elder, from seed native to Kansas, winter kills in South Dakota, while the local seedlings are perfectly hardy. This fact illustrates an important principle that applies to silver-maples, Virginia creeper, and practically all the trees, shrubs and vines which are native to South Dakota, as well as to Eastern States. The new country must avoid Eastern and Southern seed and stock of such species in order to build its home floriculture upon enduring foundations.

The difference between a

Folding Pocket Kodak



and a "pocket plate camera" is that one means pocket photography and the other doesn't.

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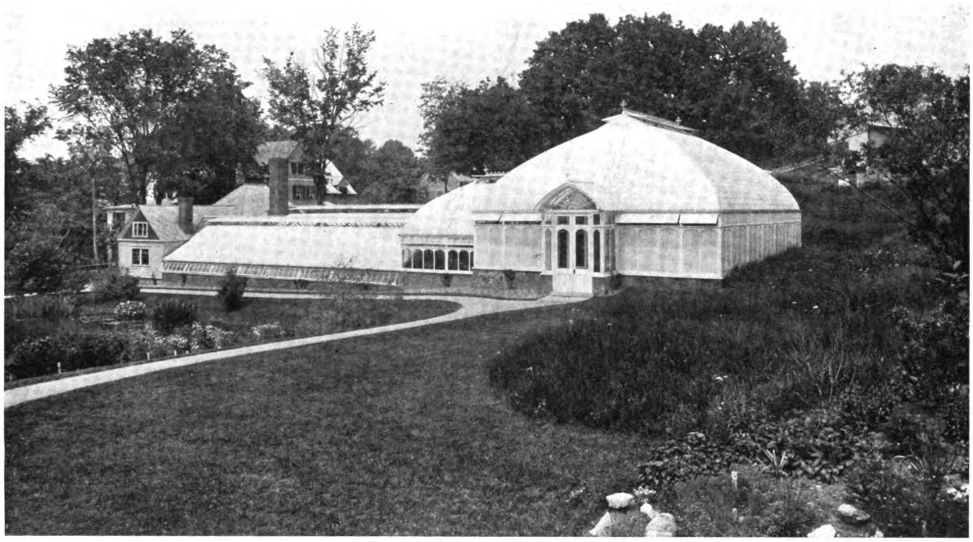

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A SUGGESTION

Take the photographs this spring and summer which you will need for next year, and make your plans early; have all copy in our hands *at least* thirty days before day of publication. It is impossible to do as good work as we must do to meet your expectations unless we have at least as much time as this.

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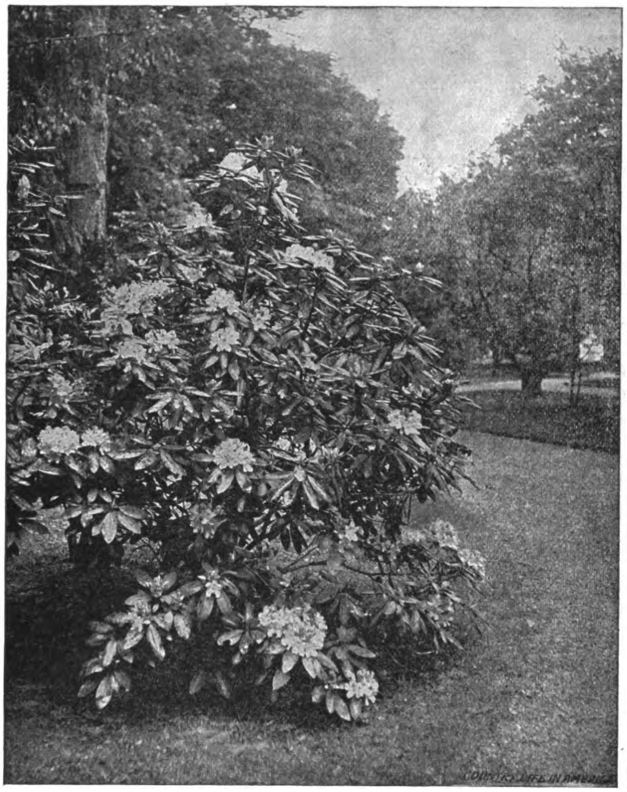
RARE RHODODENDRONS



have been successfully grafted and grown at the Kissena Nurseries for more than forty years. We have now scores of beautiful varieties in crimsons, purples and white, with all the delicate shades between. The plants combine the rare coloring of the exotic with the perfect hardiness of the native Catawbiense. Besides the small plants, usually sold at the Nursery, we have a number of fine specimen Rhododendrons, five to six feet in height; a collection unequaled in this country. A splendid effect may be obtained by planting these singly in prominent positions, where their profusion of richly colored blossoms will show to the best possible advantage. Unlike the Rhododendron Maximum, they are well shaped and well furnished to the ground, and so can stand the rather severe test of single planting.

A list of these will be sent upon application.

Another of our specialties is

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Magnolias, Ilex Crenata and other Japanese evergreens, and the charming dwarf Japanese Maples, with leaves of every conceivable form and color.

We offer a collection of the Japanese Maples, 35 named varieties for $40.

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DOGWOOD BRANCH

WHITE DOGWOOD

(*Cornus florida*)

In spite of its being so commonly seen in our woods, there is no flowering tree more beautiful than the White-Flowering Dogwood. Before the leaves appear in early May it is covered with large white blossoms; in autumn it is ablaze with brilliant berries and foliage. For specimens or planted in clumps it has no superior, and as a background for masses of Rhododendrons, Laurel and Azaleas it will be found very valuable.

3 to 3½ feet, transplanted, 75 cents each, $5 for 10; 4 to 5 feet, transplanted, $1 each, $7.50 for 10; 6 to 8 feet, transplanted, $1.75 each, $15 for 10.

OUR LEADING SPECIALTIES

Hardy Rhododendrons

Of all the shrubs produced by nature none can excel the rare beauty and stateliness of the Rhododendron with their rich, glossy foliage and flowers of wondrous brilliancy; blooming in great clusters of scarlet-purple and white, until one is lost in admiration. The finest varieties are the Hybrids of Catawbiense, from which our stock is especially selected.

WHITE DOGWOOD AS AN AVENUE TREE

Hardy Azaleas

Next in rank to the Rhododendrons for beauty and value as decorative shrubs come the Azaleas. In the latter part of May and through June every twig and branch of these beautiful plants is dressed with the most brilliant and fragrant flowers, shaded in nearly all colors, from scarlet to rose-pink, white, orange and yellow.

Ever since the establishment of these Nurseries in 1886 we have made a special effort to improve the list of Rhododendrons suitable for planting in this country. From the large number of varieties that we have tried **we know just which will do well and give our customers satisfaction.** Nothing but the hardiest hybrids of Catawbiense should be planted. We offer plants of good habit, foliage and colors.

Our Price-List gives various sizes and the prices

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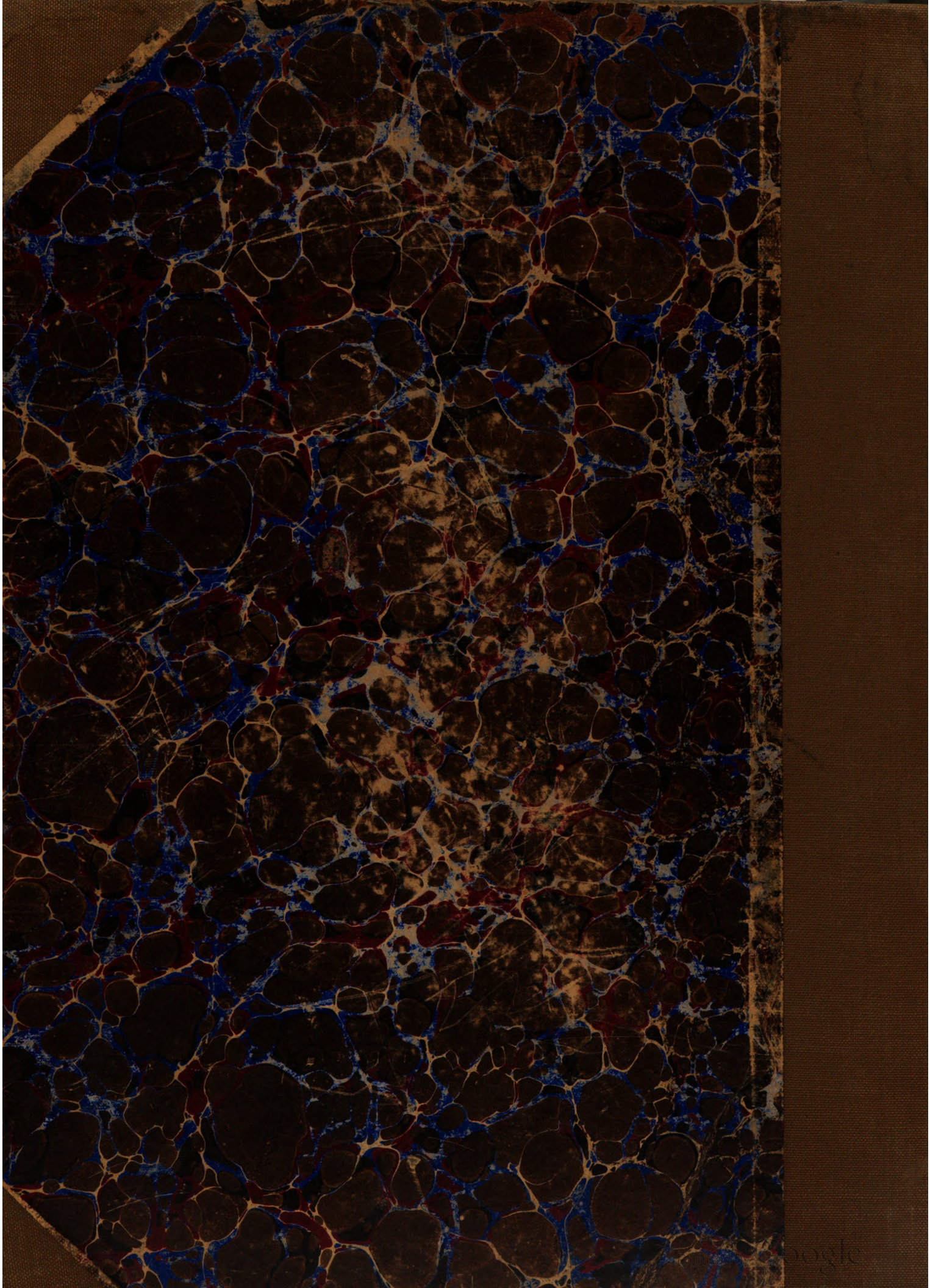
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